KNOWLEDGE, ATTITUDE, PRACTICE AND BELIEFS AMONG ADULT DIABETICS ATTENDING DIABETIC CONSULTATION CLINIC IN SULAIMANIA

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ABSTRACT

Background

Diabetes mellitus is a common chronic disease with increasing prevalence worldwide. Providing patients with proper guidance and education would make significant improvement in their life-style.

Objectives

To determine the level and finding the correlation of diabetes-related knowledge, attitude, practice and belief.

Methods

Descriptive cross-sectional study was conducted on 332 diabetic patients at Diabetes clinic in Sulaimania city, from the 15th April to the 15th March 2010. During the interviews a questionnaire was filled including demographic, patients' medical background, diabetes-related knowledge, attitude, practice and belief specific questions. SPSS version 15 was used for data analysis.

Results

Higher knowledge score was associated with younger age, higher educational level, office workers, positive family history, longer duration of diabetes, having received information, insulin use and regular pattern of follow up ($p<0.05$). Significant association was found between attitude and younger age, regular pattern of follow up and no dyslipidemia. Better practice score was associated with illiterate educational level, longer duration of diabetes ($p<0.001$) and on both insulin and oral hypoglycemic drugs ($p<0.02$). There was a significant association ($p<0.001$) between better belief scores and higher level of education, office workers and longer duration of diabetes. Weak correlations but significant found between knowledge and attitude, practice, and belief($p<0.001$), while very weak and not significant correlation found between attitude, practice and belief ($p>0.05$).

Conclusions

The overall knowledge was good, while diabetes-related attitude, practice and belief were poor, A better educational program on diabetes should be conducted to improve patients' attitude, practice and belief towards diabetes using mass media and strengthen health education in all health centers

Key words: *Knowledge, Attitude, practice, Beliefs, Diabetes*

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INTRODUCTION

Diabetes mellitus (DM) is a chronic metabolic disorder of multiple etiologies characterized by chronic hyperglycemia with disturbance of carbohydrate, fat and protein metabolism resulting from insulin deficiency, resistance or both [1,2]. Diabetes is a global problem with devastating human, social and economic impact. Globally DM is the fifth leading cause of death by disease [3]. The prevalence of diabetes is rapidly rising all over the world at an alarming rate. Over the past 30 years the state of diabetes has been changing from being considered as a mild disorder of elderly to one of the major causes of morbidity and mortality affecting the youth and middle age people [4].

According to WHO, at least 171 million people worldwide in 2000 suffered from diabetes, i.e. 2.8% of the population and it is estimated that this number will be doubled by the year 2030 [5]. Although DM is more common in western counties, the greatest increase in prevalence is expected to occur in Asia and Africa due to urbanization and life style changes, and perhaps most importantly a western–style diet [5] .

In 2008 there were 24 million people with diabetes in the US and other 57 million people were estimated to have per-diabetes [6]. In 2000 it was estimated that 668 thousand people had diabetes in Iraq and it is expected to increase to 2 million cases by year 2030 [7] . According to the national survey conducted in 2006 in Iraq it was estimated that 10.4% of adult population had hyperglycemia [8].

The management of diabetes apart from medication is, however, dependent to a great extent on the affected person's own abilities to carry out self-care in their daily lives, and patient education is considered an essential component of achieving a good diabetic control [9]. There is evidence that people having DM often have inadequate knowledge about its nature, risk factors and associated complications. This lack of awareness may be the underlying factor affecting attitudes and practices towards diabetes self-care.

Diabetes management depends not only on drug therapy but also on physical exercise, diet, and other lifestyle changes [10, 11]. Lack of understanding of patients' characteristics and diabetes-related knowledge, practice and attitude may lead to high probability of improper guidance and defective education program [12].

This study was carried to determine the level and to find out the correlations of diabetes-related knowledge, attitude, practice and beliefs.

