ADHERENCE TO SELF-CARE BEHAVIORS AND ASSOCIATED FACTORS AMONG ADULT DIABETES PATIENTS IN TIBEBE GHION SPECIALIZED HOSPITAL, ETHIOPIA

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ABSTRACT

Background: Self-care is the practice of activities that individual with diabetics will initiate and perform on their own behalf in controlling their disease, maintaining life, health and wellbeing. Poor self-care behaviour has been reported to be barriers for effective management of Diabetes mellitus complications.

Objective: The objective of this study was to assess the magnitude of self-care behavior and associated factors among adult patients with diabetes at Tibebe Ghion Specialized Hospital, Ethiopia.

Method: An institutional-based cross-sectional study was conducted from [May- 1st to July 30, 2021]. Expanded Version of the Summary of Diabetes Self-Care Activities and the Oslo 3-items Social Support Scale (OSS-3) tools were used to measure self-care behaviors and level of social support respectively. Binary logistic regression analyses were used to assess the independent predictors.

Result: The result showed that from a total of 320 study participants, 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]. People with low average monthly income (AOR =.41; 95%CI: .009, .188), those with low educational status (AOR = .041: 95% CI: 004, .413) , patients who had poor to moderate social support (AOR = .004; 95% CI: 001, .190) and female diabetic patients (AOR=2.103 [95%CI: (1.072,4.128) were more likely to adhere poorly to diabetes self-care behaviour.

Conclusion: A significant number of Diabetic patients had poor self-care behaviours. Therfore, enhancing family support and providing more intensive communicative strategies could improve the level of adherence.

INTRODUCTION

Diabetes mellitus (DM) is a group of metabolic disorders significantly reduce both quality of life and life expectancy. DM related clinical complications are most important causes of morbidity and mortality. Globally, diabetes is the third among the five leading global risks for mortality and nearly half a billion people live with diabetes. According to the International Diabetes Federation (IDF) report, the adult prevalence of diabetics in Ethiopia is quickly increased from 3.8% in 2014 to 5.2% in 2017(Organization, 2016;Thomas et al., 2019).

The chronic nature of DM and need of continuous medical care with multifactorial risk-reduction strategies, DM is becomes a major challenge for health care workers and their families. In order to reduce the burden posed to health care systems and the affected individuals, patients with diabetes need to adopt certain diabetes self-care behaviors (Cho et al., 2018;Dedefo et al., 2019;Ketema et al., 2020).

Self-care behavior refer to activities such as following a diet plan, increased exercise, self-blood glucose testing, medication taking and foot care. These activities will be initiated and performed on their own behalf in controlling their disease, maintaining life, health and wellbeing (Sorato et al.,2016;(Eva et al., 2018).

Different studies revealed that self-care behaviors prevent acute and long-term diabetes-related complications. Good self-care behavior is also associated good glycemic control. Therefore, a successful diabetes care requires a systematic approach for supporting patients' self-care behavior changes(Kalyango et al.,2008;Wabe et al.,2011; Sorato et al.,2016).

Previous studies showed that factors like older age, being male, poor family/social support, lack of education, lack of knowledge on diabetes, presence of complications, being unemployed, poor medication adherence, lack of access for glucometer, non-adherence to diet and exercise were significantly associated with poor self-care behaviors. Regardless of the type of diabetes; 95% of diabetes treatment relies on self-care behaviors. So, it is important to study and understand factors affecting the self-care behaviors of DM patients (Wabe et al., 2011; Kassahun et al., 2016; Sun et al., 2022). However, different studies showed that the majority of diabetic patients had poor self-care behavior (Mamo and Demissie,2016; Sorato et al., 2016; Abate et al., 2018; Dedefo et al.,2019). Therefore, gathering relevant information on self-care behaviors and their factors will be very helpful by improving clinical outcomes. Even though studies conducted elsewhere, but a recent study conducted in the study area and study setting is limited. In addition, the study setting is a newly established specialized teaching hospital, which is designed to provide quality of service mainly for chronic diseases, hence, such types of study result reveal the magnitude of the problem and are helpful for health care providers and diabetic patients for appropriate interventions to prevent or delay complications of DM. So, this study aimed at assessing the magnitude of self-care practices and factors affecting self-care practices among diabetic patients in TGSH.

