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## DIABETES SELF CARE PRACTICES AND ASSOCIATED FACTORS AMONG TYPE 2 DIABETIC PATIENTS IN TIKUR ANBESSA SPECIALIZED HOSPITAL, ADDIS ABABA, ETHIOPIA- A CROSS SECTIONAL STUDY

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### ABSTRACT

#### Keywords:

Adherence,  
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**Background:** Diabetes is a group of metabolic disorders that affect the body's ability to process and use sugar (glucose) for energy. Type 2 diabetes mellitus resulting from the combination of resistance to insulin action and inadequate insulin secretion. The success of long-term maintenance therapy for diabetes depends largely on the patients' adherence with self-care practices.

**Objective:** The aim of this study was to assess diabetes self-care practices and associated factors among type 2 diabetic patients in Tikur Anbessa Specialized Hospital, Ethiopia.

**Method:** institutional based cross sectional study was employed and 320 study subjects were selected using systematic random sampling technique. And the data was collected using interviewer administered structured questionnaire; data was analyzed and cleaned using SPSS version 16. Scoring method was employed to classify patients' self-care practice level as adhered or not adhered to self-care practices.

**Results:** Of all respondents 167(52.2%) female. Mean age of the respondents was 55.03±10.7 years with minimum age of 30 and maximum age of 85. The mean duration of diabetes was 12.3±7.6years with minimum of 6 months and maximum of 41 years. Respondents' self-care practices were, the majority 270 (84.4%) respondents were not adhered to Self-Monitoring of blood glucose practice. A total of 311(97.2%) respondents were adhered to anti-diabetic medication. The majority 252 (78.8%) respondents were not adhered to recommended diet management practices. There was a significant association between Level of education, monthly income, Presence of glucometer at home, marital status, diabetic complication, age and gender and self-care practices. But there was no significant association between duration of diabetes, Occupation and family history of diabetic and self-care practices.

**Conclusion:** findings of this study indicated that majority patients had poor adherence to self-care practices especially in self-monitoring of Blood Glucose and diet management practices.

**INTRODUCTION:** 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. Type 2 diabetes mellitus comprises an array of dysfunctions resulting from the combination of resistance to insulin action and inadequate insulin secretion. It is characterized by hyperglycemia and associated with micro vascular (i.e., retinal, renal, possibly neuropathic), macro vascular (i.e., coronary, peripheral vascular), and neuropathic (i.e., autonomic, peripheral) complications.

The prevalence of diabetes has reached epidemic proportions. According to IDF diabetes Atlas, 5<sup>th</sup> edition 2012 report, currently, more than 80% of people with diabetes live in Low and Middle Income Countries. An estimated 366 million people were living with diabetes in 2011. The number is expected to grow to 552 million by 2030 and the largest age group currently affected by diabetes is between 40-59 years. The African region is expected to experience the highest increase in coming years with estimated increase in prevalence rates of 98% for sub-Saharan Africa, and 94% for North Africa and the Middle East<sup>1, 2, 3, 4</sup>.

The IDF Atlas 5<sup>th</sup> edition 2012 report (ARF) revealed that in 2011, 14.7 million adults in the Africa Region are estimated to have diabetes, with a regional prevalence of 3.8%. The top six countries with the highest number of people with diabetes make up just over half of the total number in the region. This would rise to 28 million by 2030 with prevalence of 4.3%, an increase of 80%, as such exceeding the predicted worldwide increase of 55%. Type 2 diabetes is responsible for 85-95% of all diabetes in high-income countries but Type 2 diabetes accounts for well over 90% of diabetes in Sub-Saharan Africa. Based on the IDF Atlas 5<sup>th</sup> edition, 2012 report, number of cases of diabetes in Ethiopia to be estimated about 1.4 million in 2011<sup>5, 6</sup>.

When it is not prevented and properly managed diabetes is one of the major causes of premature illness and death worldwide. Non-communicable diseases including diabetes account for 60% of all deaths worldwide and more than 80% of diabetes

deaths occur in low- and middle-income countries. According to IDF Atlas 5<sup>th</sup> edition 2012 report Diabetes caused 4.6 million deaths in 2011 globally. World Health Organization projects that diabetes deaths will double between 2005 and 2030. Statistics for medical complications from diabetes are also concerning. Proportions of patients with diabetic complications in sub Saharan region ranged from 7-63% for retinopathy, 27-66% for neuropathy, and 10-83% for nephropathy.

