Patient Preference and Adherence

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SHORT REPORT

Patients' satisfaction with diabetes medications in one hospital, Saudi Arabia

This article was published in the following Dove Press journal:
Patient Preference and Adherence
11 October 2012
Number of times this article has been viewed

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Objectives: The main aim of this study was to evaluate diabetic patients' satisfaction with their treatment. A secondary objective was to assess the relationship between treatment satisfaction scores and patient-related factors, if any.

Methods: This cross-sectional study collected data from patients at a primary care clinic of a government hospital located in Riyadh, the capital of Saudi Arabia. Patients were recruited if they were ≥18 years of age, had type 2 diabetes, currently taking oral hypoglycemic agents or insulin or both, and able to read and write in Arabic. Satisfaction was measured using the Diabetes Medication Satisfaction (DiabMedSat) questionnaire.

Results: One hundred and twenty-three patients completed the questionnaire. The participant mean age was 46 years (standard deviation [SD] = 11.2 years; range 18–75 years), and mean duration of the disease was 7.8 years (SD = 6.9 years). Over half of respondents (63%) reported that they were satisfied and only 16% were unsatisfied. Approximately 54% of respondents are interested in changing their diabetes medications. The overall satisfaction score was 59.56 (SD = 15.9). Mean scores for the burden, efficacy, and symptoms domains were 59.81 (SD = 15.7), 58.1 (SD = 22.6), and 60.77 (SD = 22.1), respectively. Treatment factors (eg, type of medication; $P < 0.02$) and adherence factors (eg, difficulty taking medications; $P < 0.032$) were independently associated with lower treatment satisfaction.

Conclusion: Diabetes patients with difficulties in adherence to recommendations, as well as patients treated with insulin, require more attention in order to improve their treatment satisfaction.

Keywords: diabetes mellitus, health status, patient satisfaction, primary health care, quality of health care

Introduction

Diabetes is a common disease in Saudi Arabia with a prevalence rate of 30%.[1] Diabetes is a chronic disease that requires continuing management, often including medication, to prevent acute complications and to reduce the risk of long-term complications.[2] Given the ever increasing range of treatment options for diabetes, understanding treatment satisfaction for diabetes is especially important.[3] Treatment satisfaction is one example of patient-reported outcomes.[4] Patient-reported outcome has been defined as any report coming from patients about a health condition and its treatment.[5] Measurement of treatment satisfaction is important, as greater satisfaction has been found to be associated with higher rates of adherence and compliance with treatment regimens.[6,7] In diabetes, it has been shown that increased treatment satisfaction is

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Dovepress
http://dx.doi.org/10.2147/PPA.S32859

associated with better glycemic control,[8,9] suggesting that higher satisfaction is related to better clinical outcomes.

Former studies have measured factors that influence diabetes treatment satisfaction. Brod et al found that lower treatment satisfaction was associated with comorbidity, hypoglycemia, and weight gain.[8] Nicolucci et al found that lower treatment satisfaction was associated with being female, using insulin, and having diabetes complications.[9] They also found that treatment satisfaction and health-related quality of life are associated with each other. Other researchers noted that patients with hypoglycemia reported significant decreases in treatment satisfaction and lower quality of life, and higher levels of health care resource utilization.[10,11] Biderman et al found that treatment satisfaction is significantly different between drug treatment options, as insulin-treated patients are least satisfied with treatment.[12]

The main aim of this study was to evaluate diabetic patients' satisfaction with their treatment. A secondary objective was to assess the relationship between treatment satisfaction scores and patient-related factors, if any.

Methods

This was a cross-sectional study conducted at a primary care clinic of a government hospital located in Riyadh, the capital of Saudi Arabia. The hospital has over 500 beds and provides services to Ministry of Interior personnel and their families.

Study population

Patients with electronic prescriptions of antidiabetic medication were identified upon their visit to the outpatient pharmacy to dispense their prescription. Patients were recruited if they were ≥18 years of age, had type 2 diabetes, currently taking oral hypoglycemic agents, insulin, or both, and able to read and write in Arabic.

Before starting data collection, the study protocol had passed through the Research and Ethical Committee at the study site and the approval to proceed with this study was obtained. Patients were provided with information on the goals and methods of the study and verbal consent was obtained from each patient who volunteered to participate.

A pilot study was conducted over 1 week from (May 29–June 2, 2010) and eight patients were recruited (one patient declined, and one did not complete the questionnaire). The study was conducted over 2 months (August and September 2010). The sample size was not calculated, but all eligible patients who visited the outpatient pharmacy during the study period were invited to participate in the study.

