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Research Article

ATTITUDES TOWARDS AND ADHERENCE TO TREATMENT: A STUDY AMONG DIABETIC SAUDI MALES, KING ABDUL AZIZ SPECIALIZED HOSPITAL, TAIF, SAUDI ARABIA

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ABSTRACT
This study was conducted to identify attitudes of diabetic patients towards compliance to treatment and to measure their compliance to treatment. A cross-sectional study was conducted in King Abdul Aziz Specialized Hospital; Taif; KSA during June – October 2013. Convenient method of sampling was adopted. All adult (> 18 years) diabetic males were recruited. Data was collected through face-to-face interview method using structure questionnaire. Data was processed using the software Statistical Package for Social Science (SPPS). A total of 378 patients was recruited, of them 219(57.9 %) aged 40-65 years. Patients who were living in the town were 307(81.2 %) and more than one third had either college or university education. Overall 185(48.9 %) of the patients had positive attitudes towards compliance to treatment, while 193(51.1 %) had negative ones. Significant associations were documented between patients' attitude towards compliance and both patient's marital status and employment status (*P = 0.015), (*P = 0.020) respectively. The prevalence of non adherence was found to be 80.7 % (n = 305). Out of the patients who had positive attitudes towards compliance 145(78.54 %) were non-adherent, and 40(21.6 %) were adherent. In contrast, of the patients who had negative attitudes towards compliance 160(82.9 %) were non-adherent and 33(17.1 %) were adherent, (P = 0.226). In conclusion in this setting non-adherence to treatment was prevalent. Continuous patient educational interventions tailored to individual patient are needed to improve both patients' attitudes and adherence to treatment.
Keywords: Attitudes, Adherence, Treatment, Diabetes, Saudi

INTRODUCTION

Diabetes is an increasingly important condition globally. Between 2010 and 2030, there will be a 69 % increase in numbers of adults with diabetes in developing countries and a 20 % increase in developed ones[1]. The prevalence of diabetes is high among the Saudi population and represents a major clinical and public health problem[2]. Diabetes is a complex disorder that requires constant adherence to certain lifestyle measures and medication to achieve good glycaemic control[3]. Medication compliance may be defined as "the extent to which a patient acts in accordance with the prescribed interval and dose of a dosing regimen"[4]. Non-adherence to treatment is a formidable problem, which leads to bad consequences at both patients and healthcare system levels[5]. Medication noncompliance and clinic nonattendance were found to be independently associated with increased all-cause of mortality among diabetic patients[6]. Generally previous studies have found adherence to diabetes treatment to be sub-optimal[7,8]. Aspects that influence adherence to medication among diabetic patients include; information about medications, their experience with medication and associated complications with use, social support for medication behavior and routines in medication behavior[9]. Among Saudi diabetic patients multiple factors were found to be significantly associated with non-compliance; like female gender, level of education, urban population, irregularity of the follow-up, non-adherence to exercise regimen, and type of treatment[10]. Farmer *et al*.[11] examined the influence of patient beliefs on the medication-taking behavior among diabetic patients and found that concerns about beliefs on side effect of medication and changes to daily routine were the principal factors which led to poor compliance. Masaki *et al*[12] suggested an association between the attitude level of diabetic patients and the degree of their self-care. This study was conducted to identify attitudes of diabetic patients towards compliance to treatment and to measure their compliance to treatment, together with identifying patients' background characteristics associated with patients' attitudes towards compliance and compliance to drug treatment.

MATERIALS AND METHODS

A cross- sectional study was conducted in King Abdul Aziz Specialized Hospital; Taif; KSA during June – October 2013. Convenient method of sampling was adopted, whereby all adult (> 18 years) diabetic males on medical treatment were recruited. Verbal informed consent was obtained. Newly diagnosed patients and those who refused to participate were excluded. Data was collected through face-to-face interview method by trained final year pharmacy students using structure questionnaire. The questionnaire was designed to collect data on patients' background characteristics (age, residence, marital status, employment status, educational level, monthly income, presence of other disease, time since diagnosed with diabetes and type of current treatment). The second part of the questionnaire was designed to collect data on patients' attitudes towards compliance to treatment through 11 questions. Responses to these questions were recorded using 5- point likert scale (Strongly agree, Agree, Neutral, Disagree, and strongly disagree). At the end the patients were classified as having positive attitudes towards compliance if their scores were equal to or above the median of the total patients' scores and negative attitudes when the score was below the determined cut-off point. A third part of the questionnaire was designed to assess patients' adherence to treatment. Medication non-adherence was measured using the self-reported 4-item Morisky scale[13] which assesses