Diabetes is likely to increase the risk of several important infections in the region, including tuberculosis, pneumonia and sepsis. Diabetes being a chronic illness requires continues self care practices by sufferers so that they can contribute meaningfully in the management of their lives. A situation where diabetes patients visit clinics regularly and their blood glucose levels still remain high despite the treatment they receive is a problem that calls for attention. This is a very common observation in many diabetes patients. A good number of them report to the hospital with severe complications, like gangrene that may lead to amputation and possible premature death, this might be because of lack of appropriate self care practices<sup>5, 7, 8</sup>.

Despite the benefits of engaging in a recommended self-care regimen, research remains limited on determining recommended self-care practices level and its associated factors among diabetes patients. The Behavioral Risk Factor Surveillance System for North Carolina revealed that 83% of respondents with type 2 diabetes mellitus performed blood glucose monitoring and more than 93% had visited a health care provider for diabetes care in the past year.

Other researchers have suggested that self-care activities vary extensively according to the nature of the activity itself, with taking of medication often occurring as recommended and exercise frequently falling below recommended levels. For example, results from one study showed that 97% of respondents with diabetes always or usually took their medication, whereas only 41% always or usually exercised, as cited by Nancy E. Schoenberg<sup>9</sup>.

Furthermore, although the studies have begun to illuminate our understanding of some of the predictors of differences in diabetes self-care, we currently lack

an in-depth understanding of level and associated factors of type 2 diabetes patients to ward diabetes self-care practices. The major problematic condition about diabetes self care practices is that there are limited research findings on patients who are found in sub Saharan Africa especially in Ethiopia, even there is no enough published material and little research is done. To address these deficits, this research explores patient's level and associated factors to diabetes self-care regimens in Tikur Anbessa Specialized Hospital endocrinology unit, Addis Ababa City.

## METHODOLOGY:

**Study setting:** The study area, Tikur Anbessa Specialized Hospital is found in Addis Ababa City, Lideta Sub City. The hospital has been inaugurated by the title "Prince Mokonnen" Memorial Hospital on 3/11/1973. On 24/5/1975 named as Tikur Anbessa Hospital. Endocrinology unit is one of the specialty units of the hospital, which provide service for total of 3186 Type 2 diabetes patients in 2003 E.C as new and follow up cases. According to the 2007 census report by Central Statistical Agency of Ethiopia (CSA), the dominant ethnic group of Addis Ababa City is Amara, language is Amharic, religion is Orthodox and the other dominant ethnic groups are: Oromo, Gurage, Selte, and Tigry respectively. The study period was from September 2011 to May 2012.

The study design was institutional based cross-sectional study design. The source population was all patients who visit the endocrinology unit of the hospital during the study period. The study population was all Type 2 diabetic patients who visit the hospital's endocrinology unit at the time of data collection period and fulfilling the inclusion criteria. The sample size for the study was determined using single population proportion and correction formulas. Data was collected using standardized structured questionnaire and two diploma completed Nurses were recruited.

Continuous follow up and supervision was made by the principal investigator throughout the data collection period. Data collection was accomplished within six weeks duration (March 1<sup>st</sup> week to April 2<sup>nd</sup> week, 2012). interviewer administered structured questionnaire data collection tool was used, it contains three parts, Part I was used to collect socio

demographic data, part II was used to collect clinical status data of the study subjects and part III is the original SDSCA, which was used to measure five areas or domains of diabetes self care practices.

The independent variable were Socio-demographic characteristics, Age of diabetes onset, Duration of the disease, Family history of diabetes, Complications of diabetes, Treatment intensity and The outcome variable was self care practices of the patients. To assure data quality, training and orientation was given for the data collectors by the principal investigator. The questionnaire was initially prepared in English and then translated in to Amharic version. The Amharic version was again translated back to English to check for consistency of meaning.

Moreover questionnaire was pre-tested and necessary corrections and amendment was considered. The collected data was reviewed and checked for completeness and consistency by principal investigator on daily bases at the spot during the data collection time. The data was entered in to EPI-INFO version 3.5.1, exported to SPSS then the data was cleaned and analyzed using SPSS version 16 software statistical packages. Ethical clearance was secured from the AAU-college of health science department of Nursing and Midwifery IRB (research committee).