Treatment satisfaction

A self-administered Diabetes Medication Satisfaction (DiabMedSat)[13] questionnaire was used to measure satisfaction. The DiabMedSat is designed to assess treatment satisfaction in persons with both type 1 and type 2 diabetes mellitus and across multiple treatment modalities (oral, syringe, or pen). The DiabMedSat has 22 items, assessing three treatment satisfaction domains: efficacy, treatment burden (frequency of monitoring blood glucose and medication dosing), and symptoms (side effects), each of which is computed as a score. In addition, a total satisfaction score is computed. Each item in the scale uses a five- to seven-point Likert scale; overall and domain scores range from zero to 100, with higher scores indicating greater levels of treatment satisfaction.

DiabMedSat has been translated into many languages, including Arabic for another country. This Arabic version was written in the Modern Standard Arabic or the literary Arabic. The literary Arabic language is more widely used in the Arab World unlike the dialectal Arabic. The dialectal Arabic refers to the many national or regional varieties which constitute the everyday spoken Arabic language. However, these varieties are typically not used for written or formal communications. Instead, the literary Arabic is used in printed publications, spoken by the Arabic media, and understood by most educated Arabic speakers. For this reason, we used the available Arabic version without performing forward and backward translations. We did, however, subject it to a patient-testing stage (n = 7) and it did not reveal any conceptual problems. The questionnaire was well accepted. A user agreement was signed with MAPI Research Institute (Lyon, France) prior to using the Arabic questionnaire.

Adherence

Seven questions related to adherence included difficulty in changing dietary habits, in changing physical habits, in taking medication, in attending follow-up visits, owning a blood glucose meter, using the meter, and frequency of self-monitoring of blood glucose. These questions were adapted from Biderman et al.[12]

Sociodemographic parameters and clinical data

Data regarding age, sex, marital status, education, and presence of comorbidities were collected from the patients. Other information related to clinical parameters, such as hemoglobin A_{1c} (HbA_{1c}) was collected from patients' electronic medical records.

Questionnaire administration

Patients completed the questionnaire while waiting for their medications to be prepared at the primary care clinic outpatient pharmacy and incentives were given for each patient that returned the questionnaire. A form was used by the researcher to document the number of patients approached and medical record numbers of those who agreed to participate to ensure that patients who were given the survey returned it and were not invited to the study again.

Data management and analysis

The DiabMedSat scoring algorithms allow subjects to miss two items in burden, one item in efficacy, and one item in symptoms and still have subscale scores. Questionnaires were excluded if they exceeded the permitted number of missing items in the questionnaire. One of the authors (AS) entered the data from all surveys. A random check was conducted of all data entered. Results of the survey were evaluated using SPSS version 15.0 (IBM Corporation, Armonk, NY).

Categorical data is presented as percentages of frequency and continuous data reported as means with standard deviations (SD). The relationship between satisfaction (mean scores of DiabMedSat) and the following variables were investigated: gender, marital status, education, employment status, type of diabetes treatment (oral agents, insulin, or both), diabetes duration, complications, comorbid conditions, and self-monitoring of blood glucose. Two-tailed *t*-tests were used to compare satisfaction between two groups, while one-way analysis of variance was used to compare means across three or more groups. The correlations between continuous variables such as age, HbA_{1c} levels, and treatment satisfaction were tested by Pearson analysis. Statistical significance was determined at $P < 0.05$.

Results

Sample description

One hundred and eighty-seven patients agreed to participate in the study. Twelve patients were excluded (seven illiterate, two newly diagnosed with diabetes and had no experience with medications, three on diet only). One hundred and sixty-eight patients returned the questionnaire. Forty-five patients were excluded because they exceeded the permitted number of missing items in the questionnaire. The final sample was 123 patients. The respondents' mean age was 46 years (SD = 11.2 years; range 18–75 years), and mean duration of the disease was 7.8 years (SD = 6.9 years). The respondents' mean HbA_{1c} level was 8.57% (SD = 2.05%). Twenty-nine patients (23.6%) had HbA_{1c} level of ≤7%. Ninety-three (76%)

Table 1 Demographic and clinical characteristics (N = 123)

