

## Research Article

# Predictors of Patient Satisfaction Among Diabetic Population Attending Primary Health Care Centers at Dubai Health Authority

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## ABSTRACT

**Background:** Patient satisfaction has been increasingly used as one indicator of the quality of health care. Measures of patient satisfaction are used to compare health care programs, to evaluate quality of care, and to identify which aspects of a service need improvement. There is no published study about diabetic patient satisfaction in UAE.

**Objectives:** To assess the predictors of diabetic patient's satisfaction regarding services provided at PHC centers as well as some factors affecting it.

**Methodology:** A cross sectional study among adult diabetic patients attending PHC centers in DHA, Dubai. Data were collected by using a standardized satisfaction questionnaire to assess diabetic patient satisfaction regarding the services provided in primary health care centers where they are being managed. Random cluster sample technique was used with proper allocation of 540 patients with diabetes from PHC centers/ DHA.

**Results:** the most significant predictors of patient satisfaction are age, level of education and LDL being controlled at target. The most likely age group of being less satisfied are the <45 years old (OR = 4.90), followed by the age group 45-<55

years (OR = 3.21) in contrast to the group 65 years or more. In comparison to illiterate, the university educated patients are the most likely group to be less satisfied (OR = 5.94), followed by the secondary educated (OR = 3.48), then the preparatory education group (OR = 2.08). Those patients with LDL not controlled at target are more likely to be less satisfied (OR = 1.59). The study revealed that there is statistical significant relationship between satisfaction and Age, sex, nationality, education, marital status, occupation, duration of diabetes, treatment regimen and complication. And by application of stepwise logistic regression; satisfaction mostly affected by age and education level and LDL at control target.

**Conclusion:** Satisfaction not only related to the system difficulties but also patient and disease characteristics play a role too. There was great link and association between satisfaction and patients' characteristics like; age, gender, education, nationality, and occupation. Disease characteristics such as duration of the disease, complications, type of the drug regimen as well as the control of the disease are also associated with satisfaction.

**Key Words:** patients Satisfaction, Diabetic population, PHC Dubai

## Introduction

Patients' satisfaction with their health care is an important measure of health care quality. Patient satisfaction is considered as one of the desired outcomes of care, an element of health status, a measure of quality of care and as indispensable to assessments of quality as to the design and management of health care system. Also, it has been proposed that the effectiveness of the health care system is determined to some degree by the patient satisfaction with the services provided. Furthermore, satisfied patients are more likely than dissatisfied one to develop a deeper and longer lasting

relationship with their medical care provider leading to improve compliance, continuity of care and ultimately better health outcomes.<sup>1,2</sup>

Satisfaction is, therefore, an important tool for research, administration and planning. also it will know that client satisfaction is of fundamental importance as a measure of the quality of care because it gives information on the provider's success in meeting client values and expectations, matters on which the client is the ultimate authority. Continuous assessment of client satisfaction is important tool to assess the current situation, detect the points needed for improvement and developing protocol for subsequent improving patients care.

Over 3,000 articles were published about satisfaction within the health care setting only, and dozens of measurement instruments regarding patient satisfaction were developed during the past decade.<sup>3</sup> One of the difficulties is that satisfaction may be considered as both a multidimensional construct and an overall summary construct. On the one hand the multidimensional approach distinguishes the functional quality of care (i.e., the way in which the care is provided) and the technical quality of care (i.e., the technical accuracy of the diagnosis and treatment). On the other hand the summary construct can be considered as both a generic attitude and an overall fulfilment of expectations.<sup>4</sup>

Satisfaction, like many other psychological concepts, is easy to understand but hard to define. The importance of meeting the expectations of the population by the providers of health care services is widely accepted as the one of the indicators of system functioning. Evaluation of patient satisfaction has become a standard part of evaluation of health care systems, and meeting patient expectations has become one of the main objectives of health care systems. From the ethical perspective, patients, as health care consumers, should have their concerns addressed.

Satisfaction is an important factor in predicting the quality of health care services provided to diabetic patients. Patient satisfaction in general was studied, but satisfaction of diabetic patients and its predictors were not addressed in PHC centers of Dubai. If the predictors of diabetic patient satisfaction are assessed, implications as appropriate may be suggested to improve the satisfaction and subsequently the quality of care. Health outcomes will also be better.

## Objectives

To assess the predictors of diabetic patient's satisfaction regarding services provided at PHC centers as well as some factors affecting it.