METHODS AND MATERIAL
Study design, settings and participants

Facility based cross-sectional study design was conducted from May 1st to July 30, 2021, on Ambulatory Diabetic Patients at Tibebe Ghion Specialized Hospital (TGSH. Tibebe Ghion Specialized Hospital is a newly established university hospital, which is located on the outskirt of the vibrant Bahir Dar city (one of the ten most beautiful cities in Africa) about 10 Km south from the city center and 7Km from the new bus station. The hospital is provided health care services for more than 5 million people. On average, around 130 patients per month will get diabetic care at TGSH. The hospital has a total of 1006 health professional staff to provide different health care services, from this 6 of them are dedicated to diabetic care services. All adult diabetic patients who were available during the

data collection period and had at least three months of follow-up were included in the study. While those patients with hearing impairment and severely ill patients requiring urgent medical care were excluded from this study. In addtion those the patients have two follow-up appointments within a study peried , the patient's appointment date will be checked and he/she will be excluded from the interview.

Sample size determination
The number of patients to be involved in the study was determined via Open Epi 2.3 software using a single population proportion calculation formula using the following assumptions: 50.8 % proportion (Kshahu et al.,2016), 95 % confidence level and 5 % margin of error.

Since the source population consisted of less than 10,000 respondents, the sample size was adjusted by using correction formula

$$nf = n/1 + n/N$$

where nf = the final sample size, n=desired sample size 302 and N=total diabetic patients (941). The calculated sample size was nf=229. Considering a 10% non-response rate, then the total calculated sample yielded 320.

Sampling technique and procedures
Sampling interval was determined by dividing the expected number of diabetic patients in the study peried into the total sample size which gives a sampling interval of one. Thus, patient coming to a follow-up service was interviewed consequetively after screening them for eligibility criteria on arrival. The questionnaire was asked to the patients after they exist from the clinics and move to the pharmacy to refill their prescription or between registration.

Data collection tools and procedures
Interviewer-administered questionnaire was distributed and Self-care behaviors were collected while patients' socio-demographics and clinical data were extracted from the patient chart Expanded Version of the Summary of Diabetes Self-Care Activities (SDSCA) Self-care behaviors questionnaire was used. The tools are adapted for the Ethiopian Context(Kassahun et al., 2016). Each scale measured the frequency of self-care activity in the last 7 days for the following aspects of the diabetes regimen: general diet, foot-care, exercise and medication taking.   . The summation of the number of days of self-care practice divided by the total number of patient was sued to get the scores presented in terms of the mean number of days for each self-care behavior. The overall mean score was calculated 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. Based on overall mean score, the patient with mean score ≥3 was classified as having good self-care behavior, and if the patient mean score <3 classified as poor self-care behavior(Kasahun et al., 2016);) For assessment of the level of social support of the patients, Oslo- 3 Social Support Scale (OSSS-3) was used as an instrument. It is a brief measure of 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. For epidemiological and population-based surveys it has been applied in different settings.

The OSS-3 scores ranged from 3-14 with a score of 3-8 = poor support; 9-11 = moderate support; and 12-14 = strong support (Abiola et al., 2013; Kocalevent et al.,2018; Hart, 2019).The data was collected by trained four (B.Sc.) nurses. Supervision was made by the principal investigators during the data collection process.

Data analysis
The collected data was checked daily for completeness and consistency

by principal investigators and and data entry was done by using Epi-data 3.1 software. Then it was analyzed by using SPSS version 20.0.

Descriptive statistics (frequency, mean and standared devation) was used to summarize patients' socio-demographic data and evaluate distribution of responses. Logestic regresstion analysis were done to identify the presence of association between adherence to self-care behavior with other variables and only variables that have a p-value less than 0.2 at univariate logestic regresstion analysis were kept in the subsequent model analysis. Multiple logistic regression analysis was applied to describe the functional independent predictors of adherence to self-care behavior and statistical significance was determined at p-value<0.05.

RESULTS
Socio-demographic and clinical characteristics of respondents
Three hundred twenty diabetic patients were included in this study. Out of these respondents, the majority 171(53.4%) were men.The mean age of the respondents were 48.9+15.6 years. Out of these 48.8% were in the age group of < 47 years. More than half of the study participants were employed 251(78.4%). A small proportion of 21(6.5%) respondents were smokers (Table 1)

Table 1- Frequency distributions of socio-demographic characteristics of Diabetics patients at TGSH, Bahir Dar, Ethiopia, 2021 (n=320).