Respondents were informed about the purpose of the study then information was collected after obtaining verbal consent from each participant. Respondents were allowed to refuse or discontinue participation at any time they want. Information was recorded anonymously and confidentiality and beneficence was assured throughout the study period. The total score of each item of the questionnaire was calculated out of 100. Considering to the total score, the level of self-care practice was classified into: Not adhered (<49 and below), or adhered (50 and above)

## RESULTS:

**Socio-demographic Characteristics:** A total of 323 male and female adult type 2 diabetes patients were interviewed using standardized structured questionnaire and included in the analysis. Three respondents were excluded from the analysis for gross incompleteness and inconsistency of responses, made a response rate of 99.1 %.

Of all respondents 167(52.2%) and 153(47.8%) were Female and Male respectively. The majority of the study participants 232 (72.5%) were in the age group of 30 to 60 years. Mean age of the respondents was 55.03  $\pm$  10.7 years [(95% CI) (44.33-65.73)] with minimum age of 30 and maximum age of 85. Most of the respondents 257(80%) were orthodox Christian by

religion and Amara184 (57%) by ethnicity. A significant number 182 (57%) of the respondents did attend formal education. Two hundred forty six (77%) of respondents were married currently. From the total respondents two hundred eleven (66%) were unemployed and majority of the study participants 139(43%) were had very low monthly income (Table 1).

**TABLE 1: SOCIO DEMOGRAPHIC DATA OF TYPE 2 DIABETES PATIENTS IN TASH ENDOCRINE UNIT, ETHIOPIA, 2012 (n=320)**

Sr. no.	Characteristics	Alternative response	Frequency	
			No.	%
1	Gender	1. Male	153	48
		2. Female	167	52
		<b>Total</b>	<b>320</b>	<b>100</b>
2	Age category	1. Adult 30-60 years	232	73
		2. Geriatric 61-70 years	71	22
		3. Geriatric 71 years and above	17	5
		<b>Total</b>	<b>320</b>	<b>100</b>
3	Monthly Income	1. Very Low	139	43
		2. Low	36	11
		3. Average	79	25
		4. Above average	32	10
		5. High	34	11
		<b>Total</b>	<b>320</b>	<b>100</b>
4	Ethnic origin	1. Amara	184	57
		2. Oromo	57	18
		3. Guragie	38	12
		4. Tigray	21	7
		5. Seltie	9	3
		6. Other	11	3
		<b>Total</b>	<b>320</b>	<b>100</b>
5	Level of education	1. Illiterate	53	17
		2. Primary School	99	31
		3. Secondary School	83	26
		4. college/ University	85	27
		<b>Total</b>	<b>320</b>	<b>100</b>
6	Marital status	1. Married	246	77
		2. Divorced	16	5
		3. Widowed	38	12
		4. Single/ never married	20	6
		<b>Total</b>	<b>320</b>	<b>100</b>
7	Occupation/ employment	1. Employed	81	25
		2. unemployed	211	66
		3. Merchant	28	9
		<b>Total</b>	<b>320</b>	<b>100</b>
8	Religion	1. Orthodox	257	80
		2. Muslim	36	11
		3. Protestant	19	6
		4. Catholic	3	1
		5. Jehovah witness	5	2
		<b>Total</b>	<b>320</b>	<b>100</b>

\* Monthly income category: Very Low <445 Birr, Low=446-1200Birr, Average=1201-2500Birr, Above Average= 2501-3500Birr and High >3501Birr (Based on the Ethiopian Civil service monthly salary for civil servants)

**Health Status data:** The mean age in which diabetic disease started was  $42.5 \pm 10.03$  years [(95% CI) (32.2-52.53)] with minimum age of 30 and maximum age of 75. The mean duration of diabetes was  $12.3 \pm 7.6$  years [(95% CI) (4.7–19.9)] with minimum of 6 months and maximum of 41 years. The majority of the study participants 205 (64%) had multiple injection treatment (two injections per day). Of all respondents 101(32%) and 14(4%) had oral hypoglycemic agent or

both treatment intensity respectively. Two hundred twenty six (71%) of the respondents did not have family history of diabetes and only 119 (37%) respondents had glucometre at home. Almost half of the participants 157 (49%) had long term diabetic complication confirmed medically. Only six (2%) of all respondents have the habit of Smoking and thirty seven (12%) had history of smoking in the past (**Table 2**).

