Research Article

Self Care Practice and Its Associated Factors Among Diabetic Patients In Addis Ababa Public Hospitals, Cross Sectional Study

Melat Mamo[*1], Meaza Demissie[2]

[1]Department of Public health, School of Graduate Studies, Haramaya University, Ethiopia

[2]Addis Continental Institute of Public Health

Abstract

Background: Diabetes is one of the most prevalent non-communicable diseases globally, presenting a significant public health burden on the basis of its increasing incidence, morbidity, mortality, and economic costs. The prevalence of the disease is gradually increasing in the developing countries; Ethiopia is also facing a growing morbidity and mortality of diabetes. Self-care of diabetes is essential for control of the disease and improvement of quality of patients' life. Thus, this study has assessed self-care practice and its associated factors among diabetes mellitus patients in Addis Ababa public hospitals.

Methods: In this cross-sectional study, 660 diabetic patients were selected through systematic random sampling method; data was collected from November to December 2011. Patients were interviewed using a structured questionnaire. Based on the patients answer to the practice questions patients were categorized as those with good and poor levels of practice. Binary and multivariate logistic regressions were used to exam the association between self-care practice and different factors.

Results: The result of the study showed that only 60.3 % (95% CI: 56%, 64%) of participants had good self-care practice. There was significant association between mode of treatment AOR= 1.94(95%CI: 1.31, 2.87), social support system AOR=1.59(95% CI: 1.10, 2.31), being member of diabetic association AOR= 2.39(95% CI: 1.19, 4.81), diabetes education from health professionals AOR= 2.79(95% CI: 1.95, 3.99) diabetes knowledge AOR= 3.13(1.54, 6.39) and good self-care practice.

Conclusion: Despite the important role of self-care practice in management of diabetes and preventing its serious complications, a substantial number of the patients had poor self-care practice especially lack of regular exercise and self-monitoring of blood glucose, which have critical roles in controlling diabetes

Introduction

Diabetes is one of the most prevalent non-communicable diseases globally, presenting a significant public health burden on the basis of its increasing incidence, morbidity, mortality, and economic costs [1, 2]. It continues to be a major threat to global public health [3]. It is either the fourth or fifth leading cause of death in most high-income countries and there is substantial evidence that it is epidemic is increasing in many economically developing and newly industrialized nations and responsible for almost 3 million deaths annually [4, 5]. The globally increasing problem of diabetes is well known, and in Africa the prevalence is increasing more rapidly than in developed countries [6]. In Sub- Saharan Africa, 10.4 million individuals currently have diabetes, and projections by the International Diabetes Federation (IDF) suggest that these figures will exceed 18.7 million by 2025(4). IDF estimate in 2011, around 1.4 million peoples live with diabetes mellitus in Ethiopia which makes the third African country next to Nigeria and South Africa [7].

In spite of the great strides that have been made in the treatment of diabetes in recent years, many patients do not achieve optimal outcomes and still experience devastating complications due to lack of adequate self-care practice [8]. Self-care practice is the cornerstone of diabetes care and patients are responsible for the day-to-day control of their diabetes [9]. Poor glycemic control increases the incidence

and prevalence of complications resulting in increased morbidity, mortality [8]. Despite the high rate of complications among diabetes patients in Ethiopia, the importance of self-care practice is not emphasized [10]. There is inadequate study in Ethiopia on diabetes in general on self-care practices in particular. Therefore, the aim of this study is to assess self-care practice and its associated factors among diabetic patients in Addis Ababa public hospitals.

Methods

Study area and study period

The study was conducted in all except two public hospitals providing diabetes follow up care in Addis Ababa, Ethiopia. The study was conducted from November to December, 2011.

Study Design

Cross-sectional study design, patients which came for their follow up were interviewed using a structured questionnaire.

