

Treatment-related misconceptions among diabetic patients in Western Saudi Arabia

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ABSTRACT

Objective: To describe the types and pattern of treatment-related misconceptions among Primary Health Care Centers (PHCCs) registered diabetic patients in Makkah, Kingdom of Saudi Arabia.

Methods: A sample of 1039 PHCCs registered diabetic patients were interviewed using a structured questionnaire, concerning diabetic treatment-related misconceptions. This cross-sectional study was carried out in Makkah city, Kingdom of Saudi Arabia from May 2000 to September 2000. A scoring system was used to document the frequency of misconceptions. The relationship of misconceptions to socio-demographic and diabetes-related variables were assessed using chi-squared tests.

Results: Four hundred and five (39%) patients had a high treatment misconception score. The score was significantly higher among females than males ($P < 0.00001$), and also among patients older than 35 years ($P < 0.05$). There were no statistically significant differences

between Saudis and non-Saudis, or in association with different education levels. Also, the score was significantly higher among patients with a shorter disease duration ($P < 0.04$), and among patients who did not enjoy continuity of care ($P < 0.00001$). Patients' misconceptions were mostly related to reasons for stopping medications. Moreover, patients thought that cure from diabetes was expected following a short course of treatment (16.5%) and that one could eat what he or she liked as long as medications were taken (23%).

Conclusion: The results of this study showed the rate of treatment-related misconceptions to be high. It stresses the need for constant motivation and one on one level education at frequent intervals to encourage better knowledge regarding the disease and subsequent compliance to treatment.

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The pharmaceutical industry has developed a very potent and efficient oral hypoglycemic drugs as well as new types of insulin. Nevertheless, in the Kingdom of Saudi Arabia (KSA), many diabetic patients remain uncontrolled,¹ and continue to suffer its complications.²⁻⁵ Although, health education remains the cornerstone of diabetic management, it is not in most times delivered properly.⁶ Moreover, in the last 26-years, research has shown that diabetic patients' adherence to medical advice is of a multi-

factorial nature.⁷ Among many other reasons, patients' behaviors arising from culture, traditions and level of education; constitute obstacles to compliance with treatment.⁸ One of these behavioral attitudes towards treatment is the occurrence, among patients, of treatment-related misconceptions. Such misconceptions may reflect negatively on patients' compliance and satisfaction with treatment, diet, knowledge regarding the disease, and regularity of follow-up.⁹ In order to deliver effective health

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education for patients, it is important for physicians to recognize these misconceptions and attempt to correct them. In relation to health education directed to diabetics, studies from KSA are still scarce and limited.¹⁰ To the best knowledge of the investigators, no prior work was carried out to describe the types and pattern of treatment-related misconceptions among Primary Health Care Centers (PHCCs) registered diabetic patients in Makkah District, KSA, which is the aim of this study.

Methods. This cross-sectional study was carried out in Makkah City, KSA during the period May 2000 through to September 2000. The study population was the PHCCs registered diabetic patients whose total number was 11,614 and who were distributed among 67 PHCCs. A sample of 1039 patients was selected using a multistage random sampling technique. Data was collected using a structured questionnaire. The latter included demographic information, diabetes-related information, and a list of misconceptions related to treatment of diabetes mellitus (DM). In regards to this list of patients' responses in the form of 'yes' and 'no'; they were recorded in case they believed in misconceptions in the list or not. A score of 'one' and 'zero' were allotted for 'yes' or 'no'. The total of responses was computed to represent a misconception score. A cut-off point of 30% was used, determined by the median of scores, below and above which the score was considered as low or high.

Data was entered and analyzed in an IBM-compatible personal computer. The Statistical Package for Social Sciences (SPSS+) Version 10.0 was used for analysis. Frequency distributions of misconceptions were generated and chi-squared tests were used to test the significance differences between categorical data. A p-value of 0.05 or less was considered as indicative of statistical significance.