**TABLE 2: PATIENT HEALTH STATUES DATA OF TYPE 2 DIABETES PATIENTS IN TASH ENDOCRINE UNIT, ETHIOPIA, 2012 (n=320)**

Sr. No	Characteristics	Alternative response	Frequency	
			No	%
1	Duration of the disease	1. Less than one year	6	2
		2. One year to five years	58	18
		3. Greater than five years	256	80
		<b>Total</b>	<b>320</b>	<b>100</b>
2	Family history of diabetes	1. No	226	71
		2. Yes	94	29
		<b>Total</b>	<b>320</b>	<b>100</b>
3	Treatment intensity	1. Oral Hypoglycemic agent	101	32
		2. Insulin therapy	205	64
		3. Both	14	4
		<b>Total</b>	<b>320</b>	<b>100</b>
4	Currently do you have your own glucometre at home	1. No	201	63
		2. Yes	119	37
		<b>Total</b>	<b>320</b>	<b>100</b>
5	Diabetic complication	1. No	163	51
		2. Yes	157	49
		<b>Total</b>	<b>320</b>	<b>100</b>
6	Have you smoked a cigarette, even a puff, in the past SEVEN DAYS	1. No	314	98
		2. Yes	6	2
		<b>Total</b>	<b>320</b>	<b>100</b>

**Adherence to Self Monitoring of Blood Glucose (SMBG) Practice:** The majority 270 (84%) of the study participants were not adhered to Self Monitoring of Blood Glucose which means, monitored less than 1-2 times per week, even almost all participants said that they did SMBG practices when they had symptoms of hyperglycemia or hypoglycemia or at the time of health care visit and only 50(16%) were adhered which means monitored at least 3-4 times a week. Presence of glucometre at home, education and Monthly income was found to have statistically significant association with adherence to SMBG practice. Those who have glucometre at home were eight times less risk not to be adhered to the practice when compared with those who didn't have [ $P < 0.001$ , AOR (95% CI) = 8.19 (3.718-18.070)] and those who are with higher level of

education and monthly income were adhered thirteen and four times more than counterpart [ $P = 0.033$ , AOR (95% CI) = 12.71(1.233-131.145)] and [ $P = 0.036$ , AOR (95% CI) = 3.56(1.086-11.694)] respectively (**Table 3**).

**Adherence to Prescribed medication:** A total of 311(97%) study participants were adhered with prescribed anti-diabetic drugs but out of the total study subjects 9(3%) were non-adhered. Of the total adhered respondents 163(51%) and 148(46%) were Female and Male respectively and out of all not adhered respondents 5(2%) and 4(1%) were male and female respectively. Treatment intensity of the study participants were oral hypoglycemic agent 101(31.6%), insulin therapy 205(64.1%) and both treatment 14(4.4%).

**TABLE 3: LOGISTIC REGRESSION ANALYSIS RESULT OF ADHERENCE TO SMBG PRACTICE AMONG TYPE 2 DIABETIC STUDY SUBJECTS IN TASH ENDOCRINOLOGY UNIT, ETHIOPIA 2012 (N=320)**