PATIENTS AND METHODS

Descriptive cross-sectional study to collect data from 332 patients attending Diabetes Consultation Clinic in Sulaimania city from the 15th April to the 15th March 2010. Inclusion criteria include patients who had been diagnosed with diabetes for duration of at least two months, aged 18 years and above, who were on medications. Data collection tool was a structured questionnaire, Verbal informed consent was obtained from all participants. First part of questionnaire include questions regarding patients' demographic characteristics. It also included questions regarding patients' medical backgrounds. The second part of the questionnaire was the knowledge, attitude, practice and belief specific questions. It consisted of 41 questions: thirty knowledge-related questions covering various aspects of DM as causes and risk factors.

Three diabetes-related attitudes, namely practicing exercise, following modified diet and taking medications regularly. Three diabetes-related practice questions included blood pressure checking on every visit, eye examinations and having urine tests. Five questions on diabetes-related belief and misconceptions(Herbal therapy, Honey, Bitter food, remove all carbohydrate from diet).

Each knowledge and beliefs question was scored as one (1) for a correct answer and as zero (0) for an incorrect answer. For practice questions, adhering to instructions from the patient's health care provider was merited a score of (1), non-adherence was given a score of zero (0). For attitude questions, choosing always was given (2), sometimes was given(1) and rarely was given (0). Data entered to Microsoft Excel and coded then transferred to SPSS version 15.0. All data were expressed as mean ± standard deviation(SD). Analysis of variance (ANOVA) was used to compare mean scores of variables to find association with P-value of ≤ 0.05. Correlations between main outcomes variables were calculated by Pearson correlation coefficient.

RESULTS

Table (1) shows mean diabetes-related knowledge, attitude, practice and beliefs scores for patients' socio-demographic characteristics as mean knowledge scores were significantly higher among younger age group($p<0.001$), there were no significant differences between males and females regarding knowledge score. Higher knowledge scores were found among those with higher education level and office workers ($P<0.001$). However, there were no significant associations between knowledge scores and participants' residency, economic status, smoking habit and alcohol drinking($p >0.05$).

Mean attitude score was significantly higher in younger age group and among those with higher educational level ($p<0.001$). Although there were higher attitude scores among males, but it was not significant ($p=0.3$). There were no significant relations between attitude scores and patients' occupation, economic status, smoking habit and alcohol ($p >0.05$). Mean practice scores were significantly higher with lower education level($p<0.001$) while other demographic factors had no significant relations with diabetes-related practice. Mean beliefs scores were higher with higher educational level and among office workers ($p< 0.001$). Although higher beliefs scores were present among younger age, males, smokers, alcoholic but it was not statistically significant ($p >0.05$).

Table (2) Shows patients' medical background and diabetes-related knowledge, attitude, practice and beliefs. Mean knowledge scores were significantly higher with longer duration of diabetes ($p 0.02$), positive family history of diabetes ($p<0.001$), who were on insulin ($p<0.03$), having regular pattern of follow up ($p 0.02$). who had received information in Diabetes clinic ($P<0.001$).Mean attitude scores were significantly higher among patients with no dyslipidemia ($p 0.03$), with regular pattern of follow up ($P< 0.001$). but no significant association between mean attitude scores and duration of diabetes, family history of diabetes, having chronic diseases, type of diabetic treatment and received information in the clinic ($p >0.05$).

Practice scores were significantly higher for patients who had DM for more than five years ($P<0.001$). On both oral hypoglycemic drugs and insulin ($P 0.02$). Patients who had DM for more than five years significantly had higher beliefs scores ($P<0.001$). Although there were higher scores among those with family history of diabetes, presence of other chronic diseases, history of having received information in the clinic but none of these results were statistically significant.($p >0.05$) .

Table (3) shows the frequency of distribution of participants diabetes related knowledge, attitude, practice and beliefs level, where 182 (54.8%) of cases had good knowledge scores while more than half of the cases, 196 (59.0%), had poor attitude scores and about two-third of cases 224(67.5%), 228 (68.7%) had poor practice and beliefs scores, respectively.

Table (4) shows that there were weak positive linear correlation but significant between knowledge and attitude ($r=0.202$, $P<0.001$), knowledge and practice ($r=0.159$, $P<0.001$), and knowledge and beliefs ($r=0.322$, $P<0.001$), but very weak and statistically not significant linear correlation was found between attitude and practice ($r=0.047$, $P=0.395$), attitude and beliefs ($r=0.078$, $P=0.115$) and practice and beliefs ($r=0.066$, $P=0.228$).