Patient characteristics	n	%
Sex		
Male	51	41.5
Female	72	58.5
Marital status[a]		
Single	5	4.1
Married	100	81.3
Divorced/widowed	16	13.0
Education[a]		
Read and write	15	12.2
Primary school	23	18.7
Intermediate school	18	14.6
High school	31	25.2
College	22	17.9
Work status[a]		
Working	47	38.2
Not working	74	60.2
Salary (Saudi Riyals)[a]		
<4500	36	29.3
4500–5999	11	8.9
6000–9000	17	13.8
>9000	34	27.6
HbA_{1c}[a]		
≤7%	29	23.6
7.1%–8%	29	23.6
8.1%–9%	16	13.0
>9%	42	34.1
Comorbidities[b]		
Hypertension	52	42.3
Heart disease	2	1.6
Dyslipidemia	78	63.4
Other diseases	5	4.1
No comorbidities	30	24.4
Complications[b]		
Neuropathy	14	11.4
Nephropathy	2	1.6
Ocular	47	38.2
Diabetic foot	8	6.5
No complications	61	49.6
Type of treatment		
OAD	82	66.7
Insulin	9	7.3
OAD and insulin	32	26
Insulin delivery device		
Injection	32	78
Pen	9	22
Number of OADs/patient		
One oral	41	35.9
Two orals	60	52.6
Three orals and more	13	11.4
Number of insulin/patient[a]		
One type	33	80.5
Two types	7	17.0
Injection frequency		
Once daily	10	24.4
Twice daily	28	68.3
Three times daily	3	7.3

(*Continued*)

Table 1 (*Continued*)

Patient characteristics	n	%
Able to adjust insulin dose[a]		
Yes	24	58.5
No	15	36.5
Type of medication		
OAD		
Acarbose	13	10.5
Metformin	107	86.9
Sulfonylurea	64	52
Pioglitazone	13	10.5
Insulin		
Aspart	1	0.8
Regular	6	4.9
NPH	8	6.5
Mixtard 70/30	25	20.3
Glargine	7	5.7

Notes: [a]The number is less than expected because of missing data; [b]the number is more than expected because some respondents may have had more than one answer. **Abbreviations:** HbA_{1c}, hemoglobin A_{1c}; NPH, neutral protamine Hagedorn; OAD, oral antidiabetic drug; SD, standard deviation.

respondents reported having comorbidities and 53 (43%) reported having complications. The majority were on oral hypoglycemic agents alone (66.7%). The sociodemographic and clinical characteristics of respondents are shown in Table 1.

Treatment satisfaction

Over half of respondents (63%) reported they were satisfied and only 16% were unsatisfied (Table 2). Interestingly, however, that 54% of them were interested in changing their diabetes medications (Table 2). The overall satisfaction score was 59.56 (SD = 15.9). Mean scores for the burden, efficacy, and symptoms domains were 59.81 (SD = 15.7), 58.1 (SD = 22.6), and 60.77 (SD = 22.1), respectively.

Relationship between satisfaction, clinical parameters, and sociodemographics

There was no relationship between satisfaction score and HbA_{1c} ($r = 0.03$, $P = 0.72$), age ($r = 0.114$, $P = 0.215$), or years with diabetes ($r = -0.028$, $P = 0.76$). No association was found between treatment satisfaction and sex, complication, comorbidity, owning a glucose meter, or using it (Tables 3 and 4).

There was a statistically significant relationship between total satisfaction score and type of medication, where insulin users had lower satisfaction scores than those who were receiving oral medications (Table 3). Satisfied patients were more adherent in taking their medications, changing their dietary habits, performing physical activities, and attending their follow-up visits (Table 4).

Discussion

Treatment satisfaction

Results from this survey indicate that diabetes patients were moderately satisfied with their current therapy and were interested in trying new therapeutic options, leaving substantial room for improvement.

The results of the current study also suggest that insulin-treated patients are the least satisfied with treatment. This is in concordance with the findings of others.[9,12] This could be related to the fact that injecting insulin is less comfortable than taking a pill. Another possible explanation is that insulin-treated patients have a longer disease duration with more complications. Also, lower satisfaction scores may reflect patients' perception that insulin treatment means that their health status has deteriorated.[12]

Several studies have reported that the presence of complications affects satisfaction in diabetes patients.[9,12] In the current study, the satisfaction scores were higher in patients with no complications, but this was not statistically significant ($P = 0.052$). This is likely due to the small sample size.

In agreement with previous research,[6,12] this study found that satisfied patients are more adherent to recommendations regarding dietary habits, physical activity, medications use, and follow-up visits.