Factor	SMBG Practices		COR	CI of 95 %	AOR	CI of 95%
	Not adhered	Adhered				
	No. (%)	No. (%)				
<b>Age</b>	<b>P-Value=0.183</b>					
Adults <60 years	191(59.7)	41(12.8)	1.00			
Geriatric 60–70 years	65(20.3)	6(1.9)	0.43	(0.175	1.060)	
Geriatric >70 years	14(4.4)	3(0.9)	0.99	(0.274	3.633)	
<b>Total</b>	<b>270(84.4)</b>	<b>50(15.6)</b>				
<b>Gender:</b>	<b>P-value=0.780</b>					
Male	130(40.6)	23(7.2)	1.0			
Female	140(43.8)	27(8.4)	1.09	(0.595	1.997)	
<b>Total</b>	<b>270(84.4)</b>	<b>50(15.6)</b>				
<b>Marital status</b>	<b>P-Value=0.745</b>					
Married	204(63.8)	42(13.1)	1.00			
Divorced	15(4.7)	1(0.3)	0.32	(0.042	2.519)	
Widowed	31(9.7)	7(2.2)	1.09	(0.453	2.657)	
Single/Never married	20(6.2)	0(0.0)	0.00	(0.000	- )	
<b>Total</b>	<b>270(84.4)</b>	<b>270(84.4)</b>				
<b>Occupation:</b>	<b>P-Value=0.037</b>					
Employed	61(19.1)	20(6.2)	1.96	(0.609	6.356)	0.75 (0.188-3.039)
unemployed	185(57.8)	26(8.1)	0.84	(0.271	2.624)	0.47 (0.119-1.905)
Merchant	24(7.5)	4(1.2)	1.00			1.00
<b>Total</b>	<b>270(84.4)</b>	<b>50(15.6)</b>				
<b>Level of education:</b>	<b>P-Value=0.006</b>					
Illiterate	52(16.2)	1(0.3)	1.00			1.00
Primary	88(27.5)	11(3.4)	6.50	(0.816	51.80)	6.26 (0.691-56,815)
High School	67(20.9)	16(5.0)	12.4	(0.816	96.70)	8.01 (0.863-74.333)
college/university	57(19.7)	22(6.8)	<b>18.1</b>	<b>(2.367</b>	<b>139.3)</b>	<b>12.71 (1.233-131.145)**</b>
<b>Total</b>	<b>270(84.4)</b>	<b>50(15.6)</b>				
<b>Monthly income</b>	<b>P-Value=0.006</b>					
Very Low income	122(38.1)	17(5.3)	1.00			1.00
Low income	33(10.3)	3(0.9)	0.65	(0.180	2.361)	0.61 (0.159-2.341)
Average income	68(21.2)	11(3.4)	1.16	(0.514	2.621)	1.07 (0.452-2.567)
Above Average income	26(8.1)	6(1.9)	1.65	(0.596	4.604)	1.40 (0.417-4.711)
High income	21(6.6)	13(4.1)	<b>4.44</b>	<b>(1.884</b>	<b>10.476)</b>	<b>3.56 (1.086-11.694)**</b>
<b>Total</b>	<b>270(84.4)</b>	<b>50(15.6)</b>				
<b>Presence of glucometre at home</b>			<b>P-Value&lt;0.001</b>			
No	191(59.7)	10(3.1)	1.00			1.00
Yes	79(24.7)	50(12.5)	<b>9.67</b>	<b>(4.610</b>	<b>20.288)</b>	<b>8.19 (3.718-18.070)**</b>
<b>Total</b>	<b>270(84.4)</b>	<b>50(15.6)</b>				

\*\* Statistically associated Variable  $P < 0.05$ ; \*Variable were showed Statistical Association in COR but lost during AOR Analysis, NB: P-Value is, Value of COR analysis result.

Binomial logistic regression analysis result showed that there was significant association between prescribed medication adherence condition and types of treatment they took, those who took insulin injection were six times adhered than those who took oral hypoglycemic agent [ $P=0.044$ , AOR (95% CI) = 5.64(1.061-30.081)]. But no association to other health status data and socio demographic characteristics (Table 4).

**Adherence to Diet Management:** The majority 252 (79%) of the study participants were not adhered to recommended diet management practices which means, apply the recommended diet management practices for about less than 1-2 times per week, and only 68(21%) study participants were Adhered which means follow the recommended diet management practices at least 3-4 times a week.

**TABLE 4: LOGISTIC REGRESSION ANALYSIS RESULT OF ADHERENCE TO PRESCRIBED ANTI-DIABETES MEDICATION AMONG TYPE 2 DIABETIC STUDY SUBJECTS IN TASH ENDOCRINOLOGY UNIT, ETHIOPIA 2012, (N=320)**