Socio-demographic characteristics (n = 320)	Categories	N (%)
Sex	Male	171(53.4)
	Female	149(46.6)
Age(years)	<47	156(48.8)
	48-63	88(27.5)
	≥64	76(23.8)
Marital status	Single	110(34.4)
	Married	163(50.9)
	Divorced	15(4.7)
	Widowed/er	32(10)
Religion	Orthodox	130(40.6)
	Protestant	97(30.3)
	Muslim	85(26.6)
	Other *	8(2.5)
Ethnicity	Oromo	67(20.9)
	Tigre	111(34.7)
	Amhara	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)
	Un employed	69(21.6)
Monthly income	<600	103(32.2)
	601-3200	109(43.1)
	>3200	108(33.8)
Smoker	Yes	21(6.5)
	No	299(93.5)

*other, catholic and Adventist
**others, Guragie, Seltie, Sedama

Respondents were also asked for their clinical conditions and the result showed that the majority of respondents were 211(65.9%) type II DM patients. In addition, more than half of 186(58.2%)of them with DM for more than five years (Table 2).

Table 2- Frequency distributions of clinical characteristics of Diabetics patients at TGSH, Bahir Dar, Ethiopia, 2021 (n=320).

Clinical characteristics (n = 320)	Categories	N (%)
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 the majority 174(54.4%) [95%CI: 48.8, 60.6] of them had poor social support, 124(38.8%) [95%CI:33.4,44.7] had moderate social support and only 22(6.9%) [95%CI: 4.4,10.0] had strong social support.

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 revealed that of the total participants, nearly two-thirds of them 206(64.4%) [95%CI: 58.8, 69.7] had poor self-care behavior and only 114(35.6%) [95%CI: 30.3, 41.3] had good adherence to self-care behavior.

Sex, educational status, average monthly income, level of social support, and total number of medicine used showed significant association with adherence to self-care behavior towards diabetics (Table 3).

Table 3: - Factors Associated With Self-care Behavior Among Diabetics Patients In TGSH, Bahir Dar, Ethiopia, 2021 (n=320).

Variables	Adherence to self-care Behavior		Multi variable	
	Good	Poor	COR (95%CI)	AOR (95%CI)
Sex			*	**
Male	73	98	2.255 (1.396,3.642)	2.103 (1.072,4.128)
Female	37	112	1	1
Age				
<47	53	103	1.115 (.620, 2.0040)	
48-63	33	55	1.300 (.680,2.486)	
≥64	24	52	1	
Marital status				
Single	27	83	.621 (.266,1.451)	
Married	67	96	1.332 (.603,2.946)	
Divorced	5	10	.955 (0.261,3.495)	
Widowed/widower	11	21	1	
Educational status			*	**
Illiterate	1	75	.010 (.001,.073)	.041 (.004,.4130)
Primary	13	36	.266 (.127,.559)	.792 (.259,2.4230)
Secondary	35	54	.478 (.269,.849)	.829 (.375,1.832)
College/University	61	45	1	1
Monthly income			*	**
<600	4	99	,028 (.010,.081)	.410 (.009,.188)
601-3200	42	67	.431 (.250,.743)	.741 (.347,1.584)
>3200	64	44	1	1
Duration of diabetes (years)				
< 1years	18	23	1.443 (.725.2.870)	
1-5 years	28	69	.748 (.439,1.277)	
>5	64	118	1	
Total number of medicine used			*	**
One	37	87	.240 (.134,.430)	.105 (.045,.248)
Two	18	92	.110 (.056,.0216)	.069 (.027,.176)
More than two	55	31	1	1
Type of diabetics				
Type1	39	70	.971 (.597,1.582)	
Type2	75	136	1	
Level of social support			*	**
Poor to moderate social support	89	209	.020 (.003,.153)	.004 (.001,.190)
Strong social support	21	1	1	1

NB: COR=crude odds ratio, AOR=adjusted odds ratio, *= significant association (on bivariate), **=significant association (on multivariate), 1.00= Reference

Male DM patients more likely to have good self-care behavior than females(AOR = 2.103, 95%CI: 1.072,4.128). Respondents with college/university educational levels were more likely to have good self-care behavior than those with illiterate ones (AOR = .041, 95%CI: .004, .413). On the other hand, those respondents who had poor to moderate social support were less likely to have good self-care behavior(AOR=.004 95%CI: (.001, 0.190) than those with strong social support. In addition, average monthly income was also another factor for self-care behavior. The result showed that respondents with an average monthly income of less than 600Birr were less likely to have good self-care behavior than those greater than 3200 Birr per month. Moreover those who took more than two types medication were more likely to have good self-care behavior than those who took one and two types of medication (AOR=.105 95%CI: (.045,.248) and (AOR=.069 95%CI: (.027,.176) respectively.