patients' forgetfulness about taking medications, carelessness about taking medications, stopping medication when feeling better and stopping medication when feeling worse. Questions in this part were recorded as 'yes' and 'no' and scored one point for 'yes' and zero point for a 'no' response. Scores were summed to give total score, ranging from 0 to 4. Non-adherence was defined as a score greater than zero. The questionnaire was tested with a group of 20 patients to ensure applicability. Minor medications were suggested and the final suggestions were adopted in the final questionnaire. Data was processed using the software Statistical Package for Social Science (SPPS) (Version 21). Descriptive statistics was used to describe all variables. Association between patients' attitudes towards adherence and adherence to treatment and patients' background characteristics were tested by Mann-Whiteny U test and Kruskal –Walis tests when appropriate. *P* values of < 0.05 were considered statistically significant. Ethical approval for the conduction of the study was obtained from Pharmacy Practice Research Unit (PPRU); College of Pharmacy; Taif University; Taif; Saudi Arabia.

RESULTS

Patients' background characteristics

Overall 378 patients were eligible; of them 219(57.9 %) aged 40-65 year and 61(16.1 %) were > 65 year. Patients who were living in the town were 307(81.2 %) and more than one third had either college or university education. The majority of respondents 283(74.9 %) were married and 145(38.4 %) were employees. Patients suffering from other chronic diseases were 205 (54.2 %). Nearly 38 % of the patients were diagnosed with diabetes for > 10 years and 179(47.4 %) were on oral hypoglycemic agents. Table 1 shows patients' background characteristics.

Patients' attitudes towards compliance to treatment

Table 2 showed diabetic patients attitudes towards compliance to treatment. Out of all patients 245 (72.7 %) disagreed with the statement "If diabetic patients feel well, they would stop taking their medications". Patients who agreed with the fact that diabetic patients will get sicker if they stop taking their medications were 301 (79.7 %). A considerable number 294 (77.8 %) of patients agreed that diabetes is a disease that cause complications. Of the patients 174 (46 %) neither agreed nor disagreed with the statement that "treatment with medicines in diabetic patients may cause blindness". Out of the recruited patients 267 (70.6 %) held the view that physicians and diabetic patients should agree with the diabetes prescriptions. A considerable number 324 (85.8 %) of patients were satisfied with their current anti-diabetic therapy.

Overall 185(48.9 %) of the patients had positive attitudes towards compliance to treatment, while 193(51.1 %) had negative ones. Significant association was documented between patients' attitude towards compliance and both patient's marital status and employment status (*P = 0.015), (*P = 0.020) respectively. Associations between attitude towards compliance and patients' background characteristics were presented in Table 3.

Compliance to treatment

Patients' responses to the 4- item Morisky Scale were presented in Table 4. The prevalence of non adherence was found to be 80.6 % (n = 305). No single patients' background variable was found to be associated with patient's compliance to treatment.

Compliance to treatment and attitudes towards compliance

On cross tabulation the patients who had positive attitudes towards compliance 145 (78.4 %) were found to be non-adherent, while 40(21.6 %) were adherent. In contrast; of the patients who had negative attitudes towards compliance 160 (82.9 %) were classified as non-adherent, and 33(17.1 %) were adherent, (P = 0.226) as shown in Table 5.

Table 1: Patients' background characteristics

Background characteristics	Frequency	Percent
Age (in years)		
< 40	98	25.9
40-65	219	57.9
> 65	61	16.1
Residence		
Town	307	81.2
Outside town	71	18.8
Marital status		
Single	53	14.0
Married	283	74.9
Widowed	27	7.1
Divorced	15	4.0
Educational level		
College/ university	139	36.8
Secondary	109	28.8
Intermediate	36	9.5
Primary	35	9.3
Illiterate	59	15.6
Employment status		
Employee	145	38.4
Private business	53	14.0
Unemployed	95	25.1
Retired	85	22.5
Monthly income (SR)		
<5000	128	33.9
5000-10000	159	42.1
>10000	91	24.1
Co-morbidities		
Yes	205	54.2
No	173	45.8
Duration with diabetes		
< 1 year	37	9.8
1-5 year	91	24.1
6-10 year	108	28.6
>10 year	142	37.6
Type of medication		
Oral hypoglycemic	179	47.4
Insulin	124	32.8
Both	75	19.8
Total	378	100