Corresponding author: Melat Mamo, Bsc, MPH, Department of Public health, School of Graduate Studies, Haramaya University, P.O. Box: 1956, Addis Ababa, Ethiopia, Africa, Tel: 251-911-13-75-67; Fax: 251-911-13-75-67; E-mail: melatmamo13@yahoo.com

Sample size and procedure

The sample size was determined using a single population proportion sample size estimation method by assuming that 50% (p) of the patients follow the recommended self-care practice with 95% confidence interval and the marginal error to be 4% (d) and non-respondent rate of 10% was calculated giving a sample size of 660. The sample was distributed proportionally to the different hospitals based on the total number of adult diabetic patients on follow up in each of the hospitals. The study subjects in each hospital were selected using systematic random sampling technique. A patient was included in the study if he or she was diagnosed with either type I or type II diabetes for the last one or more years and age18 year or above. Those adults' diabetes patients 18 years or more who were unable to answer the questionnaires independently, seriously ill or weak were excluded from the study.

Data Collection analysis

Four trained nurses conducted the interview using a structured pretested questionnaire. The PI and an assistant supervised the data collection.

Data was entered and cleaned using Epi Info version 3.5.3 and SPSS Version 15 was used for data analysis. Bi- variate and multiple logistic regressions were done.

Operational definition

Good self-care practice: those who scored > 50% of the total self-care practices questions [11].

Poor self-care practice: those scored ≤ 50% of the total self-care practices questions.

Regular exercise: 30 minutes activity involved in brisk walking and easy running which increase heart beat and breathing for at least five days per week.

SMBG: Self –monitoring of blood glucose at least once every week.

Ethical Considerations

Ethical approval was obtained from the Institutional Review Board of Haramaya University. The IRB approved use of oral informed consent documented by a witness after the objectives of the study had been explained. All subjects provided informed consent.

Results

Socio-demographic/personal characteristics of the participants

A total of 660 diabetic patients were approached of which 14 consented to participate but couldn't complete the interview due to different reasons, giving 97.8 % response rate. The majority of the respondents 347(54.5%) were females. The age range of the respondents was 18-80 years and the median age was 50 years. Educational level of the respondents: the respondents were predominantly attended elementary school 183 (28.7%), married 366 (57.6), Orthodox religion followers 527 (82.7%), Pensioner 186(29.2%), Regular income 403(63.3) and monthly income ranges from 601-1500 birr 109(30.8%). The median duration of diabetes was 8 years, with range 1-50 years. The majority were on insulin injection 404 (65.6%) and only 126 (19.8%) of the participants were member of Ethiopian Diabetic Association. Majority of the participants had family/friend support 418 (65. 6%).About 372 (58.4%) of the participants usually receive diabetes education and Majority of the participants were knowledgeable 583 (91.5%) (Table1).

Self-care practice

From a total of 637 respondents, only 98 (15.4 %) consume vegetables daily, 310(48.7%) had no exercise activity in their daily lives and only 164(25.7%) exercised regularly. Blood glucose monitoring was only done by 185 (29%) of the participants during the preceding week before the interview. About 272 (42.7%) of participants did not seek medical attention when blood glucose is unusually high. Different reasons have been mentioned by the study participants for not seeking medical attention when blood glucose is unusually high. From these participants 76 (27.94%) try to control with meal and exercise, 51(18.75%) do not do anything when its high, 33(12.1%) increase the dosage of their medication, 20(7.35%) will not come to hospital unless their appointment, 4 (1.47%) participants were taking holly water and pray when its high and 2 participants do not know when blood glucose is unusually high (Table 2).

Magnitude of Self Care Practice

Over all self-care practice was calculated using 15 self-care assessment scores. Using this, the overall mean score for self-care was 8.97(SD±2.16) and range from1-14 points. The maximum possible score was 15. Three hundred eighty-four subjects (60.3%) scored above eight from the total 15 self-care questions. Self-care practice was Good in 60.3% (95% CI: 56, 64) and Poor in 39.7% of participants.

Self-monitoring of blood glucose

From 637 participants only 29% (95% CI: 25.5, 32.5) test their blood glucose at least once in the preceding week before the interview while the remaining participants test their blood glucose in month, in three months and did not have a regular plan for checking blood glucose (figure 1).

