

Self- Care Practices and Associated Factors among Adult Diabetic Patients in Public Hospitals of Dire Dawa Administration, Eastern Ethiopia

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Abstract

Background Diabetes is a huge growing problem, and causes high and escalating costs to the society. Self-care practice for adults with diabetes is not well addressed in sub-Saharan Africa including Ethiopia. To prevent serious morbidity and mortality, diabetes treatment requires commitment to demanding self-care practice. The aim of this study was to assess self-care practices and its associated factors among adults with diabetes in Dire Dawa public hospitals of Eastern, Ethiopia.

METHODS This Cross-sectional study was conducted among 513 adults with diabetes. The Study participants were selected through systematic random sampling. Data was collected from February 1 st to March 1 st , 2018. Patients were interviewed using a structured questionnaire. Data were entered into Epi-data version 3.3.1 and exported to SPSS version 22.0 for analysis. Bivariable and multivariable logistic regression with crude and adjusted odds ratios along with the 95% confidence interval was computed and interpreted accordingly. A P-value of <0.05 was considered to declare a result as statistically significant.

RESULT The result of the study showed that 55.9%, (95% CI: 51.4, 60.3) of participants had good self-care practices. Good self-care practice was associated with having family support, treatment satisfaction, diabetes education, having glucometer, higher educational status, duration of the disease, high economic status and having good knowledge. There were statistical association between good diabetes knowledge (AOR= 2.14, 95% CI:1.37, 3.35), family support system (AOR= 2.69, 95% CI:1.56, 4.62), treatment satisfaction (AOR= 2.07, 95% CI:1.18, 3.62), diabetes education (AOR= 2.21, 95% CI: 1.35, 3.63), high economic status (AOR= 1.89, 95% CI: 1.01, 3.48), having glucometer,(AOR=2.69, 95% CI:1.57, 4.63),higher educational status (AOR= 2.68, 95% CI: 1.31, 5.49), and duration of disease greater than 10 years AOR=2.70, 95% CI: 1.17, 6.26) with good self-care practice.

Conclusion In this study a substantial number of the patients had poor self-care practices especially dietary practice and self-monitoring of blood glucose which have critical roles in controlling diabetes. Provision of diabetes self-care education and counseling especially on importance of self-monitoring of blood glucose, and dietary practice should be considered by responsible bodies.

Background

Self-care in diabetes is a process where the person attempts to use a variety of self-care approaches, which is effective for her/his, lifestyle and contextual situation and taking the necessary action to protect their lives, health and well-being. In order to control their disease, patients with diabetes need to adopt self-care activities such as an appropriate diet, regular exercises, control of blood glucose, and appropriate use of medication (1).Self-care is considered crucial for all people with diabetes for monitoring the disease process, prevention of complications, and glycemic control which improved quality of life(2)

Globally, an estimated 422 million adults were living with diabetes in 2014 (3). Two-thirds of the global diabetes population lives in the developing world (4). Based on the IDF Atlas 5th edition, 2012 report, the number of cases of diabetes in Ethiopia was estimated about 1.4 million in 2011 (5). Diabetes is one of the most challenging health problems in the 21st century. It costs at least USD 548 billion dollars in health expenditure in 2013 which is 11% of total health spending on adults (6). When it is not prevented and properly managed, diabetes is one of the major causes of premature illness and death worldwide which results 5.1 million deaths in 2013. Poor self-care practice increases the incidence and prevalence of complications resulting in increased morbidity, and mortality (7). To reduce morbidity and mortality different studies were conducted in different parts of the world. Although, there was significant variation across countries, self-care practice on diabetes is less than optimal in all countries. More than one third of US adults with diabetes has poor self-care practice (8). Diabetics self-care practices in Ethiopia is still low, which is in the range of 39%-63.3 % (9). 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 inadequate self-care practice, and there is little information in the study area. Hence the finding of the study provides and fills the gap related with the level of self-care practice. Therefore, the aim of this study is to assess self-care practices and its associated factors among adults with diabetes in Dire Dawa Administration Eastern Ethiopia.