## Methodology

Descriptive cross sectional study was conducted at the primary health care centers (PHC) Dubai Health Authority (DHA). PHC in Dubai are distributed in the emirate according to the geographic location in two regions. From each region three health centers was chosen randomly. All adult diabetic patients attending the chosen PHC centers are enrolled by the study. Gestational diabetes patients were excluded from the study. The sample size was calculated by using computer program EPI-Info version "6.04". the minimum sample size selected was 538 and study sample size was 540 patients. Random cluster sampling technique was used. Proportional allocation of the patients from the chosen centers was carried out. All patients who attended the chosen PHC center were included until the completion of the required sample size. Structured questionnaire was used for data collection; data was collected through face to face interview.

## Results

Table 1 shows a significant difference between age groups as regards the domains of satisfaction. It can be noted that as age increase the level of satisfaction also increase in all domains except effectiveness of health services namely; accessibility of the service ( $P = 0.000$ ), continuity of care ( $P = 0.000$ ), humaneness of the staff ( $P = 0.003$ ), comprehensiveness of

care ( $P = 0.000$ ), provision of health education ( $P = 0.000$ ) and also the overall satisfaction had shown the same significant difference between age groups ( $P = 0.000$ ).

Table 2: It can be noted that there was a significant difference between the males and females in the following domains: accessibility of the service ( $Z = 3.14$ ,  $P = 0.002$ ), comprehensiveness of care ( $Z = 2.11$ ,  $P = 0.034$ ) and also the overall satisfaction had shown the same significant difference between males and females ( $Z = 3.17$ ,  $P = 0.002$ ) with females being more satisfied.

Table 3 Level of education of patient was found to be significantly related to his/ her level of satisfaction with accessibility of the service ( $P = 0.000$ ), continuity of care ( $P = 0.000$ ), comprehensiveness of care ( $P = 0.000$ ), provision of health education ( $P = 0.000$ ) and also the overall satisfaction ( $P = 0.000$ ) with the higher level of education patients being less satisfied. Patient satisfaction with Humaneness of staff and effectiveness of health services was not affected by level of education of patient.

Table 4 shows that the overall satisfaction percent score was higher among those suffering from diabetes for 5 years or more than those suffering in 1-5 years and this was statistically significant ( $Z = 4.26$ ,  $P = 0.000$ ), the same pattern was also noted in the accessibility of the service ( $Z = 4.30$ ,  $P = 0.000$ ), humaneness of the staff ( $Z = 2.71$ ,  $P = 0.007$ ), and comprehensiveness of care ( $Z = 2.47$ ,  $P = 0.013$ ).

Table 5 shows the relationship between the regimen of treatment and the domains of satisfaction, provision of health education was the only significant domain as regards the regimen of treatment with the highest satisfaction among those using combined treatment as compared to those using exercise/diet and those using oral hypoglycemic drugs.

Table 6 shows the relationship between the overall satisfaction and the occurrence of complications. The overall satisfaction was higher among those having retinopathy than those not having and this was statistically significant ( $Z = 3.46$ ,  $P = 0.001$ ), a similar picture was seen among those with neuropathy ( $Z = 3.56$ ,  $P = 0.000$ ), nephropathy ( $Z = 2.16$ ,  $P = 0.031$ ), coronary artery diseases ( $Z = 3.25$ ,  $P = 0.001$ ).and those having hypertension ( $Z = 4.57$ ,  $P = 0.000$ ).

Table 7 revealed the association between the process and outcome of care measures and satisfaction. As regards the outcome of care the LDL and the blood pressure kept at target controlled, showed association with overall satisfaction and this was statistically significant ( $Z = 2.32$ ,  $P = 0.021$ ,  $Z = 2.20$ ,  $P = 0.028$  respectively).

As shown in table 8, the most significant predictors of patient satisfaction are age, level of education and LDL being controlled at target. The most likely age group of being less satisfied are the <45 years old ( $OR = 4.90$ ), followed by the age group 45-55 years ( $OR = 3.21$ ) in contrast to the group 65 years or more. In comparison to illiterate, the university educated patients are the most likely group to be less satisfied ( $OR = 5.94$ ), followed by the secondary educated ( $OR = 3.48$ ), then the preparatory

**Table 1:** Age and satisfaction of diabetic patients Attending Primary Health Care Centers at Dubai Health Authority 2010.