Factor	Medication Adherence		COR	CI of 95%	AOR	CI of 95%
	Not adhered	Adhered				
	No. (%)	No. (%)				
<b>Age</b>	<b>P-value=1.000</b>					
Adults <60 years	9(2.8)	223(69.7)	0.00	(0.000 - )		
Geriatric 60–70 years	0(0.0)	71(22.2)	1.00	(0.000 - )		
Geriatric >70 years	0(0.0)	17(5.3)	1.00			
<b>Total</b>	<b>9(2.8)</b>	<b>311(97.2)</b>				
<b>Gender:</b>	<b>P-Value=0.638</b>					
Male	5(1.6)	148(46.2)	1.00			
Female	4(1.2)	163(50.9)	1.37	(0.363 5.223)		
<b>Total</b>	<b>9(2.8)</b>	<b>311(97.2)</b>				
<b>Marital Status</b>	<b>P-Value=0.777</b>					
Married	6(1.9)	240(75.0)	2.10	(0.241 18.400)		
Divorced	1(0.3)	15(4.7)	0.78	0.046 13.693		
Widowed	1(0.3)	37(11.6)	1.94	(0.115 32.883)		
Single/Never Married	1(0.3)	19(5.9)	1.00			
<b>Total</b>	<b>9(2.8)</b>	<b>311(97.2)</b>				
<b>Level of education:</b>	<b>P-Value=0.996</b>					
Illiterate	0(0.0)	53(16.6)	5.91	(0.000 - )		
Primary	3(0.9)	96(30.0)	1.17	(0.230 5.959)		
High School college/university	3(0.9)	80(25.0)	0.97	(0.191 4.978)		
<b>Total</b>	<b>9(2.8)</b>	<b>311(97.2)</b>				
<b>Treatment intensity</b>	<b>P-Value=0.040</b>					
Oral hypoglycemic agent	6(1.9)	95(29.7)	1.00		1.00	
Insulin injection	3(0.9)	202(63.1)	<b>4.25</b>	<b>(1.041 17.370)</b>	<b>5.64</b>	<b>(1.061-0.081)**</b>
Both	0(0.0)	14(4.4)	1.02	(0.000 - )	6.74	(0.000 - )
<b>Total</b>	<b>9 (2.8)</b>	<b>311(97.2)</b>				
<b>Duration of diabetes</b>	<b>P-value=0.098</b>					
6 Months to 1 year	1(0.0)	5(1.6)	1.00			
2–5 years	3(0.9)	55(17.2)	3.66	(0.319 42.124)		
≥ 6 years	5(1.6)	251(78.4)	10.0	(0.984 102.41)		
<b>Total</b>	<b>9(2.8)</b>	<b>311(97.2)</b>				
<b>Diabetic Complication</b>	<b>P-Value=0.779</b>					
No	5(1.6)	158(49.4)	0.82	(0.218 3.134)		
yes	4(1.2)	153(47.8)	1.00			
<b>Total</b>	<b>9(2.8)</b>	<b>311(97.2)</b>				

\*\* Statistically associated Variable  $P < 0.05$ . NB: P-Value is, Value of COR analysis result

Variables like education level, monthly income, presence of diabetic complication and marital status were showed statistically significant association with adherence to diet management practices. Respondents with high level of education and who are married were about five and ten times more likely to be engaged in diet management practices when compared with their counter parts [ $P=0.001$ , AOR (95% CI) = 5.36 (1.304-

22.031)] and [ $P=0.033$ , AOR (95% CI) = 9.95(1.199-82.665)] respectively and respondents with high monthly income and without diabetes complication were showed four and two times more adhered when compared to their counterpart [ $P=0.001$ , AOR (95% CI) = 4.10 (1.738-9.677)] and [ $P=0.035$ , AOR (95% CI) = 1.85(1.046-3.278)] respectively (**Table 5**).

**TABLE 5: LOGISTIC REGRESSION ANALYSIS RESULT OF ADHERENCE TO DIET MANAGEMENT PRACTICE AMONG TYPE 2 DIABETIC STUDY SUBJECTS IN TASH ENDOCRINOLOGY UNIT, ETHIOPIA 2012, (N=320)**

