



## ORIGINAL ARTICLE

# Satisfaction among Adults with Diabetes Mellitus Attending Central Diabetes Clinics with the Care Provided in Primary Health Care, Kingdom of Bahrain

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### Abstract

**Background:** Patient satisfaction is one of the desired outcomes of health care, as it is not only an indicator of quality of care but also plays a vital role in the management of chronic patients such as Diabetes mellitus because it promotes adherence to advice and treatment, utilization of health care services, and the establishment of the doctor-patient relationship.

**Aims and Objectives:** This study aims to assess diabetic patients' level of satisfaction attending the Central Diabetes Clinics in primary health care. Additionally, this study aims to determine whether patient satisfaction is related to individual characteristics such as sociodemographic parameters and disease-related factors.

**Materials and Methods:** A cross-sectional study was conducted in the Central Diabetes Clinics of Primary Health Care from February 6th to February 17th, 2022. The data was collected via a self-administered questionnaire. It was divided into two sections: the first part contained the patient's characteristics, and the second included 16 items obtained from the short form of the Patient Satisfaction Questionnaire (PSQ-18).

**Results:** The study included 369 diabetes patients in total. Most participants (85.9%) were Bahrainis between the ages of 51 and 70 (70.5%). The overall satisfaction mean score was 69.4 (86.75%, SD = 8.9). Patients were most satisfied with the interpersonal manners, while they were dissatisfied with the waiting time for emergency services. A significant association was found between overall satisfaction and education level, as well as with the duration of treatment. Lower educational levels and a duration of Diabetes of 5–10 years were associated with higher satisfaction. No significant association was found between overall satisfaction and other factors such as sex, age, nationality, marital status, employment status, monthly income, the presence of other chronic conditions, the presence of diabetes-related complications, or the treatment type.

**Conclusion:** This study concluded that most diabetic patients who visit Central Diabetes Clinics are generally satisfied with the quality of healthcare services.

**Keywords:** Diabetes, Diabetes Clinics, Patient Satisfaction, Primary Health Care, Bahrain

## Introduction

According to the International Diabetes Federation (IDF), Diabetes is one of the fastest-growing health challenges of the 21st century, with the number of adults living with the disease has tripled over the past 20 years.<sup>1</sup> The IDF estimates that 9.3% of adults aged 20–79, *i.e.*, approximately 463 million people, live with Diabetes. The IDF expects a significant increase in diabetes cases by 2030, with 578 million adults diagnosed with Diabetes, which is expected to rise even further to 700 million adults by 2045.<sup>1</sup>

The World Health Organization (WHO) and Centers for Disease Control and Prevention report that Diabetes is the seventh leading cause of death, with nearly 1.5 million deaths directly attributed to it in 2019. Type 2 diabetes accounts for approximately 90% to 95% of all diagnosed cases of Diabetes.<sup>2, 3</sup> It is a significant cause of blindness, kidney failure, heart attacks, strokes, and lower limb amputation.<sup>3</sup> The WHO states that there has been a substantial rise in people diagnosed with Diabetes, with the number rising from 108 million in 1980 to 422 million in 2014. The global prevalence of Diabetes among adults over 18 years of age rose to 8.5% in 2014, with a 5% increase in premature mortality from Diabetes from 2000 to 2016.<sup>3</sup>

Similar to the world statistics, the Middle East region has seen some of the most significant growth in diabetes mellitus (DM) in the current period, and trends predict over 90% growth in the disease by 2030.<sup>4</sup> Among the Gulf Cooperation Council (GCC) countries, the Kingdom of Bahrain is considered one of the most markedly affected countries with rising numbers of diabetic cases, with a prevalence of about 16.3% in adults in 2020.<sup>5,6</sup> According to the WHO report, the diabetes mortality rate was around 13% in 2016, among all other causes.<sup>7</sup> Additionally, Diabetes exerts a significant economic burden on healthcare systems. As estimated by the IDF, diabetes healthcare expenditure in Bahrain in 2017 was 110 million BHD (292 million USD), with a unit cost per person with Diabetes of 667 BHD (1769.9 USD).<sup>8</sup>

Patient satisfaction is one of the desired outcomes of health care and a measure of the quality of care.<sup>9</sup>