Methods

Study Area and period

The Study was conducted in Dire Dawa Administrative city from the 1st of February to the 1st of March 2018. Dire Dawa is located in the Eastern part of the country enclosed by Ethiopian Somalia and the State of Oromia. It is 515 kilometers from Addis Ababa and 47 kilometers from Harar town. It has hot temperature with a mean of 25 degree centigrade. Based on the 2007 Census, the total population of Dire Dawa Administrative is 395,000 of which females account 51.6%

It has 9 urban kebeles (small administrative unity of Ethiopia) and 38 rural kebeles. In terms of distribution of health facilities, the City has two governmental and 4 private hospitals and 8 health centers. There are 6 specialty units (internal medicine, surgery, gynecology/ obstetrics, pediatrics, dentistry, and psychiatry) run by the hospitals. Besides these, the hospital has many follow-up clinics for both pediatric and adult patients. Diabetic clinic is one of such chronic follow-up clinics. The service is rendered by physician and nurses and 2171 Diabetic patients were registered for follow-up in the past one year

Study design

Institutional based cross-sectional study design was conducted.

Inclusion and Exclusion criteria

Inclusion criteria

All adults with diabetes who has one year follow up and came in to diabetic clinics was included in the study.

Exclusion criteria

Those adults with diabetes who are critically and mentally ill, pregnant women's and newly diagnosed adults with DM was excluding.

Sample Size Determination and sampling procedures

The required sample size is determined by using a formula for single population proportion by taking different p values from different studies; and the sample size for some of the factors for diabetic self-care practices obtained from different literatures was calculated by Epi Info 7 menu statically, by considering the following assumptions: confidence level 95%, power 80% and exposed to unexposed ratio of 1. So, the sample size for this study was 466 by adding non-response rate of 10% the final sample size was 513.

Sampling procedures

In the study area there are two governmental hospitals (SGH=Sabian General Hospital and DCRH=Dill Chora referral hospital) and these two governmental hospitals was selected purposively. These two hospitals have separate clinics for diabetes follow-up. The numbers of study participants from the selected health facilities was determined from the previous total number of diabetic patients who have follow up which is 2171 in two hospitals.

Samples were allocated to each of the selected Hospitals based on proportional allocation to sample size. The lists of respondents or sampling frame were obtained from the updated registration books of each follow up clinics of the hospitals. After establishing the sampling frames of respondents, simple random sampling technique was used to identify the study unit to be included to the study. Adults with Diabetes was selected by computer method using updated registration books as sampling frame until reach 513 samples.

Data collection tools

Six trained nurses conducted the interview using a structured pretested questionnaire. The PI and an assistant supervised the data collection. Face to face interviewer administered validated questionnaire was used to measure self-care practice and which was contextualized to the study area. It was prepared originally in English and was translated to Amharic, and then translated back to English for checking the consistency of the questionnaire. The questionnaire consists of socio demographic variables which contains (8 items), health-related variables having (14 items), diabetic knowledge which accounts from

(15 items), treatment satisfaction which consists of (6 items) and self-care practice which contains (15 items).

Data collection was carried out by 6 diploma Nurse Data collectors and 2 BSC Nurse Supervisors for a period of one month.

Data Collection Technique

The data collection was conducted in an institution-based exit interview by using pre-tested Amharic, and English questionnaires. All the necessary trainings were provided for the data collectors and Supervisors by the principal investigator. All adults with diabetes who are selected and fulfill the inclusion criteria were interviewed. Confidentiality and privacy were kept. The purpose of data collection and importance of the study was told to the participants in order to maximize the response rate and generate quality data as intended.

Data Processing and Analysis

The collected data was checked by the principal investigator, and then data was coded, entered and cleaned using Epi Data version 3.3.1 software and finally exported into SPSS version 22.0 software for analysis. Descriptive statistics of different variables was determined and the result was presented in tables and graphs using summary measures such as percentages mean and median. Binary logistic regression was used for the analysis of outcome variable.

A Hosmer-Lemeshow and Omnibus test was done to test for model fitness. Bivariate logistic regression was carried out to identify the factors associated with diabetic self-care practice.

All variables were taken into the multivariable model by considering a p-value of ≤ 0.25 , context and previous studies to control for all possible confounders and multivariate stepwise logistic regression was applied to see the independent effect of each variable on the outcome variable. Multi co-linearity test was carried out to see the correlation between independent variables using standard error and one of the independent variables was dropped for those with standard error of > 2 . Finally, the result of bivariate and multivariable logistic regression analysis was presented in a crude and adjusted odds ratio with 95% confidence intervals. All tests were two-sided and $P \leq 0.05$ was considered statistically significant.