Factor	Adherence to Diet mgt		COR	CI of 95 %		AOR	CI of 95%
	Not adhered	Adhered					
	No. (%)	No. (%)					
<b>Age</b>	<b>P-Value=0.069</b>						
Adults <60 years	175(54.7)	57(17.8)	2.44	(0.542	11.007)		
Geriatric 60–70 years	62(19.4)	9(2.8)	1.08	(0.213	5.571 )		
Geriatric >70 years	15(4.7)	2(0.6)	1.00				
<b>Total</b>	<b>252(78.8)</b>	<b>68(21.2)</b>					
<b>Gender:</b>	<b>P-value=0.679</b>						
Male	122(38.1)	31(9.7)	1.12	(0.654	1.917)		
Female	130(40.6)	37(11.6)	1.00				
<b>Total</b>	<b>252(78.8)</b>	<b>68(21.2)</b>					
<b>Marital status</b>	<b>P-Value=0.099</b>						
Married	186(58.1)	60(18.8)	<b>6.12</b>	<b>(0.803</b>	<b>46.752)</b>	<b>9.95</b>	<b>(1.199-82.665)**</b>
Divorced	15(4.7)	1(0.3)	1.26	(0.073	21.970)	2.43	(0.131-45.415)
Widowed	32(10.0)	6(1.9)	3.56	(0.398	31.889)	6.03	(0.609-59.740)
Single/Never Married	19(5.9)	1(0.3)	1.00			1.00	
<b>Total</b>	<b>252(78.8)</b>	<b>68(21.2)</b>					
<b>Occupation:</b>	<b>P-Value&lt;0.001</b>						
Employed	51(15.9)	30(9.4)	2.15	(0.786	5.916)	1.13	(0.368-3.474)
unemployed	179(55.9)	32(10.0)	0.65	(0.247	1.743)	0.69	(0.233-2.095)
Merchant	22(6.9)	6(1.9)	1.00			1.00	
<b>Total</b>	<b>252(78.8)</b>	<b>68(21.2)</b>					
<b>Level of education:</b>	<b>P-Value&lt;0.001</b>						
Illiterate	50(15.6)	3(0.9)	1.00			1.00	
Primary	84(26.2)	15(4.7)	2.97	(0.821	10.791)	2.37	(0.635-8.910)
High School	65(20.3)	18(5.6)	4.61	(1.288	16.544)*	3.19	(0.852-11.974)
college/university	53(16.6)	32(10.0)	<b>10.0</b>	<b>(2.898</b>	<b>34.945)</b>	<b>5.36</b>	<b>(1.304-2.031)**</b>
<b>Total</b>	<b>252(78.8)</b>	<b>68(21.2)</b>					
<b>Monthly income</b>	<b>P-Value&lt;0.001</b>						
Very Low income	121(37.8)	18(5.6)	1.00			1.00	
Low income	33(10.3)	3(0.9)	0.61	(0.170	2.202)	0.58	(0.162-2.778)
Average income	57(17.8)	22(6.9)	2.59	(1.291	5.214)*	2.49	(1.232-5.280)
Above Average income	20(6.2)	12(3.8)	4.03	(1.689	9.630)*	3.96	(1.649-9.550)
High income	21(6.6)	13(4.1)	<b>4.16</b>	<b>(1.777</b>	<b>9.742)*</b>	<b>4.10</b>	<b>(1.738-9.677)**</b>
<b>Total</b>	<b>252(78.8)</b>	<b>68(21.2)</b>					
<b>Diabetic Complication</b>	<b>P-value=0.023</b>						
No	120(37.5)	43(13.4)	<b>1.89</b>	<b>(1.090</b>	<b>3.284)*</b>	<b>1.85</b>	<b>(1.046-3.278)**</b>
yes	132(41.3)	25(7.8)	1.00			1.00	
<b>Total</b>	<b>252(78.8)</b>	<b>68(21.2)</b>					

\*\* Statistically associated Variable P<0.05. \*Variable were showed Statistical Association in COR but lost during AOR Analysis NB. NB: P-Value is, Value of COR analysis result

**DISCUSSION:** In Ethiopia, there is limited information about the self care practices of patients with type 2 diabetes mellitus. Thus this study has tried to assess the self care practices and associated factors among type 2 diabetes patients in Tikur Anbessa Specialized Hospital endocrinology unit, Addis Ababa, Ethiopia. In this study the majority of subjects 73% were found to be in the age group 30 to 60 years and 28% of the respondents were in the age of 61 years and above.

Similarly study done in Egypt showed that 66% and 44% respectively.

The present study showed 64% and 32% of the sample were taking insulin injection and oral hypoglycemic agent respectively compared to 35% and 57% in a study done in Egypt. But study carried out in United States revealed that three-quarters of the patients received hypoglycemic agents (oral or insulin) <sup>17, 24</sup>.

Diabetes self-management behaviors such as diet and exercise involve and depend on guidance from a health care provider, meal preparation in a family context and exercising with a partner or in a group.

Glucose monitoring is a relatively quick and straightforward procedure; diabetes is managed via a regimen of control. Health professionals advise adults living with type 2 diabetes to control blood sugar levels by controlling diet, maintaining regular exercise, and adherence to medication.