Table 2 Respondents' overall treatment satisfaction and interest to change their diabetes medication

Overall, thinking about each aspect of your diabetes medications mentioned above, how DISSATISFIED or SATISFIED have you been with your current diabetes medications?						
Extremely dissatisfied	**Very dissatisfied**	**Slightly dissatisfied**	**Neither**	**Slightly satisfied**	**Very satisfied**	**Extremely satisfied**
2 (2)	4 (3)	14 (11)	26 (21)	20 (16)	33 (27)	24 (20)
Overall, based on your current experience with your diabetes medications, how INTERESTED would you be to change the type of medications you take or the way you take it, if it was possible?						
Not at all interested	**Slightly interested**	**Somewhat interested**	**Very interested**	**Extremely interested**		
13 (11)	18 (15)	25 (20)	37 (30)	30 (24)		

Note: Data represents n (%).

Table 3 Relationship between treatment satisfaction score with sex, diabetes treatment modalities, complications

	n	Satisfaction mean score (SD)	*P* value
Sex			
Male	51	62.1 (15.4)	0.133[a]
Female	72	57.7 (16.2)	
Type of treatment (general)			
Oral	82	62.4 (15.7)	0.02[b]
Insulin	9	52.9 (15.0)	
Both	32	54.1 (15.5)	
Complications			
Yes	53	56.5 (16.6)	0.052[a]
No	61	62.5 (15.5)	
Comorbidities			
Yes	93	59.2 (17.0)	0.73[a]
No	30	60.4 (14.5)	

Notes: [a]Independent *t*-test; [b]analysis of variance.
Abbreviation: SD, standard deviation.

Implications for practice

Patient-reported measures can help clinicians target interventions that will improve patient outcomes of care.[4] Based on the results of the current study, it seems important to provide support for nonsatisfied patients to improve their adherence, and thus have a positive influence on their clinical outcomes. Addressing misconceptions about insulin therapy during patient counseling may improve treatment satisfaction. Recognizing and addressing the issue of complications in diabetes patients through individually structured patient education programs could decrease the intolerance of these issues, and thereby may improve patient outcomes through higher medication adherence and greater treatment satisfaction levels. This necessitates a multidisciplinary team care approach where physicians, nurses, pharmacists, dieticians, and physiotherapists all collaborate in providing care for diabetic patients.

Table 4 Relationship between treatment satisfaction scores and adherence

	n	Satisfaction mean score (SD)	*P* value[a]
Find difficulty changing dietary habits			
Yes	76	54.6 (14.7)	0.000
No	44	67.9 (15.0)	
Find difficulty changing physical activity			
Yes	65	54.8 (15.2)	0.000
No	53	65.1 (15.6)	
Find difficulty taking medications			
Yes	31	54.3 (13.9)	0.032
No	87	61.5 (16.5)	
Find difficulty attending follow-up visits			
Yes	44	52.2 (14.9)	0.000
No	72	64.0 (15.5)	
Own a blood glucose meter			
Yes	86	60.3 (15.7)	0.650
No	35	58.8 (16.3)	
Use the blood glucose meter			
Yes	79	60.0 (16.4)	0.841
No	38	60.6 (15.0)	

Note: [a]Independent *t*-test.
Abbreviation: SD, standard deviation.

Limitations and future directions

Research on patient-related outcomes measures is in its infancy in Saudi Arabia, and the present report is the first on patient satisfaction with their medications in Saudi diabetic patients. However, the current results should be considered within the context of several limitations. The sample size was small with many participants being relatively young with no complications. Further scientific studies including larger data sets or even national data from Saudi may shed more light on this topic. The study design was cross-sectional, thus it cannot be concluded whether treatment satisfaction was influenced by the different independent variables or vice versa. Future research using a prospective design with a larger sample size should be conducted to obtain a more comprehensive analysis of treatment satisfaction among a diabetes population. Other parameters such as depression, anxiety, and quality of life, which might affect patient satisfaction, were not addressed in this study. This also requires further investigation. The study was conducted in one primary care clinic in Riyadh; therefore the findings may not be generalized to other health care centers, settings, or geographic regions. The results are also limited by reliance upon the participants' self-reports and not upon objective clinical data, with the possibility of recall bias. Also, incentives given to the patients and how it influenced their response is unclear.

Conclusion

Diabetes patients with difficulties in adherence to recommendations, as well as patients treated with insulin, require more attention in order to improve their treatment satisfaction.

Acknowledgments

The authors thank the Research Center at the Female Center for Scientific and Medical Colleges, King Saud University for their financial support towards the publication of this paper.

Disclosure

The authors report no conflicts of interest in this work.

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