Operational Definitions

Self-care Practices: 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 (10)

Good Self-Care Practices: individuals who have scored mean and above the mean value of the total 15 self-care practice questions. These 15 items which evaluates the status of patients' self-care during the last seven days. Responses in each subscale were based on 7-days, ranged from 0 to7, the higher number

was indicative of days reflecting better self-care operation. The minimum score is 0 and the maximum score in this tool is 105, which is indicative of the highest quality of self-care

Knowledge about Diabetes: Is measured by fifteen items in yes-no format. Correct answer will be given "1" and "0" is given for incorrect and don't know. Then a total score is computed out of fifteen marks (with the range of 0-15) those who Score mean and above the mean have a good knowledge where as those score below the mean value have not good knowledge (11)

Results

Socio-demographic characteristics of the participants

A total of 513 diabetic patients were approached of which 7 consented to participate but couldn't complete the interview, giving 98.6 % response rate. More than half of the respondents 279(55.1%) were females. The mean age of the respondents was 51.48 ± 14.75 years (95% CI: 36.7, 66.2) with the minimum of 18 and a maximum of 86 years old. Nearly one-fourth of the respondents (25.7%) were, do not read and write, and more than half of the respondents (54.5) were married (**Table 1**).

Health status of the study participants

Majority of the respondents, 378 (74.7%) were type 2 diabetic patients, 60.7% of the respondents had no history of comorbidities and most of the patients 61.3% were on oral hypoglycemic agents and 24.3% were on insulin medication.

Only 34 (6.7%) of the participants were members of Ethiopian Diabetes Association. Majority of the participants 392 (77.5%) had family support. About 231 (45.7%) of the participants usually received diabetes education and more than half of the participants 271 (53.6%) were knowledgeable. Diabetic treatment satisfaction rate was 81.6%.

From the total respondent's one hundred fifty-one (29.8%) had family history of diabetes and nearly one-fifth of the respondents (18.8%) had glucometer at home. More than one-third of the participants 199 (39.3%) had long term diabetic complication confirmed medically and almost all 187(94%) have hypertension (**Table 2**).

Magnitude of Self Care Practices

Over all self-care practices were calculated using 15 self-care assessment tools with total score of 105. Using this, the overall mean score for self-care was $43.5(SD \pm 10.9)$ and range from 19- 69 points. Two hundred eighty-three subjects (55.9%) scored above the mean value from the total self-care questions. As a result, 55.9 %, (95% CI: 51.4, 60.3) have good self-care practices.

Regarding adherence to regular exercise, 294 (58.1%) of the respondents adhered to the recommended daily regular exercise; nearly more than half 272 (53.8%) of the respondents practiced a physical activity

of at least 30 minute on all days of the week and twenty five (5%) had A separate exercise session more than three days per week apart from their day to day physical activities.

Regarding medication, majority 464 (91.7%) of the study participants adhered to the prescribed medication on all days of the week. Majority, 397 (78.5%), of the respondents didn't practice the recommended Self -Monitoring of Blood Glucose which means, monitoring their blood sugar level less than the mean value.

More than half 278 (54.9%) of the study participants did not adhere to the recommended diet management practices which means below the mean value. Around two-thirds (62.1%) of the respondents had practiced the recommended diabetic foot care, which scored mean and above the mean. From the total respondents, 386 (76.3%) had washed their feet all days of the week, 273 (54%) of diabetic patients had checked their feet on all days of the week. More than half, (55.7%), of the respondents performed daily foot inspection, and nearly greater than half (51%) of respondents reported that they dried between their toes after washing their feet (**Table 3**).

Discussion

In this study the current self-care practices of peoples with diabetes in Dire Dawa public hospitals and factors that contribute to self-care practice of diabetics were investigated. The finding of this study was addressed factors that were not well studied by other studies like foot care practice and it provides pertinent information to the population in the study area as well for the scientific society since there were no previous local studies. Overall, Self-care practices among peoples with diabetes was found to be good in 55.9 %, (95% CI: 51.4, 60.3) of the study participants.

The predictors of self-care practices were: getting education from health professions, having glucometer at home, having knowledge about DM, treatment satisfaction, duration of disease, having family support, educational status, and family wealth index.

The overall recommended self-care practice was (55.9%). This finding was in line with the results of the studies conducted in Addis Ababa (60.2) (12) However the finding of this study was greater than the study conducted in Harar, Eastern Ethiopia (39.2 %) (13). This discrepancy may be due to some improvements in the health care systems (related to time period gap) and variation of cutoff point to classify good and poor self-care, mean and fifty percent of total self-care practices, respectively. Sample size variation may also attribute to this difference.