It represents the extent to which patients believe the service meets their needs and expectations.<sup>9</sup> Numerous factors influence patient satisfaction; Ware et al. claimed that patient characteristics are the determinants of satisfaction, while interpersonal manner, technical quality, accessibility, convenience, costs, efficacy, and outcomes of medical care, continuity, the physical environment, and the availability of resources are the components of satisfaction.<sup>10</sup> The significance of studying patient satisfaction is well documented, especially in chronic diseases. The concept was initially introduced to achieve clinical outcomes. However, over time, health organizations used it to assess the quality of care and bridge gaps between patients' expectations and their experiences at a healthcare facility. It is now recognized that a satisfied patient is more likely to return to the clinic or physician and utilize the health care services, resulting in better compliance and eventually leading to better clinical outcomes.<sup>4, 9, 11, 12, 13, 14</sup> As emphasized by Doubova et al.<sup>14</sup>, patients' satisfaction can significantly influence their contribution to their disease management. Consistent with this argument were the findings of a study conducted in Egypt<sup>13</sup>, which showed satisfied patients have better glycemic control, *i.e.*, a negative linear relationship between patients' satisfaction and HbA1c as a measure of glycemic control. As patient satisfaction is one of the many variables influencing healthcare outcomes and service utilization, identifying and eliminating predictors of dissatisfaction is an essential step toward improving healthcare.<sup>4</sup> However, as diabetic patients must visit primary care clinics regularly, their satisfaction could be difficult to achieve.<sup>9</sup>

Therefore, the authors of this paper decided to conduct this study to assess the level of satisfaction among adults with diabetes mellitus who receive care in Central Diabetes Clinics (CDCs) in the Primary Health Care system (PHC) in the Kingdom of Bahrain. A study of this type will enable the authors, primary care physicians, and health policymakers to better understand the underlying factors that may influence patient satisfaction. Hence, the results of this study will provide a better understanding of the disease and help the healthcare system address the

disease's rising numbers and poor clinical outcomes, as well as, in the long term, reduce the clinical and financial burdens of Diabetes.

## Aims & Objectives

1. To assess the diabetic patient's level of satisfaction with attending the CDCs.
2. To determine whether there is any relationship between patients' level of satisfaction with diabetes care and their characteristics, such as sociodemographic or disease-related factors.

## Methods & Materials

### Study design

This cross-sectional study was conducted in the Central Diabetes Clinics of the Primary Health Care Clinics in the Kingdom of Bahrain from February 6th to February 17th, 2022.

### Study population

Diabetic patients attending the designated Central Diabetes Clinics. The inclusion criteria were as follows:

1. Males and females of any nationality
2. 18 years of age or older
3. Capable of providing verbal consent for participation
4. Understand either English or Arabic

The exclusion criteria were as follows:

1. Patients under the age of 18
2. Incapable of providing verbal consent for participation
3. History of intellectual disability

### Study setting, sample size, and data collection

Primary health centers in the Kingdom of Bahrain are divided into five regions, with 25 health centers. Each health center has an established CDC within it. Seven of these health centers were chosen randomly based on the different health regions. The following health centers were selected: Region 1 included Halat Bu Maher Health Center, Bahrain and Kuwait Health Center-Hidd, and NBB Arad Health Center, while Region 2 included Naim Health Center. Region 3 had Yousef Engineer Health Center, whereas Hamad Kanoo Health Center was selected

from Region 4, and Mohammad Jassim Kanoo Health Center was chosen from Region 5.

The average weekly number of CDC patients was obtained from the medical records of each health center. A sample size of the total number of daily patients to be selected from each health center for ten working days was calculated based on their average weekly attendance.

Sample size estimation was calculated using the equation for cross-sectional studies, taking into account the sample size calculator by Raosoft, Inc.

$$n = \frac{Np(-p)}{[(\frac{d^2}{Z^2} - \frac{\alpha}{2} * (N - 1) + p(1 - p))]}$$

Where N is the estimated population size attending the selected CDC in the specified health center on the assigned day, a hypothesized proportion (p) of 0.5, and a margin of error (d) of 0.05, the minimal sample size required ranged from 95% to 99% confidence level.

The final sample size calculation was based on a 99% confidence interval for each health center with 369 patients.

The selected health centers were visited on the appointed CDC days for data collection. The CDC nurse provided a list of patients so they might be contacted by phone if they did not attend the clinic. After consenting to participate in the study, researchers in the waiting area approached patients who attended the clinic on the allocated days to fill out self-administered questionnaires available in both English and Arabic. The researchers collected the questionnaires themselves after they were completed.

Patients who could not attend the health centers owing to COVID-19 pandemic laws and regulations were contacted by phone. Using the health center handsets, researchers personally contacted participants in the study sample. Before the initiation of the phone interviews, patients provided verbal consent. Following verbal consent, each item from the self-administered questionnaire was read aloud to the patients in either English or Arabic. They were asked to answer based on their preferences. The responses were appropriately documented in

the questionnaires. The patients' anonymity was maintained while recording their responses to the questionnaires.