Table 2: Patients' attitudes towards compliance to treatment

Item	Strongly Agree/ Agree	Neutral	Disagree /Strongly Disagree
If diabetic patients feel well, they would stop taking their medications.	85(22.5 %)	18(4.8 %)	245(72.7 %)
Diabetic patients will get sicker if they stop taking their medications	301(79.7 %)	36(9.5 %)	41(10.8 %)
Diabetes is a disease that cause complications	294(77.8 %)	54(14.3 %)	30(8.0 %)
In diabetic patients their medications will cause blindness	45(11.9 %)	174 (46.0 %)	159(42.1 %)
Medications for the treatment of diabetes will prevent or delay diabetes complications	275(72.7 %)	64(16.9 %)	39(4.5 %)
For diabetic patients it is difficult to take their medications at work	131(34.7 %)	33(8.7 %)	214(56.6 %)
It is advisable that diabetic patient's family facilitates their intake of medications	320(84.7 %)	10(2.6 %)	48(12.7 %)
Diabetic patients have problems complying with their treatment if they live far from the clinics	259(68.5 %)	19(5.0 %)	100(26.4 %)
Diabetic patients have problems complying with their treatment due to lack of money	279(72.5 %)	25(6.6 %)	79 (20.9 %)
Physicians and diabetic patients should agree with the diabetes prescriptions	267(70.6 %)	28(7.4 %)	83(22.0 %)
Do you agree with your diabetes treatment?	324 (85.8 %)	18(4.8 %)	36(9.5 %)

Table 3: Association between attitudes towards compliance and patients' background characteristics

Background characteristic	Attitude towards compliance		Total	P value
	Positive	Negative		
Age (in years)				
< 40	47(48.0 %)	51(52.0 %)	98	0.930
40-65	109(49.8 %)	110(50.2 %)	219	
>65	29(47.5 %)	32(52.5 %)	61	
Residence				
Town	154(50.2 %)	153(49.8 %)	307	0.324
Outside town	31(43.7 %)	40(56.3 %)	71	
Marital status				
Single	22(41.5 %)	31(58.5 %)	53	0.015
Married	149(52.7 %)	134(47.3 %)	283	
Widowed	6(22.2 %)	21(77.8 %)	27	
Divorced	8(53.3 %)	7(46.7 %)	15	
Educational level				
College/ university	69(49.6 %)	70(50.4 %)	139	0.848
Secondary	55(50.5 %)	54(49.5 %)	109	
Intermediate	16(44.4 %)	20(55.6 %)	36	
Primary	19(54.3 %)	16(45.7 %)	35	
Illiterate	26(44.1 %)	33(55.9 %)	59	
Employment status				
Employee	80(55.2 %)	65(44.8 %)	145	0.020
Private business	23(43.4 %)	30(56.6 %)	53	
Unemployed	35(36.8 %)	60(63.2 %)	95	
Retired	47(55.3 %)	38(44.7 %)	85	
Monthly income (SR)				
<5000	61(47.7 %)	67(52.3 %)	128	0.832
5000-10000	77(48.4 %)	82(51.6 %)	159	
>10000	47(51.6 %)	44(48.4 %)	91	
Co-morbidities				
Yes	102(49.8 %)	103(50.2 %)	205	0.731
No	83(48.0 %)	90(52.0 %)	173	
Duration with diabetes				
< 1 year	15(40.5 %)	22(59.5 %)	37	0.198
1-5 year	38(41.8 %)	53(58.2 %)	91	
6-10 year	55(50.9 %)	53(49.1 %)	108	
>10 year	77(54.2 %)	65(45.8 %)	142	
Type of medication				
Oral hypoglycemic	88(49.2 %)	91(50.8 %)	179	0.912
Insulin	59(47.6 %)	65(52.4 %)	124	
Combined	38(50.7 %)	37(49.3 %)	75	
Total	185(48.9 %)	193(51.1 %)	378	