Domains of satisfaction	Age (years)										Chi square	P
	<45 (128)		45- (175)		55- (172)		65- (46)		75+ (19)			
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
Accessibility of service	92.46	7.32	94.61	6.06	96.74	4.62	98.39	2.74	99.85	0.66	62.49	0.000
Continuity of service	67.79	7.78	69.81	7.54	72.87	7.28	72.32	6.36	71.05	4.31	41.20	0.000
Humaneness of the stuff	98.28	4.46	99.51	1.51	99.42	2.22	100.0	0.0	100.0	0.0	15.77	0.003
Comprehensiveness of care	83.13	3.72	84.02	3.85	85.14	5.22	88.78	5.51	88.63	4.47	68.84	0.000
Provision of health education	82.81	4.98	83.11	4.16	83.28	4.36	85.04	5.09	86.53	4.05	23.69	0.000
Effectiveness of health services	99.45	1.85	99.60	1.51	99.85	0.70	99.24	2.78	100.0	0.0	6.41	0.171
Overall satisfaction	88.86	2.50	89.99	2.20	91.04	2.06	91.94	1.61	92.33	0.86	107.35	0.000

**Table 2:** Gender and satisfaction of diabetic patients Attending Primary Health Care Centers at Dubai Health Authority 2010.

Domains of satisfaction	Gender				Z	SD
	Male (195)		Female (345)			
	Mean	SD	Mean	SD		
Accessibility of service	94.39	6.03	95.79	5.96	3.14	0.002
Continuity of service	69.54	7.12	71.14	7.77	1.75	0.080
Humaneness of the stuff	98.91	3.48	99.44	2.12	1.58	0.113
Comprehensiveness of care	84.35	3.74	84.95	5.24	2.11	0.034
Provision of health education	83.36	3.79	83.39	4.96	0.08	0.934
Effectiveness of health services	99.65	1.43	99.62	1.61	0.06	0.948
Overall satisfaction	89.87	2.44	90.55	2.32	3.17	0.002

education group (OR = 2.08). Those patients with LDL not controlled at target are more likely to be less satisfied (OR = 1.59).

## Discussions

Regarding the age, the literature supported the association between patient satisfaction and age, where the older group of the respondents were more satisfied than the younger one. The result of our study supported this hypothesis where it showed that as age increases, the overall satisfaction will increase. Comparable to our study result, there are another studies adopting same finding such as Saeed et al. (2001), Margolis et al. (2003), AL Eisa et al. (2005), Quintana et al. (2006), AL Emadi et al. (2009), Rahmqvist et al. (2010).<sup>5-10</sup> This finding can be explained as older patient are becoming more familiar with the potential shortcomings in the care delivery system. Old

patient becomes more accustomed with such shortcomings and expecting no more from the current situation they have with consequent fair satisfaction. In contrast to present result, no association was reported between age and satisfaction in many studies such Baker et al. (1995) AL Qatari et al. (1999) and Alazri et al. (2003).<sup>11-13</sup>

In our study, gender showed significant association with the overall satisfaction. It was clearly revealed that females were more satisfied than males. While this finding seems to be similar to Hargraves et al. (2001), Wolessin et al. (2005) and Bu- Alayyan et al., (2008).<sup>14-16</sup> It was found to be at odds with other studies which showed more significant satisfaction among males such as AL Azmi et al. (2006), AL Sakkak et al. (2008) and AL Eisa et al., (2005).<sup>17-19</sup> On the other hand, Baker et al. (1995) (11), Weisman et al. (2001), and Alazri et

**Table 3:** Education and satisfaction of diabetic patients Attending Primary Health Care Centers at Dubai Health Authority 2010.

Domains of satisfaction	Education								Chi square	P
	Illiterate (128)		Primary (162)		Secondary (134)		University (116)			
	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
Accessibility of service	97.88	3.96	95.84	5.67	95.16	5.72	91.80	7.01	66.15	0.000
Continuity of service	73.07	6.74	71.52	7.08	68.96	7.94	68.30	7.70	37.74	0.000
Humaneness of the stuff	99.80	0.92	99.20	2.56	99.09	2.95	98.90	3.68	5.97	0.113
Comprehensiveness of care	87.16	6.00	85.33	3.73	82.78	4.37	83.48	3.44	77.29	0.000
Provision of health education	84.97	4.01	83.46	4.29	82.03	5.37	83.07	4.00	29.20	0.000
Effectiveness of health services	99.59	2.00	99.78	1.06	99.65	1.15	99.44	1.90	5.69	0.128
Overall satisfaction	91.78	1.59	90.66	2.18	89.58	2.46	89.02	2.31	105.57	0.000

**Table 4:** Duration of diabetes and satisfaction of diabetic patients Attending Primary Health Care Centers at Dubai Health Authority.