Results. The mean age of the sample was 54.6 ± 12.5 years (Mean ± 1 Standard Deviation). Males constituted 66.7% and females constituted 33.3%. The majority of the sample was a Saudi nationality constituting 93.6%. Most of the patients (74.8%) had a low level of education while those with average were 19.1% and with higher education were 6.1%. As regards to diabetes-related variables, most patients (71.9%) had diabetes for more than 5 years while the rest had the disease for less than that. Almost half of patients (48%) had a positive family history of diabetes. Regarding follow up visits 81% of patients visited the PHCCs for more than 6 times per year. Body mass index (BMI) was high in 73.2% of patients, while those with reported compliance with drugs was 79.2% and having a fasting glucose

Table 1 - Misconceptions of treatment among 1039 diabetic patients in the Holy City, Makkah, KSA.

Misconception	n (%)
Treatment should be stopped one day before testing for fasting blood glucose	121 (11.6)
Treatment should be stopped on the day of fasting blood glucose testing	811 (78.1)
Treatment could be stopped in the absence of symptoms	459 (44.2)
Cure is expected from a short course of drugs	171 (16.5)
Drugs should be stopped during intercurrent illness	80 (7.7)
Anti-diabetic drugs can cause habituation	238 (22.9)
Efficiency of anti-diabetic drugs depends on cost	183 (17.6)
Anti-diabetic tablets are the same as insulin	278 (26.8)
Insulin and anti-diabetic oral medications can cause serious complications if taken for a long period of time	210 (20.2)
Oral anti-diabetic drugs are more effective than insulin	473 (45.5)
One can eat what he/she likes as long as medications are taken	239 (23)
n - number, KSA - Kingdom of Saudi Arabia	

Table 2 - Effect of demographic variables on treatment-related misconceptions score.

Variable	High Score n (%)	Low Score n (%)	χ ²	P-value
Gender				
Males	241 (34.8)	452 (65.2)	15.459	<0.001
Females	164 (47.4)	182 (52.6)		
Age				
<35 years	13 (26)	37 (74)	33.741	<0.05
>35 years	392 (39.7)	596 (60.3)		
Nationality				
Saudis	375 (38.5)	598 (61.5)	1.242	<0.3
Non-Saudis	30 (45.5)	36 (54.5)		
Educational Level				
Low	304 (39.9)	457 (60.1)	0.486	<0.8
Average	73 (37.6)	121 (62.4)		
High	23 (37.1)	39 (62.9)		
n - number				

level that was within normal was 26.7%. Patients' misconceptions were mostly related to reasons for stopping medications. When being asked to undergo fasting blood glucose, one-tenth of the sample believed that they should stop medications one day before the test date, while more than three-quarters of them would stop medications on the same day of the test. Also, half of the sample exhibited the misconception that medications should be stopped in case of absence of symptoms of diabetes, while a small proportion (7.7%) thought that medications should be stopped in case of inter-current illness. Patients also expressed 5 misconceptions that reflected their opinions regarding anti-diabetic medications. They thought that oral medications might be more effective than insulin (45.5%), or similar to it (26.8%); that such medications might cause habituation (22.9%), or cause serious complications (20.2%), or that the efficacy of those medications would depend on their cost (17.6%). Moreover, patients thought that cure from diabetes was expected following a short course of treatment (16.5%) and, that one could eat what he or she liked as long as medications were taken (23%) **Table 1**. As regards to the treatment, misconception had a high score in 405 (39%) patients. The score was significantly higher among females than males ($P < 0.00001$), and also among patients older than 35 years ($P < 0.05$). There were no statistically significant differences between Saudis and non-Saudis, or in association with different education levels, **Table 2**. Also, the score was significantly higher among patients with a shorter disease duration ($P < 0.04$), and

among patients who did not enjoy a continuity of care ($P < 0.00001$) **Table 3**.