### ***Study tool and measurement of satisfaction***

The study instrument used in this study was a validated short form of the Patient Satisfaction Questionnaire (PSQ-18). The questionnaire contains 18 statements divided into seven dimensions of satisfaction with medical care: general satisfaction, doctors' technical quality and competence, interpersonal manner, communication skills, time spent with the doctor, accessibility, and convenience. However, because the questionnaire was developed in the United States of America, it includes the financial aspect of the medical care provided, which is inapplicable to our country since most Bahraini residents receive medical treatment at no cost. As a result, statements 5 and 7, addressing financial issues, were omitted. The final questionnaire was divided into two sections. Section one covered patients' characteristics, such as sociodemographic data, duration of Diabetes, type of treatment received, presence of other chronic conditions, and presence of diabetic complications. At the same time, the second section of the questionnaire included 16 items from PSQ-18.

An official linguistic expert translation office translated the questionnaire into Arabic. The authors of this study also double-checked the Arabic-translated version of the questionnaire by first translating it into English and then into Arabic to ensure the originality of the English version.

The questionnaire responses were recorded on a five-point Likert scale, ranging from strongly agreeing to strongly disagreeing. The questionnaire items were scored using the PSQ-18 questionnaire scoring instructions. Since some PSQ-18 items are worded so that agreement reflects satisfaction with medical care, while others are phrased so that agreement reflects dissatisfaction with medical care, all items were rescored so that higher scores reflect satisfaction with medical care, i.e., a delighted response received a score of 5. In contrast, a fully dissatisfied response received a score of 1. Following item scoring, items within the same subscale were averaged together to produce the six different

subscale scores (general satisfaction, technical quality, interpersonal manners, communication, time spent with the doctor, and interpersonal relationships).

### ***Data analysis***

The Statistical Package for the Social Sciences (SPSS) version 26.0 was used for all data analyses. The patient satisfaction level for each item and the subscales of the PSQ-18 questionnaire were expressed in means and standard deviations. A one-way ANOVA (Analysis of Variance) was used to test for a statistically significant difference in the mean scores for total satisfaction in more than two categorical groups, while an independent t-test was used to test for a statistically significant difference in the mean scores for total satisfaction in more than two categorical groups. A p-value of  $< 0.05$  was considered statistically significant. In cases where a significant difference in means was detected, a post-hoc Turkey's honest significance test (Turkey's HSD test) was performed to determine where the difference lies between the groups. Moreover, Cronbach's alpha was used on individual items and the subscales of the PSQ-18 questionnaire to test the scale's reliability measuring the satisfaction level.

### ***Ethical approval***

The ethical committee of Bahrain's Ministry of Health reviewed the research proposal. The research proposal was approved by the Primary Health Care Research Committee and counter-approved by the Head of Primary Health Care Services. Before data collection, the doctors in charge of each health center also consented. Patients verbally agreed to participate in the study via a phone interview or a self-administered questionnaire.

### **Results**

The study included a total of 369 diabetic patients from CDCs across all the health sectors in the Kingdom of Bahrain. **Table 1** depicts the study participants' personal characteristics. It shows that most of the study participants (85.9%) were Bahrainis. Most participants were between the ages of 51 and 70, accounting for 70.5% of the total study population. The study group had an equal number of males and females, 50.7% and 49.3%, respectively. The majority were married,

accounting for 78.6% of the population. The majority of study participants were educated, with secondary school ranking first (41.5%), followed by university (22.5%), intermediate (14.4%), and primary (13.3%). The illiterate group made up only 4.6% of the study group, while those with a postgraduate level of education made up 4.1%. The majority of the participants (72.8%) were unemployed. The participants were further divided into six groups based on their monthly income: those earning less than 200 BHD (31.2%), those earning 200–399 BHD (10.8%), those earning 400–599 BHD (17.9%), those earning 600–799 BHD (22.8%), those earning 800–999 BHD (12.7%), and those earning more than 1000 BHD (4.6%). Most participants (78.6%) in the study had other chronic conditions like Diabetes. Most of the study population (66.7%) had Diabetes for more than 10 years; those with it for 5–10 years were 24.7%, and those with it for less than five years were only 8.7%. The percentage of study participants with diabetes-related complications versus those without was almost equal (51.8% vs. 48.2%, respectively). The majority of participants (46.1%) received both oral hypoglycemic agents (OHA) and insulin, while 44.2% were only on OHA and 9.5% were only on insulin.

**Table 1:** Personal Characteristics of Study Sample

Demographics	Total = 369 n (%)
<b>Nationality</b>	
Bahraini	317 (85.9)
Non- Bahraini	52 (14.1)
<b>Age in years</b>	
<40	24 (6.5)
40-50	55 (14.9)
51-60	117 (31.7)
61-70	143 (38.8)
>70	30 (8.1)
<b>Sex</b>	
Male	187 (50.7)
Female	182 (49.3)
<b>Marital Status</b>	
Single	23 (6.2)
Married	290 (78.6)
Divorced	19 (5.1)
Widowed	37 (10)

