Adherence to Self-care Behaviors and Associated Factors among Adult Diabetes Patients in Menelik II Referral Hospital, Addis Ababa Ethiopia

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Abstract

Diabetes mellitus is a group of metabolic disorders. It is the third among the five leading global risks for mortality. Diabetes self-care behavior is the cornerstone of diabetes care and an essential part of life for patients with diabetes to have a better and healthy lifestyle. Thus, this was aimed to assess the magnitude of self-care behavior and factors associated with it among adult patients with diabetes at Menelik II Referral Hospital, Addis Ababa Ethiopia. An institutional-based cross-sectional study was conducted from May 1st to June 30, 2021, G.C. Patients who visited the hospital within the study period were included in the study. Data was collected by using data extraction formats and adapted Expanded Version of the Summary of Diabetes Self-Care Activities (SDSCA). The overall mean score was determined to identify level of adherence. Finally, data were cleared, edited, entered in to SPSS version 20, and analyzed. The result showed that about 320 patients were included in the study among which 171 (53.4%) were male and 125 (39.1%) were below 40 years old. Majority of patients 211 (65.9%) were type II DM patients and 186 (58.2%) of them have lived more than five years with diabetes. The self-reported adherence to self-care behavior was good for 114 (35.6%) [95% CI: 30.3 - 41.3] and poor for 206 (64.4%) [95% CI:58.8 - 69.7] of study subjects. Low educational status (P.Value= 0.001), poor social support (P.Value=0.00) and low average monthly income (P.Value=0.01) were predictors of poor adherence to diabetes self-care behaviors in the hospital but being male (P.Value=0.00) was confounding variable. Therefore the self-care behaviors of diabetic patients in the hospital was poor. There has to be integrated effort to improve the quality of services and enhance adherence in the hospital.

Keywords: Self-care behavior, Diabetes mellitus, Ethiopia

Introduction

Diabetes mellitus (DM), commonly known as diabetes, is a group of metabolic disorders characterized by the occurrence of persistent hyperglycemia (high blood sugar level) due to deficiency in insulin secretion, insulin action, or both. It leads over time to serious damage to the heart, blood vessels, eyes, kidneys, and nerves. Depending on the cause, diabetes is classified as type 1, type 2, gestational and other types of diabetes [1, 2]. Globally, diabetes is the third among the five leading global risks for mortality and it affects about 463 million adults. Of these 79% of people with diabetes live in low- and middle-income countries. About 10% (USD760 billion) of global health expenditure is spent on diabetes. Therefore, urgent national actions are needed to improve diabetes prevention and management [3,4].

Self-care management is an essential part of diabetes management and to improve quality of life. Improved overall behavior and discipline to adhere to diet and physical activity result a better health outcome is thus, key to better outcome [5]. Successful diabetes care requires a systematic approach for supporting patients' behavioral modifications such as healthy lifestyle changes, disease self-management, and prevention of diabetes complications [6-8]. Poor self-care behaviors have also been reported to be barriers to the effective management of DM complications [9]. Regardless of the type of diabetes; 95% of diabetes treatment relies on self-care behaviors and 95% of the self-care is usually provided by the patients or their families. Hence it is important to examine and understand factors affecting self-management behaviors of diabetic patients [4].

Although effective management of diabetes need to have adequate levels of knowledge and practice of self-care behaviors to reduces both the quality of life and life expectancy, there are inadequate studies on self-care behaviors of patients in resource-limited countries including Ethiopia [8, 9]. Thus, this study is aimed to fill the gap through assessment of the magnitude of self-care behavior and factors associated in the referral hospital in Addis Ababa, Ethiopia.

Methods and Material

Study design, settings, and participants

The facility-based cross-sectional study design was conducted from May 1st to June 30, 2021, in the Diabetic clinic at Menelik II Referral Hospital in Addis Ababa, Ethiopia. Menelik II Referral Hospital is one of the first referral public hospitals in Addis Ababa which is providing arrange of service including inpatient and outpatient diabetic care services. The hospital serves about 1200 patients in a month. The hospital is staffed with more than 1050 health professionals where about 10 of them were dedicated to diabetic care service.

Study participants

All adult diabetic patients who visit the hospital from May 1st to June 30, 2021 were included in the study. Patients who were diagnosed with in the three-month period were excluded from the study since it will not show as the level of adherence. The sample size was determined via Open Epi 2.3 software using a single population proportion calculation formula. Th prevalence of 50.8% proportion was used to calculate the sample size [9] based on 95 % confidence level, 5 % margin of error and 10% non-response rate. And based on the total number of about 1200 patients who will visit the hospital, the total calculated sample yielded 320.