On the contrary the finding of this study was lower than the study conducted in Eastern Nepal of which (70%), of the study participants had good self-care practices (14). This variation could be due to socio cultural difference. Majority of the study participants in Nepal had high income, so that they could afford their own glucometer and easily get healthy diet. This finding is also lower than the study which was conducted in Dilla, South Ethiopia which had 76.8% good self-care practices. Methodological and sample size variation may also account for this discrepancy (11)

This study revealed that those who had family support were nearly three times more likely to have good self-care practices than those who did not have. This is consistent with a study conducted in Addis Ababa (12) and Kenya (15). Individuals who have family support could have better information related to disease, have a chance to get education and may have got good income.

Those who had received education from health care professionals were almost two times more likely to have good self-care practice than those who didn't. This finding was comparable with the study conducted in Addis Ababa (12) and Harari (13)

Respondents who had higher level of education were nearly three times more likely to be engaged in self-care practices when compared with respondents who were unable to read and write. This finding was congruent with the studies conducted in Black Lion, Hospital and study conducted in Gondar (7, 12). This implies that education is the base for diabetic patient to understand the disease process and to provide own self care practice, because they may be able to read and become more informed of the benefits of adherence.

Knowledge towards DM and its disease process was found to be positively associated to self-care practice. Individuals who were knowledgeable were nearly two times more likely to have good self-care practice than those who had less diabetes knowledge. This finding is in line with the finding from Addis Ababa, Malaysia and Harari Region of Eastern Ethiopia (8, 12, 13). The possible justification is that, the right knowledge about DM and its self-care practice creates a clear understanding and avoids confusion about the practice and the disease condition.

Respondents who have glucometer at home were nearly three times more likely to have good self-care practice when compared to those who didn't have. This finding is in line with the finding which was conducted in Black Lion Specialized Referral Hospital, Addis Ababa (4).

In this study participants who had high income were two times more likely to have good self-care practices than those who had low income. This finding was in line with the study conducted in Dilla University Referral Hospital and Arba Minch General Hospital (10, 11)

Respondents who were satisfied regarding treatment were nearly two times more likely to have good self-care practices than their counterpart. This finding was congruent to a study conducted in Nigeria (16). Since Patient satisfaction is, directly associated with the degree of satisfaction with expected care and is linked with cognitive evaluation and emotional reactions to the components of care services.

The findings of this study were interpreted cautiously in the light of some limitations. The use of a cross-sectional survey design did not allow for the generalization of the findings beyond the sample from which data was gathered. The collected data was based on self-report, and may therefore, not be consistent with complaints from a medical point of view. Despite these limitations, this study has provided the foundation for future empirical studies among persons living with diabetes in relation to their diabetes

self-care practice. Future study may use qualitative design to understand and address the key drives to engage in diabetes self-care practices.

Conclusion

Despite the importance role of self-care practices in the management of diabetes, substantial number of participants had poor self-care practices especially dietary practice and SMBG, which has critical role in controlling and managing diabetes. Subjects who had no glucometer, lack of family support, low educational status, low diabetes education, low economical status and poor diabetes knowledge were less likely to have good self-care practice.

The hospital administration should stress on educating clients more during follow up periods and Diabetic self-care should be incorporated in the health education program of the hospital.

Healthcare professionals should use specific rather than general information and more aggressive counseling for those especially on diabetes dietary management with emphasis to lifestyle modification. Health care professionals working in diabetes clinics should consider including not only patients but also families in health education programs.

Interventional studies are recommended in order to determine the effect of diabetic educational programs on diabetes self-care practice of diabetic patients. Furthermore, investigation is needed to identify the reasons for poor diabetic self-care practices.

List Of Abbreviations

DM: diabetes mellites: confidence interval, OR: adjusted odd ratio, IDF: international diabetes federation.

Declarations

Ethical approval and consent to participant

Officially written approval letter was obtained from the Institutional Health Research Ethical Review Committee (IHRERC) of the College of Health and Medical Sciences, Haramaya University. In addition, an official letter was issued from the College of Health and Medical Sciences, Haramaya University to the director of each hospital. After securing permission from each hospital administrator, the actual data collection was commenced after obtaining written and signed voluntary consent from each study participant. All information collected from the participants was kept confidential.

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Availability of data and material

The datasets used and/or analyzed during the current study available from the corresponding author on reasonable request.

Consent for publication

Not applicable

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Not applicable

Competing interests

The authors declare that they have no competing interests.