<b>Level of Education</b>	
Illiterate	17 (4.6)
Primary	49 (13.3)
Intermediate	53 (14.4)
Secondary	152 (41.2)
University	83 (22.5)
Postgraduate	15 (4.1)
<b>Employment</b>	
Employed	101 (27.4)
Unemployed	268 (72.6)
<b>Monthly income in BHD</b>	
< 200	115 (31.2)
200 -399	40 (10.8)
400 - 599	66 (17.9)
600 -799	84 (22.8)
800- 999	47 (12.7)
> 1000	17 (4.6)
<b>Chronic Conditions</b>	
Yes	290 (78.6)
No	79 (21.4)
<b>Duration of Diabetes in years</b>	
<5	32 (8.7)
5 -10	91 (24.7)
>10	246 (66.7)
<b>Complications</b>	
Yes	191 (51.8)
No	178 (48.2)
<b>Type of Treatment</b>	
Diet+ Exercise	1 (0.3)
Oral Hypoglycemic Agents ( OHA)	163 (44.2)
Insulin	35 (9.5)
OHA+ Insulin	170 (46.1)

Table 2 displays the mean scores with standard deviations (SD) for the patients' satisfaction with each of the 16 items of the PSQ-18 questionnaire. The mean score for the individual items ranged from the highest score of 4.8 (SD = 0.52) for item 9 (doctors acting in a friendly manner) to the lowest score of 3.5 (SD = 1.1) for item 7 (waiting for emergency services).

**Table 2:** Satisfaction scores for each PSQ-18 items

Satisfaction scores for each PSQ-18 items	Mean(SD)
	Maximum score = 5 Minimum score = 1
1. Doctors are good at explaining tests	4.6 (0.85)
2. The doctor's office has everything needed to provide complete medical care	4.4 (0.88)
3. The medical care received is just about perfect	4.5 (0.88)
4. Sometimes, doctors make the patients wonder if their diagnosis is correct	4.5 (1.0)
5. When patients go for medical care, Doctors are careful to check everything when treating and examining them	4.4 (1.0)
6. Easy access to the medical specialists I need	4.2 (1.05)
7. People have to wait too long for emergency treatment	3.5 (1.1)
8. Doctors act too businesslike and impersonal	4.5 (1.1)
9. Doctors treat patients in a very friendly and courteous manner	4.8 (0.52)
10. Medical care providers sometimes hurry too much when they treat patients	4.4 (1.02)
11. Doctors sometimes ignore what patients tell them	4.6 (0.91)
12. Doubts about the ability of the doctors who treat patients	4.6 (0.91)
13. Doctors usually spend plenty of time with patients	4.6 (0.85)
14. It is hard to get an appointment for Medical care right away	3.9 (1.31)
15. Dissatisfied with some things about the medical care I receive	3.6 (1.3)
16. Ability to get medical care whenever needed	4.4 (1.02)

Table 3 displays the mean scores of the PSQ-18 questionnaire's six subscales and total satisfaction. As noted, the mean score for interpersonal manners was 9.3 (SD = 1.3). The communication subscale had a mean score of 9.2 (SD = 1.4), while the time spent with the doctor had a mean score of 9.0 (SD = 1.6). The mean score for technical quality was 17.8 (SD = 2.7), while the mean score for accessibility and convenience was 16.0 (SD = 2.9). The mean score for overall satisfaction was 69.4 (86.75%, SD = 8.9), whereas the mean score for general satisfaction was 8.4 (SD = 1.7).

**Table 3:** Six subscales of patients' satisfaction

Six subscales of patients' satisfaction	Mean Score (SD)
General Satisfaction (Items 3, 15)	8.4 (1.7)*
Technical Quality (Items 2,4,5,12)	17.8 (2.7)**
Interpersonal Manners (Items 8, 9)	9.3 (1.3)*
Communication (Items 1, 11)	9.2 (1.4)*
Time Spent with Doctor (Items 10,13)	9.0 (1.6)*
Accessibility and Convenience (Items 6,7,14,16)	16.0 (2.9)**
Total Satisfaction ( Items 1 to 16)	69.4 (8.9)#

\* maximum score = 10, minimum= 2; \*\* maximum score = 20, minimum= 2; # maximum score=80, minimum= 16

An independent-sample t-test was performed for total satisfaction for the PSQ-18 mean scores for independent variables such as sex, nationality, employment status, associated chronic conditions, and complications related to Diabetes, as shown in **Table 4**. There were no significant differences in the scores for males (M = 69.9, SD = 8.4) and females (M = 69.3, SD = 9.3,  $t(367) = .63$ ,  $p = .53$ , 2-tailed). The magnitude of the difference in means was small (mean difference = .58, 95% CI: -1.2 to 2.4), with a small effect size (.0001). Similarly, no significant difference was found in the mean scores for Bahrainis (M = 69.4, SD = 9.1) and non-Bahrainis (M = 70.8, SD = 7.2);  $t(367) = -1.0$ ,  $p = .298$ , 2-tailed. A slight mean difference was observed (MD = -1.4, 95% CI: -3.98 to 1.23), with a small effect size of .002. There was no difference in the mean scores for employed (M = 70.0, SD = 7.5) and unemployed (M = 69.5, SD = 9.3);  $t(367) = .53$ , with a slight difference in the mean score (MD = .55, 95% CI: -1.5 to 2.6, with a small effect size = .001). Furthermore, no significant difference was observed for respondents with associated chronic conditions (M = 69.6, SD = 8.9) and with no chronic conditions