Domains of satisfaction	Duration of diabetes (years)				Z	SD
	1-5 (241)		>5 (299)			
	Mean	SD	Mean	SD		
Accessibility of service	93.92	6.97	96.39	4.86	4.30	0.000
Continuity of service	69.76	7.88	71.20	7.27	1.93	0.054
Humaneness of the stuff	98.84	3.59	99.58	1.60	2.71	0.007
Comprehensiveness of care	84.17	4.21	85.19	5.12	2.47	0.013
Provision of health education	83.00	4.67	83.68	4.47	1.58	0.114
Effectiveness of health services	99.65	1.42	99.62	1.64	0.36	0.720
Overall satisfaction	89.74	2.62	90.77	2.07	4.26	0.000

al., (2003) showed no association between overall satisfaction and gender. <sup>11,13,20</sup>

Regarding the nationality, our study revealed a significant association. The Emirians revealed less satisfaction than the expatriates. It is believed that most of the Emirians have been exposed to many health care systems abroad that makes the comparison not in favor of the local health care system. Our result was similar to Saeed et al. (1992) (21) and AL Faris et al. (1996) who reported less satisfaction among country national than non-national. While Kersnik et al., (2002), AL Eisa et al.

(2005) and AL Azmi et al. (2006) proved no association between nationality and satisfaction with the health care services. <sup>17,19,21-23</sup>

Marital status was brought out as an important factor with health care system satisfaction. The present study showed that married patients were more satisfied than single ( $X^2= 31.45$   $p=0.000$ ). This was found to be in accordance with AL Faris et al., (1996) but opposite to Tulker (2002) and Quintana et al. (2006) who found that married patients were less satisfied. <sup>8,22,24</sup>

The present study showed that less educated patients were more satisfied with the provided services than higher educated

**Table 5:** Regimen of treatment and satisfaction of diabetic patients Attending.

Domains of satisfaction	Regimen for treatment						Chi square	SD
	Diet/Exercise (19)		Oral (441)		Insulin ± Oral (80)			
	Mean	SD	Mean	SD	Mean	SD		
Accessibility of service	93.38	8.78	95.30	5.90	95.68	5.84	0.25	0.882
Continuity of service	66.67	10.12	70.76	7.64	70.42	6.28	4.52	0.104
Humaneness of the staff	100.0	0.0	99.20	2.88	99.34	1.90	2.27	0.322
Comprehensiveness of care	83.58	2.27	84.66	4.87	85.40	4.50	2.91	0.233
Provision of health education	83.16	1.68	83.21	4.72	84.35	4.03	5.99	0.050
Effectiveness of health services	100.0	0.0	99.66	1.42	99.38	2.23	2.27	0.322
Overall satisfaction	89.42	2.64	90.30	2.44	90.53	1.92	2.65	0.265

**Table 6:** Diabetic complications and satisfaction of diabetic patients Attending Primary Health Care Centers at Dubai Health Authority 2010

Complications		Overall satisfaction			Z	P
		No.	Mean	SD		
Retinopathy	Yes	38	91.54	1.94	3.46	0.001
	No	502	90.21	2.39		
Neuropathy	Yes	94	91.13	1.91	3.56	0.000
	No	446	90.13	2.44		
Nephropathy	Yes	14	91.58	0.98	2.16	0.031
	No	526	90.27	2.40		
Coronary Heart Disease	Yes	41	91.48	1.75	3.25	0.001
	No	499	90.21	2.41		
Stroke	Yes	2	92.82	0.00	1.80	0.072
	No	538	90.30	2.38		
Hypertension	Yes	315	90.73	2.13	4.57	0.000
	No	225	89.71	2.59		

patients. Our finding was consistent with many studies done by Makhdoom et al. (1997), Ayatollahi et al. (1999), Babic-Banaszak et al., (2001) and Niakas et al., (2004).<sup>25-28</sup> Likely, the less educated patients are usually satisfied and with less demands. Less educated people have little knowledge what ideal care should look like, furthermore they are unable to judge the technical quality of the services received.<sup>29</sup> However opposite to the current result, increase satisfaction in educated people was seen by Saeed et al. (2001).<sup>5</sup> Surprisingly no association was found by Gadallah et al., (2003).<sup>30</sup>