Factors associated with self-care practice

Both bivariate and multiple logistic regression analysis were done to identify the factors that are associated with self-care practice. Mode of treatment, that those with insulin treatment had more likely to have a good self-care practice when compared with those on tablets. Being member of Ethiopian Diabetic association, health education on DM, having a social support, knowledge on DM were independently associated with diabetes self-care. Patients who were member of Diabetes association, who had health education, have social support, and who have knowledge are more likely to have a good self-care practice, AOR (95% CI): 2.39(1.19, 4.81), 2.79(1.96, 3.99), 1.59(1.10,2.39), 3.13 (1.54,6.39) respectively (Table 3).

Discussion

Self-care practice among diabetic patients was found to be good in only 60.3 % (95% CI: 56%, 64%) of the diabetes patients, the rest of the patients which account for 40% are having poor care which can lead to complications of the disease. This level of good self-care practice was lower than what has been documented in Jamaica and Iran [12, 13]. However, when compared to what has been documented in eastern part of Ethiopia [11], it is much better. With regard to adherence to medication 91.7% of patients were adherent but with regard to other practices there is negligence. The absence of regular exercise is about 75% of our patients is one major problem observed; this is consistent with what 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 [11,14]. Regarding self-monitoring of blood glucose was practice only by 29% of the patients. Comparable finding was obtained in the study done in Harari, Eastern Ethiopia [11], they identified financial barrier as a barrier for not monitoring glucose level. Since most of our patients cannot afford to have the glucometer, 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.

Those on insulin therapy were 1.94(95% CI: 1.31, 2.87) more likely to have good self-care practice than those who were on tablet. Comparable finding was also found in Iran 3.6 (95% CI: 2.1, 5.7) for insulin treatment [13]. The relatively better self-care score among Insulin user in the present study could be these people may have 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 [15].

This study revealed that those who had support from their family and or friend were more likely to have good self-care practice than those who did not have support from their family/friend. Similarly, social support was independent, direct predictors of diabetes self-care in a study conducted South Carolina [16].

Those who usually receive education from health care professionals were almost three times more likely to have good self-care practice than those who did not usually receive education from health professionals. This finding was comparable with study conducted in Harari, Eastern Ethiopia where patients with less frequent information were less likely to have good self-care [11].

Individuals who were knowledgeable were three times more likely to have good self-care practice than those who had less diabetes knowledge; similar to the finding in South Carolina, more diabetes knowledge were independent predictors of diabetes self-care [16].

The limitations or potential biases in this study are (a) the data on self-care practice was collected through self-reporting rather than direct observation, (b) the possibility of recall and social desirability biases, (c) Absence of national guidelines limit the study to be undertake based on local context as a result, measurement were done based on another countries guideline.

Conclusion

Despite the importance role of self-care practice in management of diabetes, substantial number of participants had poor self-care practice especially regular exercise and SMBG, which has critical role in controlling and managing diabetes. Several common characteristics of the study subjects that predicted poor self-care were identified. Subjects who were prescribed with diabetes tablet, lack of family/friend support, being not member of diabetic association, low diabetes education and low diabetes knowledge were less likely to have good self-care practice.

Recommendations

- Healthcare professionals may use specific rather than general information and more aggressive counseling for those especially on diabetes tablet with emphasis to lifestyle modification.

- Almost half of the participants were lower in educational status and economically poor to adhere the recommended SMBG. Thus, it is important to increase the frequency of follow up visit in diabetic clinics to have good control of blood sugar and to reduce the development of complications.

- Health care professionals working in diabetes should consider including not patients only but family in health education programs.

Table 1: Basic Socio-Demographic characteristics of adult diabetic patients in Addis Ababa public hospitals, November to December 2011.

Variables(n=637)	Categories	Frequency(n=637)	Percentage
Sex	Male	290	45.5
	Female	347	54.5
Age			
	<=29	109	17.1
	30-39	89	14
	40-49	107	16.8
	50-59	163	25.6
	>=60	169	26.5
Marital status			
	Married	367	57.6
	Never married	126	19.8
	Once married [a]	144	22.6
Educational status			
	No formal education	126	19.8
	Elementary	183	28.7
	High school	179	28.1
	College/University	149	23.4
Regular Income			
	Yes	403	63.3
	No	234	36.7
Monthly income(n=354)			
	<300	61	17.2
	300-600	97	27.4
	601-1500	109	30.8
	1500+	87	24.6