Table 1. Mean diabetes-related knowledge, Attitude, Practice and belief scores for participants' socio-demographic characteristics.

Variables	Knowledge*		Attitude**		Practice***		Beliefs****	
	Mean (±SD)	p	Mean (±SD)	P	Mean (±SD)	p	Mean (±SD)	P
Age (year)								
18-40	20.5(3.7)		5.1(1.8)		1.4(0.5)		2.3(1.1)	
41-60	18.2(4.2)	<0.001	4.1(1.6)	<0.001	1.4(0.5)	0.7	2.0(1.0)	0.1
>60	17.4(4.1)		4.1(1.5)		1.3(0.1)		2.2(1.2)	
Gender								
Male	18.7(4.1)	0.2	4.4(2.0)	0.3	1.4(0.5)	0.5	2.3(1.6)	0.1
Female	18.1(4.2)		4.2(1.5)		1.3(0.5)		2.0(1.0)	
Education								
Illiterate	16.1(3.7)		3.7(1.1)		1.8(0.5)		1.7(0.9)	
Primary	19.0(2.7)		4.5(1.7)		1.5(0.5)		2.2(1.0)	
Intermediate-	20.8(4.6)		5.1(1.8)	<0.001	1.3(0.4)		2.4(0.9)	
Secondary	22.9(4.2)	<0.001	4.4(4.7)		1.5(0.5)	<0.001	2.8(1.2)	<0.001
Institute and College	23.8(3.3)		4.9(2.4)		1.6(0.6)		3.1(0.9)	
Occupation								
House wife	17.7(4.0)		4.2(1.4)		1.4(0.5)		1.9(1.0)	
Retired	17.8(4.9)	<0.001	4.2(1.9)	0.1	1.3(0.6)	0.2	2.4(1.2)	<0.001
Self-employed	19.4(3.6)		4.6(2.1)		1.3(0.4)		1.7(0.9)	
Office worker	22.1(3.7)		4.2(2.1)		1.6(0.7)		3.1(1.0)	
Residency								
Inside city center	18.3(4.5)	0.6	4.4(4.4)	0.7	1.4(0.5)	0.3	2.1(1.1)	0.1
Outside city	18.6(2.8)		4.2(4.1)		1.3(0.5)		1.9(1.1)	
Economic state								
Low								
Medium	18.2(2.9)		4.2(4.1)		1.3(0.5)	0.1	1.2(1.0)	
High	18.4(4.5)	0.8	4.3(4.3)	0.4	1.4(0.5)		2.1(1.1)	0.7
	18.0(4.4)		4.0(3.9)		1.2(0.3)		2.2(1.0)	
Smoking								
No	18.3(4.4)	0.9	4.2(4.2)	0.7	1.3(0.5)	0.7	2.0(1/0)	0.5
Yes	18.5(3.4)		4.4(4.4)		1.3(0.4)		2.3(1.1)	
Alcohol	18.3(4.2)	0.9	4.3(4.2)	0.1	1.4(0.5)	0.8	2.1(1.1)	0.5
No	18.5(5.2)		3.2(3.1)		1.3(0.5)		2.3(0.8)	
Yes								

***Maximum knowledge score = 30 ** Maximum attitude score = 6**
***** Maximum practice score = 3 ****Maximum beliefs score = 5**

Table 2. Patients' medical background and diabetes-related knowledge, Attitude, Practice and beliefs scores