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 the respondents had good adherence to self-care activity. The result of this study is comparable with data reported in Harari 39.3% (Ayele et al., 2012) Arba Minch General Hospital 41.2% (Sorato et al.,2016),Egypt 41.7% (Mahfouz and Awadalla, 2011) and United Arab Emirates 37.7%(Gillibrand and Stevenson, 2006). While the finding of this study was lower than a study done in Dilla referral hospital 76.8% (Addisu et al.,2014), Nekemte Referral Hospital 59.5% (Dedefo et al., 2019) and 45% (Amente et al., 2014), Jimma University Specialized Hospital 50.8%(Kassahun et al., 2016)and Tikur Anbessa Specialized Hospital 55.6%(Berhe, Kahsay and Gebru, 2013). The differences in self-care practices could be due to the types instruments used in different studies or may be related to local differences in accessible follow-up care .

While this result is higher than study conducted in FelegeHiwot Referal Hospital 28.4% (Abate et al.,2018).This could be due to higher proportions of literate population in the present study setting,this might help them for easy acess to health related information.

This study revealed that male DM patients were 2.1 times more likely to had good self-care behavior than female patients. Studies also showed that most of women in the world had limited accesses to treatment, care and education (da Silva, 2017). However ,this finding is not consistent with other studies which is conducted elsewhere(Demoz et al., 2019;Jackson et al., 2014;Dedefo et al., 2019). This difference in gender ingeneral shows difference in commitment for adhering to the self-care practices, thus strategies for improving self-care practices has to be provided for all diabetic patients.

Patients who were more likely to demonstrate poor adherence to self-care practices were persons with lower educational status. Similar result s were obtained in studies done in Ghana (Mogre *et al.*, 2017) and Jimma University Teaching Hospital (Kassahun *et al.*, 2016). This indicates that knowledge on diabetes self-care behavior is gained through education and lower education status associated with low self-care behaviors.

Patient with multiple medication had shown significant association with poor self-care practices than those with a single dose of diabetes medication. Similar findings were also reported from a study conducted in Felegehowote Referal hospital (Abate *et al.*,2018). In the current study, respondent earn average monthly income < 600 Birr/ month compared to >3200 Birr/ month had high likely to have lower level of adherence to self-care behavior. Similar result also seen in study conducted in Jimma University Teaching Hospital (Kassahun *et al.*, 2016) Arba Minch General Hospital(Sorato *et al.*, 2016). This might be due to individuals with low socioeconomic status cannot access education, information and recommended diet on time.

Social support was another important factor for good self care behavior. Similar findings were observed in a study done in Jimma (Kassahun *et al.*, 2016) and Addis Ababa(Mamo and Demissie, 2016). This could be due to diabetic patients with strong social support may have got better care from their families and this might have effect on self-care behavior.

CONCLUSIONS
More than half of diabetic patients had poor diabetes self-care practice. Therefore, health care personnel should increase the patient's awareness to the importance of self-care practices. Sex , economical level, taking multiple medication, level of education and social support have a significant factor for good self care behaviour. Therefore health institutions provide emphasis on self-care practice by segmenting the patients status.

Limitation Of The Study
The institutional based nature of the study might not infer for other diabetic patients. Similarly, the nature of cross-sectional study design does not indicate temporal relationship or causality.

Data Availability
The authors confirm that data used to support the findings of this study are available from the corresponding author upon request.

ETHICAL STATEMENT
Formal letter was obtained from Rift vally University and submitted to Tibebe Ghion Specialized Hospital then, support letter was obtained from the hospital before conducting the study. Consent of each participants of the study was taken before they were interviewed. Individuals participating in the study were informed about the purpose of the study.

Conflicts Of Interest
The author(s) declare(s) that there is no conflict of interest regarding the publication of this article.

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