[a]: Once married- Separated, Divorced and widowed

Table 2: Frequency of self-care practice among adult diabetic patients in Addis Ababa public hospitals November –December 2011

Variables(n=637)	Frequency	Prevalence
Daily vegetables	98	15.4
Space carbohydrates	309	48.5
Meal on time	501	78.6
Any exercise activity	327	51.3
Regular exercise	164	25.7
Self-Blood Glucose testing	185	29
Adherence to medication	584	91.7
Keeping appointment	558	87.6
Communicate with health care professionals	498	78.2
Foot care	486	76.3
Eye care	298	46.8
Seek medical attention when blood glucose is unusually high	365	57.3
Treat low blood glucose with carbohydrates	455	71.4
Carry sugar to treat low blood glucose	285	44.7
Abstinence from smoking	602	94.5
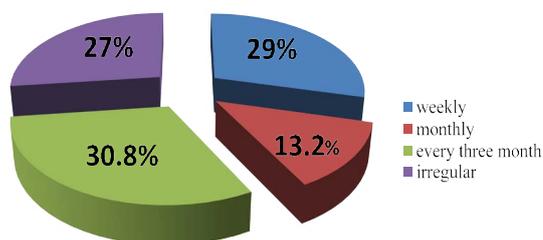
Figure 1: Proportion of self-blood glucose testing among adult diabetic patients in Addis Ababa.

Table 3: Self-care practice among adult diabetic patients and factors associated with self-care in Addis Ababa public hospitals, November – December 2011

Variables	Self-care Practice		Crude Odds Ratio	Adjusted Odds Ratio
	Good (%)	Poor(%)		
Age				
<=29	75(68.8)	34(31.2)	2.12(1.28, 3.52)*	1.71(0.81, 3.61)
30-39	61(68.5)	28(31.5)	2.10(1.22, 3.60)*	1.62(0.85, 3.08)
40-49	62(57.9)	45(42.1)	1.33(0.816, 2.16)	1.26(0.72, 2.22)
50-59	100(61.3)	63(38.7)	1.53(0.99, 2.37)	1.56(0.95, 2.56)
>=60	86(50.9)	83(49.1)	1.00	1.00
Marital Status				
Married	222(60.7)	144(39.3)	1.36(0.92, 2.00)	1.13(0.71, 1.79)
Never Married	85(67.5)	41(32.5)	1.83(1.11, 3.00)*	0.83(0.40, 1.70)
Once Married	77(53.1)	68(46.9)	1.00	1.00
Educational level				
Elementary	106(57.9)	77(42.1)	1.42 (0.90, 2.24)	0.89(0.52, 1.53)
High school	113(63.1)	66(36.9)	1.76(1.11, 2.80)*	0.81(0.45, 1.47)
College/University	103(69.1)	46(30.9)	2.31 (1.41, 3.78)*	1.05(0.55, 2.00)
No formal education	62(49.2)	64(50.8)	1.00	1.00
Income				
Yes	255(63.3)	148(36.7)	1.40(1.01, 1.94)*	1.25(0.84, 1.85)
No	129(55.1)	105(44.9)	1.00	1.00
Mode of treatment				
Insulin injection	276(68.3)	128(31.7)	2.47(1.77, 3.45)*	1.94(1.31, 2.87)**
Diabetes tablet	107(46.5)	123(53.5)	1.00	1.00
Social Support				
Yes	271(64.8)	147(35.2)	1.72(1.24, 2.41)*	1.59(1.10, 2.31)**
No	113(51.6)	106(48.4)	1.00	1.00
Being member of diabetics Association				
Yes	98(77.8)	28(22.2)	2.75(1.74, 4.33)*	2.39(1.19, 4.81)**
No	286(56)	225(44)	1.00	1.00
Attendance of monthly DM education from association				
Yes	56(78.9)	15(21.1)	2.70(1.49, 4.90)*	1.10(0.44, 2.72)
No	328(58)	238(42)	1.00	1.00
Diabetes Education from health professionals				
Received	262(70.4)	110(29.6)	2.79(2.01, 3.87)*	2.79(1.955, 3.99)**
Not received	122(46)	143(54)	1.00	1.00
Diabetes knowledge				
Knowledgeable	370(63.5)	213(36.5)	4.96(2.63, 9.33)*	3.13(1.54, 6.39)**
Less knowledgeable	14(25.9)	40(74.1)	1.00	1.00

* Significant association without controlling other variables
**Significant association after controlling other variables
1.00-reference

- Advocate to membership of association which is a vital for diabetic education, support and adherence to self care practice.