Variables	Knowledge*		Attitude**		Practice***		Beliefs****	
	Mean (±SD)	P	Mean (±SD)	p	Mean (±SD)	p	Mean (±SD)	P
Duration DM								
>5years	18.8(6.1)		4.3(1.5)		1.5(0.53)		2.3(1.1)	
1-5years	18.2(4.0)	0.02	4.0(1.6)	0.07	1.3(0.47)	<0.001	1.9(0.9)	<0.001
<1year	16.3(6.1)		4.8(1.9)		1.0(0.51)		1.5(1.0)	
Family history								
Positive	18.9(3.8)	<0.001	4.3(1.6)	0.7	1.3(0.53)	0.4	2.1(1.0)	0.7
Negative	17.5(4.6)		4.2(1.6)		1.4(0.51)		2.0(1.1)	
Having chronic diseases								
Yes	18.1(4.5)	0.5	4.1(1.5)	0.1	1.3(0.53)	0.4	2.1(1.0)	0.1
No	18.4(3.8)		4.4(1.7)		1.4(0.52)		2.0(1.1)	
Hypertension								
Yes	18.1(4.4)	0.4	4.1(1.6)	0.7	1.4(0.54)	0.4	2.1(1.1)	0.9
No	18.4(3.8)		4.2(1.7)		1.3(0.51)		2.1(1.0)	
Dyslipidemia								
Yes	18.3(4.8)	0.8	3.9(1.5)	0.03	1.3(0.53)	0.9	2.1(1.1)	0.4
No	18.2(4.0)		4.3(1.7)		1.3(0.52)		2.0(1.0)	
Ischemic heart disease								
Yes	18.9(4.4)	0.3	4.3(1.8)	0.5	1.4(0.54)	0.6	2.2(1.0)	0.3
No	18.2(4.2)		4.2(1.6)		1.3(0.52)		2.0(1.1)	
Type of treatment								
Oral hypoglycemic	18.0(4.3)		4.1(1.6)		1.3(0.52)		2.0(1.0)	
Insulin	19.8(3.6)	0.03	4.7(1.5)	0.06	1.4(0.49)	0.02	2.2(1.2)	0.5
Both	19.5(3.6)		4.7(1.4)		1.6(0.48)		2.3(1.0)	
Follow up pattern								
Regular	18.6(4.2)	0.02	4.5(1.6)	<0.001	1.4(0.53)	0.1	2.1(1.0)	0.3
Irregular	18.3(4.4)		3.7(1.6)		1.3(0.51)		2.1(1.1)	
Receive information								
Yes	19.0(4.3)	<0.001	4.4(1.6)	0.7	1.3(0.54)	0.4	2.1(1.0)	0.6
No	17.7(4.1)		4.0(1.6)		1.4(0.51)		2.0(1.1)	

***Maximum knowledge score = 30 ** Maximum attitude score = 6**

***** Maximum practice score = 3 ****Maximum beliefs score = 5**

Table 3. Distribution of participants according to the level of diabetes-related knowledge, attitude, practice and beliefs

Variables	N (%)	Variables	N (%)
Knowledge		**Practice**	
Poor*	36 (10.8)	Poor	224 (67.5)
Acceptable**	114 (34.4)	Acceptable	108 (32.5)
Good***	182 (54.8)	Good	0 (0.0)
Attitude		**Beliefs**	
Poor	196 (59.0)	Poor	228 (68.7)
Acceptable	104 (31.3)	Acceptable	65 (19.6)
Good	32 (9.7)	Good	39 (11.7)

***Poor: < 40% of maximum possible scores.**
****Acceptable: 41%-60% of maximum possible scores.**
*****Good: > 60% of the maximum possible scores.**

Table 4. Correlation between knowledge, attitude, practice and beliefs.

Variables	Pearson Correlation coefficient	P value
Knowledge and attitude	0.202	<0.001
Knowledge and practice	0.159	<0.001
Knowledge and beliefs	0.322	<0.001
Attitude and practice	0.047	0.39
Attitude and beliefs	0.078	0.11
Practice and beliefs	0.066	0.22

