LIFESTYLE AND SATISFACTION WITH TREATMENT IN PATIENTS WITH TYPE 2 DIABETES MELLITUS IN SULAIMANI CITY

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ABSTRACT

Background and Objectives: Diabetes mellitus is a group of metabolic disorders of carbohydrate metabolism in which glucose is underutilized, producing hyperglycemia & changes in lipid profile. The aim of the study was to find out lifestyle and degree of satisfaction with treatment in patients with type 2 diabetes mellitus in Sulaimani city.

Methods: A cross sectional study was done in the diabetic and endocrine center from 1st of May 2015 to 28th of May 2016, a convenient sample of 300 patients involved, all of them had Type 2 diabetes; data analyzed by Statistical package for social science version 21 Program. Chi square test used to get the association and p-value equal or less than 0.05 was considered as significant.

Results: Three hundred patients were involved in this study their age between 28-89 years. Highest percentage was among female 157(52.3%), DM duration of 1-5 years (39%) and satisfied with currently treatment (50. 6%).A significant association between age, level of education and residency with treatment satisfaction scores was found, p-value (0.01) , (<0.001), (0.019) respectively.

Conclusion: Most of the participants were females, illiterate, married, housewives, from inside city center, of moderate economic status and satisfied with their currently treatment. A significant association between age, level of education and residency with treatment satisfaction scores was found.

Key Word: Life style. Satisfaction, DM, Sulaimani

Introduction

Diabetes mellitus (DM) is a chronic disease that occurs either when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin it produces [1,2]. Diabetes is a disease with a large and increasing societal cost due to the number of people affected worldwide and its associated complications, such as increased risk of cardiovascular disease, neuropathy, and eye complications. For patients with type 2 diabetes, weight control, by means of dietary and physical activity regimens, is the cornerstone of the treatment[3,4]. The Criteria for Diabetes Diagnosis are: FPG ≥126 mg/dL (7.0 mmol/L). 2-hr PG ≥200 mg/dL (11.1 mmol/L) during OGTT (75-g). A1C ≥6.5% (48 mmol/mol). Random PG ≥200 mg/dL (11.1 mmol/L) [5].Lifestyle characteristics, such as physical activity, diet, and stress are important factors that influence development and prognosis of type 2 diabetes [6]. Changes in diet and increase in physical activity and exercise are key components of the management of type 2 diabetes[7], and guidelines recommend changes in these lifestyle characteristics for both prevention and management of the disease [8]. According to the American Diabetes Association and the European Association for the Study of Diabetes, first-line treatment for the management of hyperglycemia in patients with T2DM consists of changes in lifestyle plus metformin; second-line treatment consists of changes in lifestyle plus metformin and sulfonylurea [9,10]. Routine assessment of patient satisfaction with treatment, and the resultant treatment tailoring, is an important step toward building and maintaining a therapeutic alliance among the patient and family [11]. Because there are potentially multiple aspects of a patient's experience and preferences for treatment to consider, verbally asking the patient questions about their treatment might not elicit an accurate report on the nature or type of difficulties experienced as is possible with the combined use of tested and validated items[12]. A widely-used diabetes specific measure, the Diabetes Treatment Satisfaction Questionnaire (DTSQ) has performed well in measuring patients' treatment satisfaction for diabetes therapies[13,14]. Providing a brief assessment of qualities of diabetes treatment satisfaction of convenience, well-being and blood glucose control. It does not include an extended range of issues or concerns, such as side effects, dosing schedules which may vary across agents, time spent managing diabetes, and integrating medication regimens into one's lifestyle or routine [15,16].

The main objectives of this study are: To identify the socio-demographic status of the participants, to find out way of life among type 2 diabetes, to assess the degree of satisfaction with the treatment of patients with type 2 diabetes mellitus, and to find out association between treatment satisfaction and socio-demographic characteristics of diabetic patients.