References

1. Narayan KM, Gregg ED, Fagot-Campagna A, Engelgau MM, Vinicor F et al. (2000) Diabetes a common, growing, serious, costly, and potentially preventable public health problem. *Diabetes Research and Clinical Practice* 50: S77-S84.

2. Wild S, Roglic G, Green A, Sicree R, King H (2004) Global prevalence of diabetes: estimates for the year 2000 and projections for 2030. *Diabetes Care* 27: 1047-1053. [crossref]

3. Abegunde DO, Mathers CD, Adam T, Ortegon M, Strong K (2007) The burden and costs of chronic diseases in low-income and middle-income countries. *Lancet* 370: 1929-1938. [crossref]

4. International Diabetes Federation. Diabetes Atlas 2006. Brussels: Available from http:// archine.diabetesatlas.org/global burden

5. Alvin PC (2008) Diabetes mellitus. In: Harrison, Brauwnwald, Kasper: Harrison's Principles of Internal Medicine. The McGraw-Hill Companies 17: 2275-2304.

6. Gill G, English P, Price C, Dedicoat M. Tesfaye S, et al. (2010) The variable African diabetic phenotype: tales from the north and the south. *African Journal of Diabetes Medicine* 18: 12-14.

7. Guariguata L, Whiting D, Weil C, Unwin N (2011) The International Diabetes Federation diabetes atlas methodology for estimating global and national prevalence of diabetes in adults. *Diabetes Res Clin Pract* 94: 322-332. [crossref]

8. Funnell MM, Anderson RM, Ahroni JH (2005) Empowerment and self-management after weight loss surgery. *Obes Surg* 15: 417-422. [crossref]

9. Martha M, Funnell MS. Robert AM (2004) Empowerment and Self-Management of Diabetes. *Clinical Diabetes* 22: 123.

10. Mesmar M, Eljack A, Al-Kuwari MG (2011) Knowledge and Practice of Type 2 Diabetic Patients Attending Primary Health Care in Qatar. *Middle East Journal*

of Family Medicine 9: 3-10.

11. Feleke Y, Mengistu Y, Enqusilassie F (2007) Diabetic Infection:Clinical and Bacteriologocal study at Tikur Anbessa Specialized university Hospital, Addis Ababa, Ethiopia. Ethiopian. *Medical Journa* 45: 171-179.

12. Ayele K, Tesfa B, Abebe L, Tilahun T, Girma E, et al. (2012) Self care behavior among patients with diabetes in Harari, Eastern Ethiopia: the health belief model perspective. *PLoS One* 7: e35515. [crossref]

13. Duff EM, O'Connor A, McFarlane-Anderson N, Wint YB, Bailey EY, et al. (2006) Self-care, compliance and glycaemic control in Jamaican adults with diabetes mellitus. *West Indian Med J* 55: 232-236. [crossref]

14. Yekta Z, Pourali R, Aghassi MR, Ashragh N, Ravanyar L, et al. (2011) Assessment of Self-Care Practice and Its Associated Factors among Diabetic Patients in Urban Area of Urmia, Northwest of Iran. *J Res Health Sci* 11: 33-38. [crossref]

15. Hailu E, H Mariam W, Belachew T, Birhanu Z (2012) Self-care practice and glycaemic control amongst adults with diabetes at the Jimma University Specialized Hospital in south-west Ethiopia: A cross-sectional study. *Afr J Prm Health Care Fam Med* 4.

16. Moodley LM, Rambiritch V (2007) An assessment of level of knowledge about diabetes mellitus among diabetes patients in primary health care settings. *SA Fam Pract* 49: 16-16d.

17. Osborn CY, Bains SS, Egede LE (2010) Health literacy, diabetes self-care, and glycemic control in adults with type 2 diabetes. *Diabetes Technol Ther* 12: 913-919. [crossref]