Systemic random sampling technique was used to select study participant. The patients who were appointed within the month were identified based on registration logbook the diabetic clinic to determining the sampling frame. Based on the sampling frame the interval (k) was calculated by k=N/n which was 4. The first sample was selected by lottery method and then every 4th patient was included in the data collection. For patient who do have double visits with in a month only one was taken and for patients who lost to follow up the next patient was taken.

Data collection tools and procedures

Data was collected by trained four (B.Sc.) nurses using pre-tested semi-structured questionnaire was used for data collection. The patients' socio-demographic and clinical data were extracted from the patient chart using data extraction formats. Expanded Version of the Summary of Diabetes Self-Care Activities (SDSCA) Self-care behaviors questionnaire which was adapted for the Ethiopian Context [9] was used to assess participant's self-care behavior adherence. Each scale measured the frequency of self-care activity for the last 7 days based on adherence to general diet, foot-care, exercise, and medication taking and the score was presented in terms of the mean number of days for each self-care behavior, which was calculated by summation of the number of days of self-care practice divided by the total number of patients. The overall mean score was determined by summation of the mean score for diet, foot care, exercise, and medication-taking divided by the sum of the number of questions under each scale. If the overall mean score is ≥3 the patients were known to have good self-care behavior and if the score is <3 poor self-care behavior [10]. Oslo- 3 Social Support Scale (OSSS-3) was used as an instrument to assess the level of social support to measure the social functioning and it covers different fields of social support by measuring the number of people the respondent feels close to the interest and concern showed by others and the ease of obtaining practical help from others. Based on literature the OSS-3 scores ranged from 3-14 with a score of 3-8 is poor support; 9-11 is moderate support; and 12-14 was strong support [11-13]. Data collection process was daily supervised for completeness and consistency.

Finally, data were cleared, edited, entered in to SPSS version 20, and analyzed. data were analyzed by using SPSS version 20.0. Descriptive statistics and Multiple regression analysis were computed to meet the objective. First bivariate analysis was conducted to determine the presence of an association between adherence to self-care behavior and medication adherence with other variables and then variables with p-value of less than 0.2 were run multiple regression analysis to exclude confounded variables. Statistically significant was determined at p- value <0.05.

Operational definitions

- Self-care; It is the practice of activities that individual diabetics will initiate and perform on their own behalf in controlling their disease, maintaining life, health and wellbeing. Diabetes
  - Self- care Behaviors: the exercise of self -care- the actual performance of self- care actions by individuals to manage their diabetes.
  - Illiterate: those individual unable to read and write
  - Primary education : level of education from Grade 1 to Grade 8
  - Secondary education: level of education from Grade 9 to Grade 12

Result

Socio-demographic and clinical characteristics of respondents

Three hundred twenty diabetic patients were included in the study out of which 171(53.4%) were men and 149(46.6%) were women. About 125(39.1%) of respondents were under age of <40years with (±SD) 48.88 ±

15.6 years. About half the patients were 163(50.9%) were married. and 21(6.5%) were smoker (Table 1).
Table 1: **Frequency distributions of socio-demographic characteristics of Diabetics patients on follow up at MRH, 2021**, N=320

Variables	Categories	Frequency (%)
Sex	Male	171(53.4)
	Female	149(46.6)
Age(years)	<40	125(39.1)
	40-60	110(34.4)
	>60	85(26.6)
Marital status	Single	110(34.4)
	Married	163(50.9)
	Divorced	15(4.7)
	Widowed	32(10)
Religion	Orthodox	130(40.6)
	Protestant	97(30.3)
	Muslim	85(26.6)
	Other *	8(2.5)
Ethnicity	Amhara	67(20.9)
	Oromo	111(34.7)
	Tigre	133(41.6)
	Others**	9(2.8)
Educational status	Illiterate	76(23.3)
	Primary	49(15.3)
	Secondary	89(27.8)
	College/University	106(33.1)
Employment status	Employed	251(78.4)
	Unemployed	69(21.6)
Monthly income	<600 birr	103(32.2)
	601-3200 birr	109(43.1)
	>3200 birr	108(33.8)
Smoker	Yes	21(6.5)
	No	299(93.5)

*Others: catholic and Adventist; **others, Guragie, Seltie, Sedama

About 211(65.9%) of patients were type II patients and more than half 186(58.2%) had lived more five years with diabetes. About 41(12.8%) of patients had reported about consulting traditional healers (Table 2).