Material And Methods

A cross sectional study was conducted among type 2 diabetes patients attending Sulaimani center for endocrine and diabetes diseases, from 1st of May 2015 to 31th December 2015. A convenient sample of 300 type 2 diabetes mellitus aged ≥18 years were enrolled in the study. The questionnaire included socio-demographic status, smoking and alcohol consumption habits, medical history, family history of diabetes, dietary information, other lifestyles ,investigations and treatment satisfaction questionnaire (WHO Diabetes Treatment Satisfaction Questionnaire DTSQ). The BMI was calculated as weight in kilograms divided by squared height in meter, conventional BMI cut-off points were applied to classify the study populations into[17]: Underweight (BMI < 18.5 kg/m²).Normal (BMI 18.5-24.9 kg/m²).Overweight (BMI 25-29.9 kg/m²).Obesity (BMI 30-39.9 kg/m²). Morbid obesity (BMI ≥40 kg/m²). The WHO-Diabetes Treatment Satisfaction Questionnaire DTSQ is an eight-item questionnaire, scored on a scale of 0-6, This tool has been identified by the World Health Organization and the International Diabetes Foundation as useful in assessing outcomes of diabetes care [18,19] the detail of it as following: For the first item; zero means very dissatisfied with the current treatment, one means dissatisfied (in the table we mixed them as 0-1 dissatisfied), 2-4 moderately satisfied, five satisfied, while six means very satisfied with the current treatment (in the table we mixed them as 5-6 high satisfied). For the second and third items, zero means never felt; regarding unacceptably high or low blood sugar in a week; while six means all of the time felt that. For the fourth item, zero means very inconvenient regarding how convenient are the patient to be with his or her treatment recently; one means inconvenient (in the table we mixed them as 0-1 inconvenient), 2-4 moderately convenient, five convenient, while six means very convenient (in the table we mixed them as 5-6 very convenient). For the fifth item, zero means very inflexible regarding how flexible are the patient with his or her treatment recently; one means inflexible (in the table we mixed them as 0-1 inflexible), 2-4 moderately flexible, five flexibles, while six means very flexible (in the table we mixed them as 5-6 high flexible). For the sixth item, zero means very dissatisfied regarding how satisfied the patient are to be with understanding of diabetes; one means dissatisfied (in the table we mixed them as 0-1 dissatisfied), 2-4 moderately satisfied, five satisfied, while six means very satisfied (in the table we mixed them as 5-6 high satisfied). For the seventh item, zero means no I would definitely not recommend regarding are the patient recommend this form of treatment to someone else with his or her kind of diabetes; one means not recommend (in the table we mixed them as 0-1 not recommend), 2-4 moderately recommend, five recommend, while six means yes I would recommend (in the table we mixed them as 5-6 high recommend). For the eighth item, zero means very dissatisfied regarding how satisfied the patient are to be continue with the present form of treatment; one means dissatisfied (in the table

we mixed them as 0-1 dissatisfied), 2-4 moderately satisfied, five satisfied, while six means very satisfied (in the table we mixed them as 5-6 high satisfied). Data analyzed using Statistical Package for the Social Science (SPSS) version 21.0 program. Chi square and fisher exact test to get the association P-value equal or less than 0.05 was considered significant.

Results

Table (1) shows the highest frequency was among those their age more than 50 years (64%), females (52.3%), married (96.7%), housewife (44%), inside city center (78.7%), and moderate socio-economic state (88.3%).

Table 1: Socio-demographic characteristics of the study sample.

Socio-demographic	Variables	No.	%
Age in year	≤50	108	36
	>50	192	64
Gender	Female	157	52.3
	Male	143	47.7
Marital status	Married	290	96.7
	Widow	10	3.3
Occupation	Employed	82	27.3
	Free worker	65	21.7
	Students	1	.3
	Housewife	132	44.0
	Retired	20	6.7
Residency	Inside city center	236	78.7
	Outside city center	64	21.3
economical level	Low	23	7.7
	Moderate	265	88.3
	High	12	4.0
Total		300	100

Figure (1) Distribution of the study sample by level of education. Illiteracy was the highest percentage (32%), then primary school (27%), secondary school (18.3%), university and institute (16.3%), and those who can read and write accounts (6.3%).