(M = 69.7, SD = 8.6;  $t(367) = -.12$ ,  $p = .91$ , 2-tailed, with a slight mean difference of -.13, 95% CI: -2.34 to 2.1, with a small effect size of .001). Finally, there was no significant difference in the mean scores for respondents with complications (M = 68.9, SD = 9.0) and with no complications (M = 70.4, SD = 8.7);  $t(367) = -1.6$ ,  $p = .12$ , 2-tailed), with a slight difference in the means (MD = -1.5, 95% CI: -3.3 to .36), with a small effect size of .007.

**Table 5** illustrates the findings of the one-way ANOVA comparing groups to explore the impact of age, marital status, education level, monthly income, duration of Diabetes, and treatment type on total satisfaction as measured by the PSQ-18 questionnaire. There was no significant difference in the mean score between the age groups, marital status, monthly income, and treatment type ( $p = .1$ ,  $p = .2$ ,  $p = .4$ , and  $p = .1$ ), respectively. However, there was a significant difference in the mean score for education at the  $p < 0.05$  level in PSQ-18 scores for the three education level groups;  $F(2, 366) = 5.6$ ,  $p = .004$ , with the actual difference in mean scores between the groups being small, with a small effect size (.03). Post-hoc comparison using the Tukey

**Table 4:** Independent t-test to compare the PSQ-18 mean scores for total satisfaction for sex, nationality, employment, Chronic conditions, and complications

Sex	N	Mean (SD)**	Mean Diff	95% CI of Diff of means	px	±Effect size
Male	187	69.9 (8.4)	0.58	-1.2 to 2.4	0.53	0.0001
female	182	69.3 (9.3)				
<b>Nationality</b>						
Bahraini	317	69.4 (9.1)	-1.4	-3.98 to 1.23	0.298	0.002
Non-Bahraini	52	70.8 (7.2)				
<b>Employment</b>						
Employed	101	70.0 (7.5)	0.55	-1.5 to 2.6	0.56	0.001
Unemployed	268	69.5 (9.3)				
<b>Chronic Cond.</b>						
Yes	290	69.6 (8.9)	-.13	-2.34 to 2.1	0.91	0.001
No	49	69.7 (8.6)				
<b>Complications</b>						
Yes	191	68.9 (9.0)	-1.5	-3.3 to .36	0.12	0.007
No	178	70.4 (8.7)				

±Effect size Eta squared: small = .01. medium = 0.06, Large = 0.14

×P = 2-tailed

\*\*Maximum score = 80, Minimum score = 16

HSD test showed that the mean score for Group 1, i.e., those with an education level below secondary (M =71.8, SD 8.2), was significantly different from Group 2, i.e., those with an educational degree of secondary school (M = 68.9, SD 8.9), and Group 3, i.e., those with an education level of university and above (M 68.1, SD 9.2). Group 2 (M = 68.9, SD = 8.9) did not differ significantly from Group 3 (M = 68.1, SD = 9.2). Furthermore, the duration of having Diabetes showed a significant difference at the  $p < 0.05$  level in the PSQ-18 mean score for total satisfaction for the three groups:  $F(2, 366) = 3.5$ ,

$p = .03$ . The actual difference is relatively small, despite reaching significance with a small effect size (.02). A post-comparison using the Tukey HSD test showed that the mean score for Group 2, i.e., those with Diabetes for 5–10 years (M = 71.5, SD = 6.3), was significantly different from Group 3, i.e., those with Diabetes since > 10 years (M = 68.8, SD = 9.3), but there was no difference between Group 1, i.e., those with Diabetes less than five years of duration, and Group 3 (M = 70.9, SD = 10.9) and (M = 68.8, SD = 9.3), respectively.