The current study revealed that working status of the patient was affecting the satisfaction that was less among working patients. Time inconvenience between the appointment and work schedule of the patient might be one cause. Second, sick leave sometimes constitutes a big debate if the physician refused to grant it to his patient especially if such sick leave is irrevocable. This finding was in accordance with Makdoom et al., (1996) Saeed et al., (2001), Bu-Alayyan et al., (2008) but in opposite with Narayan et al., (2003), while no association between working status and satisfaction was found by AL Qatari

et al., (1999), Al Eisa et al., (2005), Quintana et al., (2006).<sup>5,8,12,16,19,25,31</sup> The present study revealed a significant association between the duration of diabetes and satisfaction. Patients having diabetes more than five year were more satisfied than those who had the disease for less than five year ( $p=0.000$ ). With chronicity of diabetes and the frequency of visiting the health care providing settings, patient becomes more accustomed with the already existent services with more satisfaction.

Our result was opposite to other studies which found no significant association between satisfaction and the duration of the disease such as Wredling et al., (2000), Hirschl et al., (2000) and Redekop et al., (2002).<sup>32-34</sup>

The present study found no significant association between regimen of treatment and all domain of satisfaction except for provision of health education which showed that patient who was taking combined oral hypoglycemic treatment and insulin were more satisfied than other two category (oral hypoglycemic drugs alone or diet/exercise) ( $p = 0.05$ ), although this finding was statistically significant, no justification could be found. The current result was contradicting with other studies that showed

**Table 7:** Quality of care measures and satisfaction of diabetic patients Attending Primary Health Care Centers at Dubai Health Authority 2010.

Variable		No.	Overall satisfaction		Z	P
			Mean	SD		
<b>Process of care measures</b>						
Blood pressure measured every visit	Yes	540	90.31	2.38	-	-
	No	-	-	-		
Hemoglobin A1c measured every 3 months	Yes	328	90.27	2.28	0.93	0.353
	No	212	90.36	2.54		
Low density lipoprotein measured in the last 12 months	Yes	534	90.31	2.39	0.36	0.722
	No	6	90.26	1.21		
Foot examination in the last 12 months	Yes	505	90.33	2.38	0.77	0.442
	No	35	90.04	2.41		
Eye examination in the last 12 months	Yes	451	90.32	2.41	0.44	0.663
	No	89	90.26	2.26		
<b>Outcome of care measures</b>						
Hb A1c at target controlled	Yes	238	90.42	2.35	0.84	0.399
	No	302	90.22	2.41		
LDL at target controlled	Yes	287	90.50	2.37	2.32	0.021
	No	253	90.09	2.38		
Blood pressure at target controlled	Yes	325	90.13	2.37	2.20	0.028
	No	215	90.57	2.39		

**Table 8:** Results of stepwise logistic regression analysis of factors affecting 2.34satisfaction of diabetic patients

Variable		P	Adjusted OR	95% CI	
				Lower	Upper
Age (years)	< 45	0.001	4.90	1.85	12.97
	45-	0.015	3.21	1.26	8.19
	55-	0.371	1.53	0.61	3.85
	65+		1.00		
Education	Illiterate		1.00		
	Primary	0.029	2.08	1.08	4.00
	Secondary	0.000	3.48	1.75	6.92
	University	0.000	5.94	2.93	12.03
LDL at target controlled	Yes		1.00		
	No	0.018	1.59	1.08	2.34

patients being treated with insulin were less satisfied than those using oral hypoglycemic drug Nicolucci et al., (2009) and Bidman et al., (2009).<sup>35,36</sup> Although chronic medical conditions are associated with worse health status, the degree to which a particular illness relates to an individual patient's satisfaction with health care may vary according to the nature and severity of the condition.<sup>37</sup>

The current study reflected higher satisfaction rate with the provided health services among diabetic patients with complications compared with patients who didn't suffer from such

complications. Moreover the more the complications, the more the satisfaction among patients. This finding explained as great attention of medical care providers to those who had the complications and offering them special as well high standard care thus, their satisfaction was increased another explanation could be as more frequent utilization of health services by those patients who had complications and by time subsequently their more expectation decreased and their satisfaction increased. The results of current study were contradictory with other studies that showed the least satisfaction among diabetic patients with complication Ken et al., (2002), Greenfield et al., (2002) and Nicolucci et al., (2009).<sup>35,38,39</sup> While other studies