Discussion. Most of the sample included patients who were males, past middle age, overweight or obese, poorly controlled, inflicted with type 2 DM, and of low education. The rate and nature of treatment related misconceptions seen in this study were both relatively very frequent, and at the same time related to common day to day management of diabetes. It indicates poor basic knowledge regarding the fundamentals of treatment of diabetes by the patients, although 72% of them had the disease for more than 5-years. Consequences of such misconceptions may be serious, or at least may reflect negatively on patients' compliance and control.^{9,11} In KSA, reasons behind this situation may be related to deficiencies in the structures and the process of the health education programs directed to diabetic patients where only 33% of diabetic patients were found to have adequate health education.¹⁰ Barriers to effective health education may include factors such as low educational level,⁸ in accurate culture-bound beliefs,⁹ time required to teach patients¹² poor knowledge regarding the disease by the educator^{13,14} language^{8,12} or cultural barriers.¹² Studies have shown that the impact of effective health education and behavioral intervention reflect on the patients' compliance, metabolic control and knowledge regarding the disease management.^{15,16} The out-patient visit for DM should be different from other chronic and acute diseases when more time should be invested for patients' education.^{17,18} The

Table 3 - Effect of diabetes-related variables on treatment misconceptions score.

Misconceptions	High Score n (%)	Low Score n (%)	χ^2	P-Value
Family history				
Positive	223 (41.3)	317 (58.7)	2.537	<0.06
Negative	182 (36.5)	317 (63.5)		
Duration of diabetes mellitus				
< 5 years	133 (46.2)	155 (53.8)	7.452	<0.04
≥ 5 years	272 (36.9)	465 (63.1)		
Body mass index				
High	283 (40.1)	423 (59.9)	0.655	<0.2
Normal	96 (37.2)	162 (62.8)		
Continuity of care				
Follow-up in the same center	340 (36.9)	581 (63.1)	14.362	<0.001
Follow-up in different centers	63 (55.3)	51 (44.7)		
Follow-up regularity				
Regular	329 (37.9)	540 (62.1)	2.927	<0.053
Not regular	75 (44.9)	92 (55.1)		
Annual n of visits to center				
< 6 visits/year	70 (41.2)	100 (58.8)	0.512	<0.3
≥ 6 visits/year	277 (38.2)	448 (61.8)		
n - number				

main variables that were revealed to be significantly related to the treatment-related misconceptions score in this study were female gender, older age, less than 5-years duration of diabetes and patients having their follow-up in different centers. This finding points to the target population of diabetic patients to whom treatment-related health education should be directed in order to help them effectively control this serious disease.

In this study, misconceptions were significantly more among females compared to males. Similar results from KSA were described earlier.¹⁹ However, this finding is in variance with reports that have shown that the knowledge regarding diabetes not to be influenced by the patients' gender.²⁰ Our results support earlier findings that correct knowledge regarding the disease is associated with younger age groups.²⁰ The rate of misconceptions found in this study appears to be universal to all the diabetic community strata of the study sample, with insignificant differences among Saudi nationals and non-Saudis, and among the different educational levels. Studies have shown that higher educational level of the patient to be associated with better knowledge regarding diabetes,⁸ but others have found that non-adherence to treatment is more among this group of patients.²¹ Positive family history of diabetes was associated with higher rate of misconception. This may support earlier finding that the characteristics of the family determine the self-care practice.²² In the current study, the rate of misconceptions was significantly higher among patients suffering from the disease for less than 5-years. This finding is in accordance with earlier reports²¹ but varies with others.²⁰ The results of this study show that patients with higher misconception rate were found to be significantly associated with poor follow up and tend to visit more than one fixed PHCC. They were also found to be associated with irregular follow-up and with less than 6 visits/year, although the differences were not statistically significant. In KSA, one of the reports showed that the diabetic patients' compliance with appointments in PHCCs to be good in 60% and poor in 30%.¹⁰ In another study from KSA, compliance with appointment was significantly associated with good care score.²³ Similar results were reported from elsewhere^{9,11,15,16} It was surprising to find that the sample compliance with drugs was 79.2%, but only 26.7% had normal fasting glucose levels while 73.2% of patients had high BMI. This finding stresses the importance of compliance to diet in addition to drugs to attain a good diabetic control,²³ although assessment of compliance by patient recall might be misleading.

In conclusion, the results of this study showed the rate of treatment-related misconceptions to be high, and of important nature. It stresses the need for constant motivation and face-to face health education at frequent intervals to encourage better knowledge regarding the disease and to improve compliance with treatment.

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