**Table 5.** One-way ANOVA between groups – the impact of age, marital status, education, income, duration of disease, and treatment type on the level of total satisfaction as measured by PSQ-18

	N	Mean (SD)**	95% CI for mean	P	±Effect size*
<b>Age in years</b>					
1. <40	24	65.2 (11.7)	60.2 to 70.1		
2. 40-50	55	68.7 (9.2)	66.2 to 71.1		
3. 51-60	117	70.2 (7.9)	68.7 to 71.6		
4. 61-70	143	70.2 (8.9)	68.7 to 71.6	0.1	0.02
5. >70	30	70.4 (9.3)	66.9 to 73.9		
Total	369	69.6 (8.6)	69.7 to 70.5		
<b>Marital status</b>					
1. Single	23	65.8 (11.1)	61.0 to 70.6		
2. Married	290	70.1 (8.7)	69.1 to 71.1		
3. Divorced	19	69.5 (6.7)	66.2 to 72.7	0.2	0.014
4. Widowed	37	68.9 (9.5)	65.7 to 72.0		
Total	369	69.6 (8.9)	68.7 to 70.5		
<b>Education level</b>					
1. < Secondary	119	71.8 (8.2)	70.3 to 73.3		
2. Secondary	152	68.9 (8.9)	67.5 to 70.4		
3. > University	98	68.1 (9.2)	66.3 to 70.0	0.004	0.03
Total	369	69.6 (8.9)	68.7 to 70.5		
<b>Monthly income in BHD</b>					
1. <200	115	69.4 (9.8)	67.6 to 71.3		
2. 200 - 599	106	70.4 (8.9)	68.7 to 72.1		
3. 600-799	131	69.6 (7.3)	68.4 to 70.9	0.4	0.01
4. >800	17	66.6 (12.4)	60.3 to 73.0		
Total	369	69.6 (8.9)	68.7 to 70.25		



<b>Duration of diabetes</b>					
1. <5 years	32	70.9 (10.9)	66.9 to 74.9		
2. 5-10 years	91	71.5 (6.3)	70.2 to 72.8		
3. >10 years	246	68.8 (9.3)	67.6 to 70.0	0.03	0.02
Total	369	69.6 (8.9)	68.7 to 70.5		
<b>Treatment type</b>					
1. Diet/Ex/OHGA	164	70.4 (8.2)	69.2 to 71.7		
2. Insulin	35	67.0 (11.6)	63.0 to 71.0		
3. Insulin + OHGA	170	69.4 (8.8)	68.1 to 70.8	0.1	0.01
Total	369	69.6 (8.9)	68.7 to 70.5		

\*±Effect size Eta squared: small =.01, medium= 0.06, Large=0.14

\*\*Maximum score = 80 , Minimum score= 16

## Discussion

Since patient satisfaction plays a vital role in the management of chronic conditions by encouraging better compliance with the treatment and improving the doctor-patient relationship<sup>15</sup>, the authors conducted this study to assess the overall satisfaction of diabetic patients as a means to assess the quality of care and to recognize the possible factors that may play a role in their satisfaction.

### Overall level of patients' satisfaction

Results of this study showed that when determining overall total satisfaction, most diabetic patients attending the CDCs were satisfied with the health care provided to them, with a mean score of 69.4 (86.75%). The findings of this study are comparable to those of a study conducted in the Saudi Arabian city of Abha, where nearly 87% of diabetic patients were satisfied with their care.<sup>9</sup> A similar study in Australia found that nearly 90% of patients were satisfied with their primary care.<sup>16</sup> According to a study conducted in Kuwait, patient satisfaction ranged from 75.2% to 78.4%.<sup>17</sup> Another study done in Malaysia showed that 78.6% of patients attending the family health clinic were satisfied.<sup>18</sup> A study in Egypt demonstrated that approximately 60% of diabetic patients were satisfied.<sup>13</sup> The variability in patient satisfaction in different studies reflects the differences in economics, culture, and patients' expectations.<sup>13</sup>

### Satisfaction with each item and the subscales of PSQ-18

This study further analyzed the level of satisfaction with individual items of the PSQ-18 questionnaire. The findings revealed that patients showed the highest level of satisfaction with the interpersonal manners of the doctor, i.e., the friendliness and courteous behavior of the doctor. At the same time, the waiting time to receive emergency treatment received the lowest mean score (3.5). These findings are similar to those of the study done in Malaysia, where doctors' friendly behavior received the highest level of satisfaction while waiting time received the lowest satisfaction score.<sup>18</sup> This finding could be explained by the fact that CDCs do not provide emergency care. As a result, patients in emergencies must attend regular clinics. Patients are either directed to secondary emergency care or, if the situation is not urgent, the nearest available appointment in CDCs is given, or a walk-in appointment is scheduled based on the availability of the attending doctor at CDCs.

This study also attempted to determine the patients' satisfaction with each subscale of PSQ-18. According to this study's findings, the mean satisfaction score for interpersonal manners was the highest among the six subscales, followed by communication. These findings are consistent with the results of the Malaysian study, which found

that patients were most satisfied with interpersonal manners, followed by contact. Our study showed that patients were least happy with the accessibility and convenience of their medical care. This finding could be explained by the fact that many patients attend the CDCs, and the availability of appointments and access to medical care is limited, as the annual statistics of the CDCs showed that the total number of visits to the CDCs in 2020 was 48,331.