Author's contribution

AG designed the study, drafted the paper, involved in the data collection, do analysis and interpretation of the results and participated in preparing all versions of the manuscript. AB, BG, TA, BW and ZA assisted in the design and in the proposal development, monitored data collection, assisted during analysis and revised subsequent drafts of the paper. All authors read and approved the final manuscript.

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Tables

Table 1: socio-demographic data of adult diabetic patients in Dire Dawa public hospitals 2018, (n= 506)

Characteristics	Alternative response	Frequency	
		No	%
Sex	Male	227	44.9
	Female	279	55.1
Ethnicity	Amhara	217	42.9
	Oromo	190	37.5
	Tigre	17	3.4
	Gurgie	53	10.5
	Somali	29	5.7
Religion	Orthodox	287	56.7
	Muslim	170	33.6
	Protestant	47	9.3
	Other	2	.4
Marital status	Married	276	54.5
	Single	71	14
	Widowed	53	10.5
	Separated	106	20.9
Level of education	Cannot read cannot write	130	25.7
	Read and write	70	13.8
	Primary school	101	20
	Secondary school	120	23.7
	College and above	85	16.8
Occupation	Self-employed	172	34
	Employed	105	20.8
	Unemployed	161	31.8
	Student	26	5.1
	House wife	42	8.3
Wealth index	Low	170	33.6
	Medium	193	38.1
	High	143	28.3

Table 2: Health status data of type 2 diabetes patients in Dire Dawa public hospitals, 2018 (n=506)

Characteristics	Alternative response	Frequency	
		No	%
Knowledge of diabetes	Good	271	53.6
	Poor	235	46.4
Duration of diabetes	1-5 years	215	42.5
	6-10 years	240	47.4
	Greater than 10 years	51	10.1
Comorbidities	Yes	199	39.3
	No	307	60.7
Current treatment	Oral	310	61.3
	Insulin	123	24.3
	Both	73	14.4
Having glucometer	Yes	93	18.38
	No	413	81.62
Getting DM education	Yes	231	45.7
	No	275	44.3
Members of Diabetes association	Yes	34	6.7
	No	472	93.3
Treatment satisfaction	Yes	413	81.6
	No	93	18.4
Having family support	Yes	392	77.5
	No	114	22.5
Having support from society	Yes	19	3.8
	No	487	96.2
Alcohol drinking	Yes	35	6.9
	No	471	93.1

Table 3: Self-care practices among adults with diabetes and factors associated with self-care in Dire Dawa public hospitals, 2018.

Variables	Self-care practice		COR; 95% CI	AOR; (95% CI)
	Good N (%)	Poor N (%)		
Duration of disease in Year				
1-5	16(39)	25(61)	1.00	1.00
6-10 years	90(51.75)	84(48.3)	0.146(0.84-3.35)	1.56(0.99-2.46)
>10 years	177(60.8)	114(39.2)	2.426(1.24-4.74)	3.339(1.51-7.38)
DM Education				
Received	153(66.2)	78(33.8)	2.188(1.52-3.13)	2.20(1.34-3.62)*
Not received	130(47.3)	145(52.7)	1.00	1.00
Sex				
Male	143(63)	84(37)	1.00	1.00
Female	140(50.2)	139(49.8)	1.69(1.182-2.416)	0.906(0.55-1.48)
Disease knowledge				
Good	188(69.4)	83(30.6)	3.338(2.31-4.81)	2.144(1.37-3.34)*
poor	95(40.4)	140(59.6)	1.00	1.00
Glucometer at home				
Yes	78(83.9)	15(16.1)	5.27(2.93-9.47)	2.69(1.56-4.62)*
No	205(49.6)	208(50.4)	1.00	1.00
Mode of treatment				
Tablet	167(53.9)	143(46.1)	1.00	1.00
Insulin	116(59.2)	80(40.8)	0.80(0.56-1.15)	0.97(0.61-1.54)
Educational level				
Not read and write	62(47.7)	68(52.3)	1.00	1.00
Read and write	26(37.1)	44(62.9)	0.64(0.35-1.17)	0.77(0.36-1.63)
Elementary school	58(57.4)	43(42.6)	1.48(0.87-2.49)	1.55(0.75-3.17)
Secondary school	74(61.7)	46(38.3)	1.764(1.066-2.92)	1.95(0.95-3.95)
College and above	63(74.1)	22(25.9)	3.14(1.73-5.69)	2.70(1.17-6.25)*
Marital status				
Married	162(58.7)	114(41.3)	1.53(0.97-2.49)	0.77(0.42-1.39)
Single	44(62)	27(38)	1.75(0.78-3.21)	0.859(0.36-2.00)
Widowed	26(49.1)	27(50.9)	1.038(0.53-2.00)	0.747(0.33-1.69)
Separated	51(48.1)	55(51.9)	1.00	1.00
Family support				
Having	246(62.8)	146(37.2)	2.28(1.52-3.43)	2.69(1.56-4.62)*
Not having	37(32.5)	77(67.5)	1.00	1.00
Treatment satisfaction				
Satisfied	240(58.1)	173(41.9)	1.61(1.02-2.53)	2.06(1.18-3.61)*
Not satisfied	43(46.2)	50(53.8)	1.00	1.00
Wealth index				
Low	76(44.7)	94(55.3)	1.00	1.00
Medium	123(63.7)	70(36.3)	2.1(1.42-3.31)	1.47(0.85-2.53)
High	84(58.7)	59(41.3)	1.76(1.12-2.76)	1.88(1.02-3.47)