DISCUSSION

Significant association was found between mean knowledge scores and patient's age as younger age group had higher scores. This result was in line with a study done by Rafique et al in Pakistan, Tham et al in Singapore [12,13]. In spite that mean knowledge scores were slightly higher among males than females, but it was not statistically significant,while studies conducted by Tham et al ,Mohan et al, Murugesan et al [13-15]. Shows significant differences in mean scores between males and females as scores were higher among males which could be explained by the fact that education level was higher among males. There were highly significant relations between occupation and knowledge scores as office workers had higher score which might be due to their higher education. This result was in agreement with a study conducted in Southern India [15] where professionals or those with executive jobs had higher scores. Patients' educational level significantly affect mean knowledge scores since college graduates had the highest scores. This highlights the importance of patient's educational level which was in line with other studies done by Rafique et al, Al Shafaee et al, Sabri et al, Gazaraeian et al, Bradaran et al and Sann et al [12, 16-20]. Sabri et al [17] . shows significant impact of residency on knowledge score where urban resident diabetic patients had higher scores, while the current study, patient's residency had no significant effect on diabetes-related knowledge. There was no significant association between patients' economic status and mean knowledge scores while Al Shafaee et al and Sann et al [16,20]. Shows that higher household income significantly associated with higher scores. Differences in age groups among our participants was significantly affecting diabetes related attitude as younger age group

had higher attitude scores. This result is in harmony with a study done by Badrudin et al[19]. Subjects with higher educational level significantly had higher attitude scores. This has again drawn attention to the important role of patient educational level on their attitude regarding their disease. This result was in accordance with a study done by Sann et al in 2007 [20].

Mean practice scores were only higher among illiterate educational level, while Rafique et al [12] demonstrated no impact of educational level on practice which could be explained by the fact that diabetes related practices mostly depends on health care system and service delivery. Patients' age and gender were not significantly associated with beliefs scores which was consistent with Rafique et al [12] that beliefs' scores were significantly low among the elderly and females. Patients' educational level and occupations were significantly affecting beliefs scores as they were higher among patients with higher education and office workers. There were significant association between knowledge scores and duration of having DM as scores were higher with longer duration of diabetes which was in agreement with results of studies conducted in Scotland in 2003, Kuwait in 2007 [19, 21]. Having family history of diabetes had impact on mean knowledge scores and is significant. This result was in accordance with Al-Adsni et al in Kuwait and Gunay et al in Turkey [21,22].

Type of diabetic treatment significantly affected diabetes related knowledge scores as they were higher among those who were on insulin, this was in line with a study done by Rafique et al, Moodly et al in 2005 [12, 23]. And could be explained by the fact that insulin treated group of patients require more intensive counseling. Higher knowledge scores were found among those with regular follow up pattern and who received information in clinic. Palanin et al, Shrestha et al, Pollock et al, Vadstrup et al [24-27]. Highlights the significance of regular follow up and applying educational programs. Patients who had no dyslipidemia, regular follow up pattern significantly had higher attitude scores which is consistent with Skovlund et al that better diseases-related attitude result in better health [28].

Duration of having diabetes, Family history of diabetes, having other chronic diseases and having received information had no significant impacts on diabetes-related attitude scores which was in agreement with the result of a study done in Pakistan [12]. Having diabetes for longer duration of time was associated with higher practice scores, and this result was in harmony with studies done in Pakistan and Scotland [12, 19]. Significant effect of the type of diabetic medication were observed in relation to mean practice scores, since there were higher practice scores among patients on both oral hypoglycemic and insulin therapy which is significant while Rafique et al [12] Shows that patients who were on insulin therapy only had higher scores.

Mean beliefs scores in current study were increasing with longer duration of diabetes as patients obtain more experience regarding the use of herbs, bitter foods and honey with time. Type of diabetic treatment had no significant impact on beliefs' scores. This is inconsistent with Rafique et al [12]. As those who were on insulin had higher scores. More than half of the cases had good knowledge scores, whereas about two-third of subjects had poor attitude, practice and beliefs score which is quite unsatisfactory. This shows a clear gap between knowledge and patients' attitude, practice and beliefs regarding their disease. This result is consistent with Murugesan et al , Shrestha et al [15,25]. There were weak correlations between knowledge scores and attitude, practice and beliefs scores, since higher knowledge scores were associated with higher attitude, practice and beliefs scores, but very weak correlations was found between attitude, practice and beliefs. This result was in accordance with Ambigapathy et al in Malaysia[9]. That confirms the role of having knowledge on patients self care, practice and beliefs.

In conclusion it seems that good knowledge level is associated with better attitude, practice and beliefs. Therefore, active involvement and empowerment of the patients by sustained active education and supports is mandatory using available mass media.

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