### ***Association between patients' characteristics and overall satisfaction***

This study further attempted to identify any possible association between patients' sociodemographic and personal characteristics and total satisfaction. Our study found that, out of all variables, only education level and duration of treatment were significantly associated with the whole level of satisfaction.

It was noted that those patients with an educational level below secondary showed more satisfaction when compared to those with higher education, i.e., university level or postgraduate level. However, the magnitude of the difference between the groups was small. This is by the studies done in Abha City, Egypt, and Malaysia, which showed that higher levels of education were associated with higher levels of dissatisfaction.<sup>9,13,18</sup> This finding can be explained by the fact that educated patients have higher knowledge and are more likely to be aware of their rights, which makes them more demanding and have higher expectations from the healthcare system. In contrast, those with lower education appreciate receiving any health care.<sup>9,13</sup> However, Thiedke argued that the less educated tend to be less satisfied.<sup>19</sup>

As previously stated, this study found that the duration of having Diabetes had a statistically significant effect on patients' overall satisfaction. It was noted that those with a time of Diabetes between 5 to 10 years were more satisfied than those with a duration of Diabetes of less than 5 years or more than 10 years. However, the difference between the groups was minor. This finding could be explained by the fact that those diagnosed with Diabetes recently (within the last 5 years) are dissatisfied due to the emerging challenges of living with a chronic

disease. Similarly, those who have had Diabetes for more than ten years are dissatisfied, most likely due to dealing with multiple aspects of a chronic condition, thus leading to dissatisfaction with the health care they receive.

When gender differences were considered, this study found no significant differences in overall satisfaction. This finding is consistent with an Egyptian study, which found no significant difference between genders.<sup>13</sup> However, this contrasts with other studies done in the region. The Abha study found that male patients were more dissatisfied than females, whereas the Kuwait study found that female patients were more satisfied than males.<sup>17</sup> However, according to Theidke<sup>19</sup>, studies on the effect of gender on satisfaction are contradictory, with some studies showing that women are less satisfied and others showing the opposite.

This study found no statistically significant differences in diabetic patients' satisfaction levels based on their nationality or age groups. However, this finding contrasts with several other studies, in which older age was linked to higher satisfaction levels.<sup>9,19</sup> This study also revealed that overall satisfaction did not differ significantly according to the patient's marital status. These findings are similar to those of the study done in Abha.<sup>9</sup>

There was also no statistical difference between different groups and their overall level of satisfaction in terms of patients' employment and income. This contradicts what was found in other studies conducted in the region, such as the Abha study, which found that those employed and with a higher income had higher levels of overall dissatisfaction.<sup>9</sup> However, Thiedke<sup>19</sup> argued that patients from lower socioeconomic backgrounds are less satisfied. Furthermore, Al-Dousari et al. reported in a study conducted in Kuwait that patient satisfaction increased linearly as family income increased.<sup>17</sup>

According to the findings of our study, there was no statistically significant difference in overall satisfaction across groups regarding the presence or absence of chronic conditions or complications. Furthermore, the type of treatment did not affect the overall satisfaction levels of the patients.

## Strengths

The scale used in this study, i.e., the PSQ-18 questionnaire, had a high internal consistency (Cronbach's alpha coefficient of 0.854).

## Limitations and Recommendations

1. Further studies with a larger sample size may be required to support and add to the findings of this study because the present study was conducted on a small population.
2. Since the study was conducted during the COVID-19 crisis, most patient interviews and data collection occurred over the phone, so the favorable results may have been biased. Consequently, additional research using self-administered questionnaires may be necessary to confirm the results of this study.
3. The current study did not measure clinical measures of glycemic control such as HbA1c levels; additional research should be conducted to determine whether patient satisfaction leads to better clinical outcomes, i.e., reaching target HbA1c levels and reducing developing adverse effects, i.e., diabetes-related complications.

## Conclusion

According to this study's findings, most diabetic patients who attend CDCs are generally satisfied with the quality of health care services provided, i.e., they are happy with the quality of care they receive in CDCs. The mean score for the overall level of patient satisfaction is 69.4 (86.75%). Among the subscales, the patients were most satisfied with the interpersonal domain, followed by communication.

The study also concluded that the level of satisfaction did not differ statistically based on the patient's characteristics such as gender, age, nationality, marital status, employment status, monthly income, or disease-related factors such as the presence of other chronic conditions, the presence of diabetes-related complications, or the type of treatment received. However, it was noted that those patients with a higher education level and those with a duration of treatment between 5 to 10 years were slightly more satisfied. In terms of looking at specific aspects of medical care the

patients received, they showed the highest level of satisfaction with the courteous and friendly behavior of the doctor.

## Conflicts of Interest

The authors declare no conflicts of interest.

## Author Contribution

All authors share equal effort towards (1) substantial contributions to conception and design, data acquisition, analysis, and interpretation; (2) drafting the article and critically revising it for important intellectual content; and (3) final approval of the manuscript version to be published.