Table 2- **Frequency distributions of clinical characteristics of Diabetics patients on follow up at MRH, 2021**, N=320

Clinical characteristics	Categories	Frequency (%)
Duration of diabetes (years)	< 1years	39(12.2)
	1-5 years	95(29.7)
	>5	186(58.2)
Type of diabetes	Type1	109(34.1)
	Type2	211(65.9)
Consulting traditional healers	Yes	41(12.8)
	No	279 (87.2)

Level of social support
The level of social support was also examined through Oslo-3 Social Support Scale (OSSS-3). The result showed that about 174 (54.4%) of the patients had poor social support (Figure1).
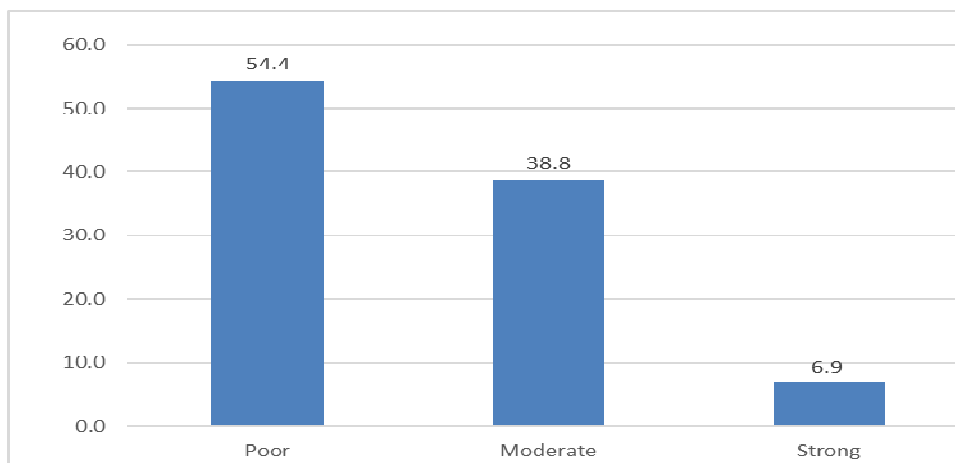
Figure-1: **The level of social support among Diabetics patients in the hospital**

Adherence to self-care behaviors

The mean number of days each diabetes self-care behavior was reported as being performed during the last 7 days. The result showed that about 114 (35.6%) of the patients had good adherence to self-care behavior while two-third 206 (64.4%) of them had poor self-care behavior. Sex, educational status, average monthly income, level of social support, marital status ,total number of medication took and duration of diabetic showed significant association with adherence to self-care behavior towards diabetics in the bivariate analysis but only educational status, average monthly income, number of medication took and level of social support showed statistically significant association with adherence to self-care behavior towards diabetics during the multivariable analysis.

Diabetic patients who attended college and university are 92.7% more adherent to self-cate behavior than those who are illiterate (AOR=0.024 (.002, .249); P. Value=0.002). Similarly, Diabetic patients who do have better income (>3200.00 birr per month) are 91% more adherent to self-cate behavior than those who do have low monthly income (<600.00 per month) (AOR=0.09(.018, .456), P. Value=0.004). On the other hand those who had three and more medication regimen more likely to practice good self-care behavior to diabetes than those who were on one and two medications (AOR=.145(.050,.420), P value=.000). Likewise, those patients who had strong social support were 99.9% more likely to self-care behavior (AOR=0.001(.000, .045); P. Value=0.000) than those have poor social support (**Table 3**).

Table 3: **Factors associated with self-care behavior among diabetic's patients in MRH, Addis Ababa, Ethiopia, 2021** (N=320).

Variables	Adherence to self-care Behavior		Bivariant analysis		Multivariable analysis	
	Good	Poor	COR (95%CI)	P- value	AOR (95% CI)	P-value
Sex						
Male	76	95	2.337 (1.452-3.762)	0.000*		
Female	38	111	1			
Age				0.394		
<40	44	81	1.233(0.684-2.223)	0.487		
40-60	44	66	1.513(.831-2.753)	0.175		
>60	26	59	1			
Marital status				0.079*		
Single	29	81	0.684(.294-1.58)	0.377		
Married	68	95	1.367(.618-302)	0.440		
Divorced	6	9	1.273(0.359-4.58)	0.709		
Widowed/widower	11	21	1			
Religion				0.495		
Orthodox	46	84	0.329(.075-1.437)	0.139		
Protestant	30	55	0.327(.073-1.465)	0.144		
Muslim	33	64	0.309(.07-1.375)	0.123		
Other	5	3	1			