The extent to which individuals are able to adhere to such recommendations varies. Despite the increasing prevalence of diabetes, improved understanding of the disease, and a variety of new medications, glycemic control does not appear to be improving. SMBG is one strategy for improving glycemic control; however, patients' adherence is suboptimal and a proper education and follow-up are crucial, cited by Eman M. Mahfouz and Hala I<sup>17</sup>.

The finding of this study also showed that only 16% were adhered to SMBG practices. This result is higher than a study done in Ethiopia 5%, India 3% and Nigeria 8% but lower than U.S.A 78%. But similar with studies done in Malaysia 15%. A study done in Malaysia showed that level of education; family income; duration of diabetes; and treatment regime (insulin) was significant predictors of SMBG practice. Similarly in this study level of education, monthly income and presence of glucometre at home showed significant association to SMBG practices.

Although SMBG is recognized to be useful and effective in achieving diabetes control, this study has found that only a minority of respondents with diabetes were perform SMBG (Self Monitoring of Blood Glucose) practices this is probably related to a lack of awareness on its importance in the management of diabetes and there are relevant financial barriers to purchase the device and its strips<sup>6, 12, 14, 15, 16</sup>.

In this study only 3% were unable to adhere with prescribed medicine. This result was lower from study result of Egypt (9%), Malaysia (46%) and Nigeria (46%). This study indicated that there was significant association between medication adherence and treatment intensity (type of treatment). But study done in Nigeria report that lack of finance, drug side

effect, and perceived inefficacy of the prescribed medications had significant association with the practice. As in this study indicated, adhered participants were higher than the non adhered individuals, this might be because of the participants were well informed and have good perception about the prescribed medications especially to insulin injection.

Concerning adherence to the diet management practices, this study showed that only 21% participants were adhered. This is lower than a study done in Egypt 81%, India women 52% and men 32% and Iran 96% male and 100% female were followed the recommended diet instructions. Study done in U.A.E indicated that only 24% respondents were read food labeling. 76% reported being unable to distinguish clearly between low and high carbohydrate index food items and no one reported counting calorie intake. 46% reported that they had never been seen by dietician since their diagnosis.

Their overall risk profile, notably body weight, lipid profile and blood pressure, was very unfavorable; more than half of the study sample had uncontrolled hypertension and uncontrolled lipid profile and the majority was overweight (36%) or obese (45%). Abdominal obesity was particularly common (59%). Only 31% had an HbA1c of less than 7%. As this study indicated that similar to the SMBG practice adherence condition, adherence to diet management practices were lower than the other studies, this might be because of financial barrier, Poor perception toward the importance of fruits and vegetables, lack of awareness on the importance of the practices and most respondents had not any idea even how to prepare and follow healthy diet plan at all, Socio-cultural variation and life style difference<sup>14, 17, 18, 21</sup>.

A study in Egypt showed that there was a statistically significant difference between education and adherence to dietary management of diabetes, nearly one quarter (26%) of illiterates were not adhered to dietary management of diabetes and also revealed that younger age group and shorter disease duration had a positive impact on dietary management practices adherence condition<sup>17</sup>.

Similarly this study also showed that subjects with high level of education, monthly income, who are married and without diabetic complication were more adhered to dietary management practices than the counterpart but occupation and duration of disease did not show significant association this might be cause of small sample size.

**Strengths and Limitations of the study:** The Strengths of the study were Use of contextually adopted standardized questionnaire, High response rate and since there is no similar study conducted in the area, it can contribute a lot as baseline information for future studies. Limitations were Social desirability bias, Limitation of related literatures to compare and discuss some of the findings and because the study design were cross-sectional method, the direction of causal relationship between variables can't always be determined

**CONCLUSION:** Despite the important role of self-care practices in management of diabetes were recognized to be useful and effective in achieving diabetes control and preventing its serious complication, findings of this study confirm previous findings concerning self-care among people with type 2 diabetes: Prescribed medications adherence practice was accomplished as recommended in majority respondents, but the other aspects of self-care practice were more problematic. The SMBG practice and diet management practices especially warrants. However, self-monitoring of blood glucose and diet management practices are said to be the cornerstone of self-care practices and glycemic control. Generally adherence to self-care practice was suboptimal among type 2 diabetic patients in Tikur Anbessa Specialized Hospital endocrinology unit

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