found no association between complication and satisfaction such as Hirsch (2000) (33), Redekop et al., (2002) (34), Kerret al (2003) (40), Gross et al., (2003) (41) and Fan et al., (2005) .<sup>34,40-42</sup> Adherence to the guidelines has been shown to increase the efficiency of health services, constrain expenditures, improve the quality of health care and prevent inappropriate medication and referral.<sup>43</sup> The retrospective study of the records of adult diabetic patients is reflecting how strict both process and outcome of care management indicators for diabetic patients in primary health care setting in Dubai were followed. Blood pressure was documented in all diabetic patients on each visit (100%) this can be explained as it is a routine procedure that's done and documented by the practicing nurses.<sup>43</sup> Furthermore, this result reflects the strict rules and regulations that have been implemented by DHA as a part of continuous quality improvement program for diabetes care in family practice setting. Assessment of glycosylated hemoglobin levels is an objective measure of metabolic control of diabetes. This study showed that, 60.7% of the patients had HbA1c performed four times/year which was lower than the figure detected in USA (97.4%), HbA1c was performed once a year in other study. The international guidelines necessitate that, HbA1c should be done twice/year for controlled patients and 4 times/year for uncontrolled patients. Concerning LDL measuring for diabetic patients, our findings revealed a high performance rate (98.9%) in comparison with 75% in Bosnia and 87.6% in USA.<sup>44,45</sup>

Funduscopy referral in our study was high (83.5%) as compared to other studies where it was 66% in USA. Feet examination was performed in approximately 93% of the patient which was high compared with other studies in Bosnia, (53.4%) and in England (70.4%).<sup>45-47</sup> The implementation of treatment goals for diabetes is challenging, however, it has been suboptimal in most clinical settings.<sup>48</sup> However our study showed the following: Regarding the intermediate outcome of care measures; the study showed that the proportion of patients with good glycaemic control (HbA1c < 7%, according to the ADA guidelines) were 44.1% which was nearly the same compared to a study done in USA (44%), while a higher percent was reported in Australia (57%).<sup>49,50</sup> Hypercholesterolemia is a major treatable cardiovascular risk factor in diabetic patients. The current study revealed that 53.1% of the diabetic patients reached the ADA target of controlling LDL (LDL < 100 mg/dL), this finding is in agreement with other studies done in USA and Australia which reported percentages of 46.1% and 52.8 % respectively.<sup>44,50</sup> The present study showed that the proportion of patients achieving the target of ADA for controlling the blood pressure (<130/80mmHg) were 60.2% as compared to 33% in another study.<sup>46</sup> There are multiple barriers to reach BP goals in primary care including, patient factors (social, economic, physiological, and treatment-related factors), provider factors (clinical inertia, polypharmacy, and time constraints), and system factors (insurance coverage, medication co-payments, access to primary care, self-management programs, and reimbursement schemes). Additionally, the recommended changes to diet and lifestyle are challenging for patients, and the lack of knowledge about health outcomes from poorly controlled hypertension can be a barrier to achieve the recommended goal.<sup>51</sup> The relation between satisfaction and outcome of care measures is complex and there is growing evidence linking patient satisfaction with

better medical outcome of care. These outcomes include better compliance, and adherence to medical regimes.<sup>52</sup> However, it is equally true that people who receive both good process and good outcome of care are likely to be more satisfied.<sup>53</sup> The current study result showed no significant association or relation between the control of diabetes (HbA1c<7) and satisfaction, while control of LDL (LDL<100) was associated with increased satisfaction. Controlling of blood pressure (BP<130/80) was associated with decreased satisfaction. Other studies which had been conducted in this field showed that there is an association between satisfaction and the outcome of care determined by HbA1c, where increased patient satisfaction usually leads to an improvement in the outcome of diabetes in terms of HbA1c and vice versa. Alazri et al., (2003) and Redekop et al., (2002) found that poorly controlled diabetic patients were being less satisfied.<sup>13,34</sup> Ultimately, we can conclude that among the diabetic patients in the current study, the overall satisfaction was fairly good except with aspects of continuity of the care that brought out some shortcomings. Quality of care measures as well showed relatively good adherence to the ADA guidelines that was also expressed in better satisfaction among diabetic patients. Based on these findings some recommendations will be raised.

## Conclusions

Satisfaction is not only related to the system difficulties but also patient and disease characteristics play a role too. There was a great link and association between satisfaction and patients' characteristics like; age, gender, education, nationality, and occupation. Disease characteristics such as duration of the disease, complications, type of the drug regimen as well as the control of the disease are also associated with satisfaction.

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