Variables	Adherence to self-care Behavior		Bivariant analysis		Multivariable analysis	
	Good	Poor	COR (95%CI)	P- value	AOR (95% CI)	P-value
Ethnicity				0.143		
Amhara	29	38	2.671(.516-13.826)	0.242		
Oromo	44	67	2.299(.456-11.578)	0.313		
Tigre	39	94	1.452(.289-7.303)	0.651		
Others	2	7	1			
Educational status				0.000*		.012**
Illiterate	1	75	0.008(.001,.063)	0.000	0.024(.002, .249)	.002
Primary	13	36	0.228(.108,.480)	0.000	.824(.226,3.013)	.770
Secondary	35	54	0.409(.229,.728)	0.002	0.497(.185,1.338)	.167
College/University	65	41	1		1	
Monthly income				0.000*		.002**
<600	4	99	0.025(.008-0.072)	0.000	0.09(.018,.456)	.004
601-3200	43	66	0.399(.231,.689)	0.000	1.415(.550,3.640)	.471
>3200	67	41	1	0.001	1	
Duration of diabetes (years)				0.120*		
< 1years	19	23	1.385(.703.2.728)	0.346		
1-5 years	27	69	0.656(.384,1.122)	0.124		
>5	68	114	1			
Type of diabetics						
Type I	39	70	1.010(.624,1.637)	0.967		
Type II	75	136	1			
Total number of medication				.000*		.000**
One medicine	38	68	.249(.139,.446)	.000	.145(.050,.420)	.000
Two medicine	21	89	.133(.070,.254)	.000	.063(.019,.211)	.000
Three medicine	55	31	1			
Level of social support				0.000		0.000**
Poor social support	15	159	0.004(.001,.036)	0.000	0.001(.000,.045)	0.000
Moderate social support	78	46	0.081(.011,.0620)	0.016	0.027(.001,.866)	0.041
Strong social support	21	1	1		1	

Discussion

For successful diabetes management, individuals should pay more attention to apply the recommended self-care practices. This study revealed that only 35.6% of respondents had good adherence to self-care activity. The result of this study is similar to a study conducted in Harari 39.3% [14] and Arab Minch General Hospital 41.2% [8] but it was lower than the study conducted in Dilla referral hospital 76.8% [15], Nekemte Referral Hospital 45% [16], Jimma University Specialized Hospital 50.8% [9] and Tikur Anbessa Specialized Hospital 55.6% [17]. It was also similar to those studies conducted in Egypt 41.7% [18] and the United Arab Emirates 37.7% [19].

Patients who were more likely to demonstrate poor adherence to self-care practices were persons with lower educational status, those with low average monthly income, and who has poor social support. A study which is conducted on African Americans also showed, social support was found to be a factor for poor self-care behavior [20]. This could be due to diabetic patients with strong social support who may have got better care from their family and this might affect self-care behavior.

Another predator for poor self -behavior in this study was level of educational status. Respondents' educational status with college/university level was less likely to have a low level of self-care behavior towards diabetes than those with illiterate one. Similar result was observed in across-sectional survey on type 2 diabetes patients attending diabetes outpatient clinic Ghana revealed that people with low education need additional support to improve adherence to self-care behaviors in this type 2 diabetes population [21]. Another cross-

sectional survey in Jimma University Teaching Hospital showed that lower educational level was the predictors of poor self-care behaviors [9]. Literatures conclude that this might be diabetes self-care behavior is gained through education and lower education status could end up with low self-management behaviors and lower continuity of care [10,21].

In the current study, the earn average monthly income < 600 Birr/ month compared to >3200 Birr/ month nearly 93% high likely to have a lower level of adherence to self-care behavior. This might be due to individuals with low socioeconomic status who cannot access education, information, and the recommended diet on time. This could also affect their level of self-care behavior. This study also revealed that those who took three and more medication had better selfcare behavior. This could be due to those who took more medication are sever patients therefore they are curious for their selfcare behavior. Being the institutional-based nature of the study, it might not infer for other diabetic patients. Similarly, the nature of the cross-sectional study design does not indicate a temporal relationship or causality.

In conclusion, although the value for the level of adherence to self-care behaviors is low it is comparable in other hospitals. The level of self-care behavior was affected by level of income, presence of support and level of education.

Conflict of interest: There is no conflict of interests

Author's contribution: AM was involved in the design of the study, data analysis, and interpretation of the findings, report writing and manuscript preparation. TM was involved in the data analysis, interpretation of the findings, report writing and manuscript preparation. All authors read and approved the final manuscript.

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