* Statistically significant at P<0.05

Figures

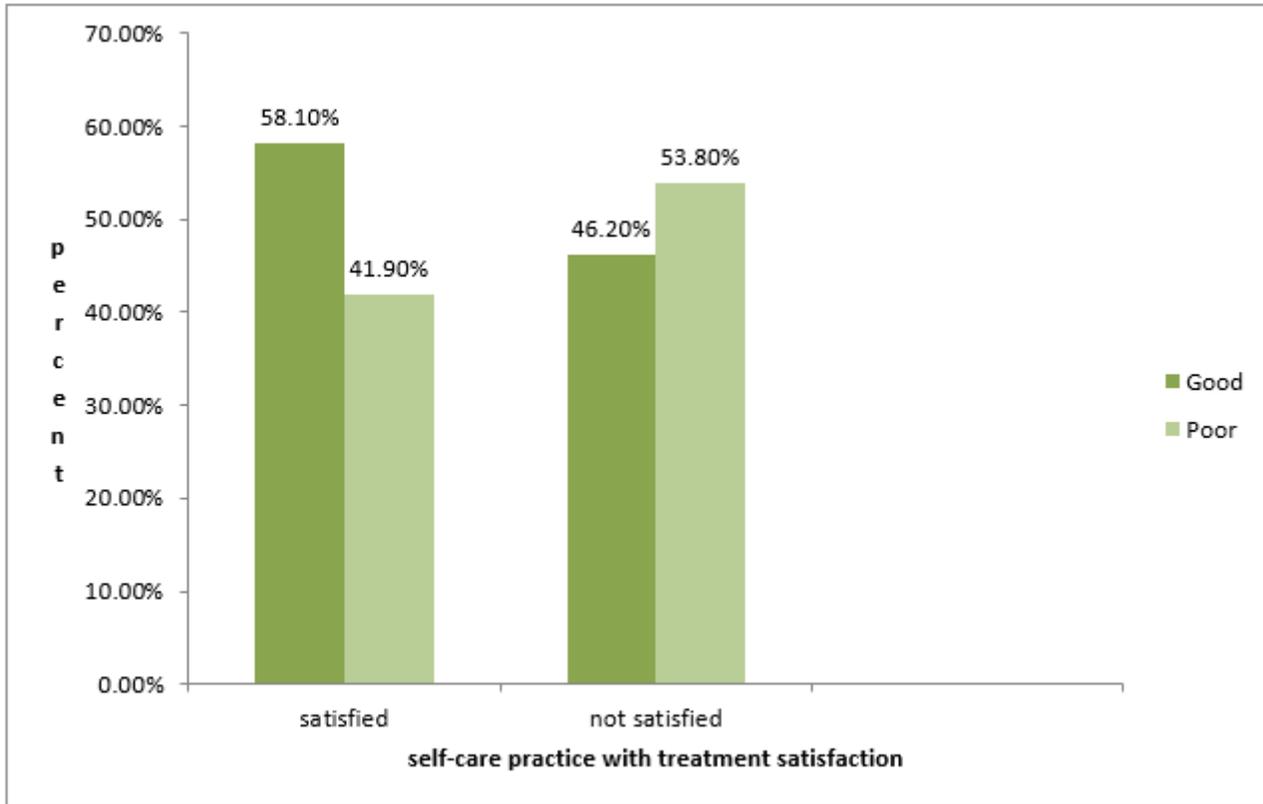


Figure 1

self-care practice distribution with treatment satisfaction among adult diabetic patients in Dire Dawa public hospitals Eastern Ethiopia, 2018