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## References

1. Williams R, et al. Worldwide toll of Diabetes. In: Karuranga S, et al, editor. IDF Diabetes Atlas 9th edition 2019. 9th ed. Belgium, Brussels: International Diabetes Federation; 2019.
2. Diabetes Quick Facts (2023) Centers for Disease Control and Prevention. Centers for Disease Control and Prevention. Available at: <https://www.cdc.gov/diabetes/basics/quick-facts.html> (Accessed: June 25, 2021).
3. Diabetes (no date) World Health Organization. World Health Organization. Available at: <https://www.who.int/news-room/fact-sheets/detail/diabetes> (Accessed: June 25, 2021).
4. Bener A, Al-Hamaq AO, Yousafzai MT, Abdul-Ghani M. Relationship between patient satisfaction with diabetes care and treatment. Niger J Clin Pract. 2014; 17:218–25.
5. Health Information Directorate - Web Services Group (no date) Diabetes, Diabetes - ministry of health. Available at: <https://www.moh.gov.bh/Services/Diabetes?lang=en> (Accessed: June 25, 2021).
6. IDF MENA (no date) International Diabetes Federation - Home. Available at: <https://idf.org/our-network/regions-members/middle-east-and-north-africa/members/33-bahrain.html> (Accessed: June 25, 2021).

7. Diabetes Bahrain 2016 country profile (no date) World Health Organization. World Health Organization. Available at: <https://www.who.int/publications/m/item/diabetes-bhr-country-profile-bahrain-2016> (Accessed: June 25, 2021).
8. Salman, R.A., AlSayyad, A.S. & Ludwig, C. Type 2 diabetes and healthcare resource utilization in the Kingdom of Bahrain. *BMC Health Serv Res* 19, 939 (2019).
9. Ghazwani EY, Al Jaber OA. Study of satisfaction of diabetic patients attending the diabetic clinic at primary health centers in Abha city, Saudi Arabia. *Int J Med Sci Public Health*. 2014; 3:436–443.
10. Ware J.E., Snyder M.K., Wright W., Davies A.R. Defining and measuring patient satisfaction with medical care. *Eval Program Plan* 1983; 6:247–263. doi: 10.1016/0149-7189(83)90005-8.
11. Al Hayek AA, Robert AA, Al Dawish MA. Clinical characteristics and satisfaction of liraglutide treatment among patients with type 2 diabetes: A prospective study. *Clin Med Insights Endocrinol Diabetes*. 2019; 12:1179551419834935. doi: 10.1177/1179551419834935.
12. Biderman A., Noff E., Harris S.B., Friedman N., Levy A. Treatment satisfaction of diabetic patients: What are the contributing factors? *Fam. Pract.* 2009; 26:102–108. doi: 10.1093/fampra/cmp007.
13. Ahmed, S.F. et al. (2016) Patients' satisfaction with type 2 diabetes care and its relation to their glycaemic control-primary health care setting, Port Said, Egypt, Suez Canal University Medical Journal. Suez Canal University, Faculty of Medicine. Available at: [https://journals.ekb.eg/article\\_44170\\_0.html](https://journals.ekb.eg/article_44170_0.html) (Accessed: April 5, 2023).
14. Doubova SV, Pérez-Cuevas R, Zepeda-Arias M, Flores-Hernández S. Satisfaction of patients suffering from type 2 diabetes and/or hypertension with care offered in family medicine clinics in Mexico. *Salud Pública a Méx* 2009; 51(3): 231-9
15. Ganasegeran K, Perianayagam W, Manaf RA, Jadoo SAA, Al-Dubai SAR. Patient satisfaction in Malaysia's busiest outpatient medical care [Internet]. *TheScientificWorldJournal*. U.S. National Library of Medicine; 2015 [cited 2023Apr5]. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4306375/>
16. Kamien M. Ward A, Mansfield F, Fatovich B, Mather C, Anstey K. Type 2 diabetes. Patient practices and satisfaction with GP care. *Aust Fam Physician*. 1995; 24(6):1043-9. 1051.
17. Al-Dousari H, Al-Mutawa A, Al-Mithen N. Patient Satisfaction According to Type of Primary Healthcare Practitioner in the Capital Health Region, Kuwait. *Kuwait Med J* 2008; 40 (1): 31-38.
18. Che' Man, M. et al. (2020) A cross-sectional study on patient satisfaction at International Islamic University Malaysia (IIUM) Family Health Clinic, Kuantan Pahang Malaysia, IIUM Repository (IRep). Available at: <http://irep.iium.edu.my/88205/> (Accessed: 04 June 2023).
19. Thiedke, C.C. (2007) What do we really know about patient satisfaction? *Family Practice Management*. Available at: <https://www.aafp.org/pubs/fpm/issues/2007/0100/p33.html> (Accessed: April 5, 2023).