Table 4: Participants' responses to Morisky Scale items

item	Yes	No
Do you ever forget to take your medicine?	287(75.9 %)	91(24.1 %)
Are you careless at times about taking your medicine?	104(27.5 %)	274(72.5 %)
When you feel better do you sometimes stop taking your medicine?	77(20.4 %)	301(79.6 %)
Sometimes if you feel worse when you take the medicine, do you stop taking it?	38(10.1 %)	340(89.9 %)

Table 5: Association between patients' attitudes towards adherence and adherence to treatment plan

Attitude towards adherence	Adherence to treatment			P value
	Adherent	Non adherent	Total	
Positive	40(21.6 %)	145 (78.4 %)	185	
Negative	33(17.1 %)	160(82.9 %)	193	
Total	73(19.3 %)	305(80.7 %)	378	

DISCUSSION

Analysis of patients' demographic variables in present study showed that younger and middle-aged are mostly affected with diabetes than elderly ones. Compared with Western populations, Asians develop diabetes at younger ages[14]. In a survey conducted to determine the prevalence of diabetes among Saudi population, the mean (SD) age for onset of diabetes in males was found to be 57.5 (13.1) years[2]. Nearly 80 % of the recruited patients were living in the town. Most studies showed that diabetes increases with migration and urbanization. A survey conducted in Oman revealed a high prevalence of diabetes, obesity; hypertension and high cholesterol among Omani population, particularly among urban-dwellers and older individuals[15]. In contrary to these findings a recent study conducted among Greenland Inuit impaired fasting glycaemia was found to be low among urban population[16]. Variations in responses to questions designed to assess patients' attitudes towards compliance was documented in the current survey. A considerable number of interviewees had positive attitudes on certain aspects related to the disease and its treatments, however others had negatives ones. One of the identified misconceptions was that > 20 % of the interviewees agreed with the statement that "If diabetic patients feel well, they would stop taking their medications". As a consequence patients may stop treatment, therefore it's important to educate the patients that diabetes treatment is a lifelong therapy and discontinuation or interruption are associated with increased morbidity and mortality. More than 50 % of the patients thought or didn't know that their medications will cause blindness. Some people "public misconception" attributes blindness; as one of the disease complications; to drug treatment. For treatment success patients with chronic conditions become more actively involved in the management of their diseases and in making decisions about their care[17]. More than 20 % of the patients were not aware with their role in the management of drug therapy. To improve patients adherence to drug treatment patients must be given increased choice over when, where, and how they are treated. The respondents who had positive attitudes towards compliance were more than patients who held negative ones. Both patient's marital status and employment status were found to be significantly associated with their attitudes towards compliance to treatment. Researchers in another study found that family members' non-supportive behaviors were associated with being less complying to one's diabetes medication regimen[18]. However; in another survey no relationship was documented between family support and self-management behavior[19]. The results of the assessment of patients 'adherence to the prescribed treatment in the current study showed that non-adherence was prevalent among 80.6 % of the interviewed patients. In another Saudi study Binhemd[20] found low levels of knowledge, attitude and compliance with medications among Saudi female patients with type 2 diabetes mellitus. Findings from the present study did not identify any significant correlation between patients' background characteristics and patient adherence to treatment. In contrast in an Indian study; older age, male sex, illiteracy, a low monthly income and a longer duration of diabetes were found to be significantly associated with patients' compliance to treatment[21]. The variations in the results between the two studies may be attributed to the difference in methods used for assessment of patients' compliance or difference in the characteristics of the studied populations. The result of the current study showed that patients with positive attitudes towards compliance to treatment had better compliance to treatment compared to those with negative ones, although the association was not statistically significant. Anderson *et al*[22] found that high adherent diabetic patients to self-care measures had more positive attitudes than patients classified as low adherent.

Study limitations

This study was not without limitations, only a single method was used to assess patients' compliance to treatment. In addition, the study was conducted in one hospital in one city which limits the generalizability of the obtained results to all diabetic patients in the country.

CONCLUSIONS

In conclusion in this setting non-adherence to treatment was prevalent, no single background characteristic was found to be associated with patients' adherence to treatment. Although it was not statistically significant patients with positive attitudes towards compliance to treatment had better adherence than those with negative ones. Improvement of both patients' attitudes towards adherence to treatment and adherence may be achieved through continuous patient education tailored to individual patient needs.

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