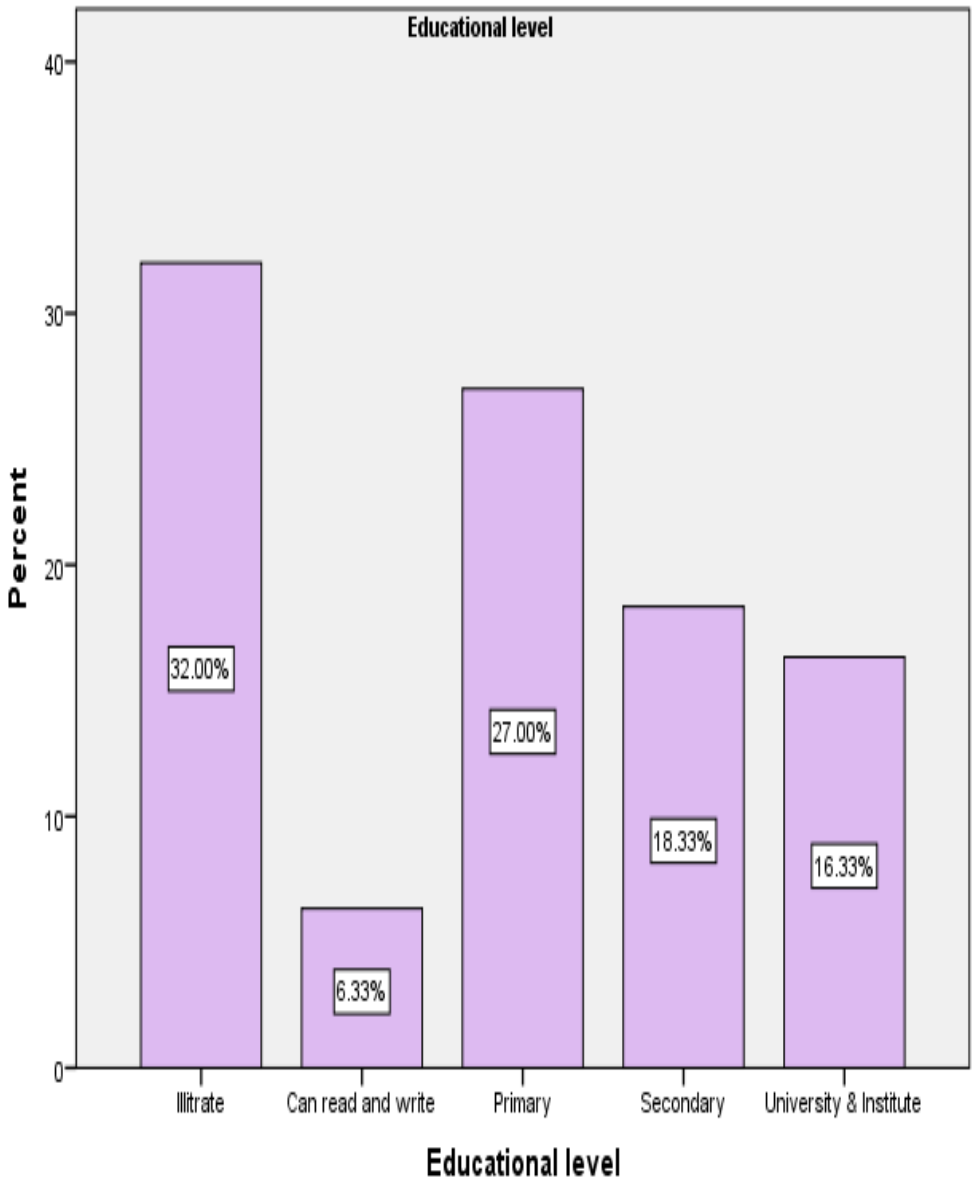

Figure (1) Distribution of the study sample by level of education.

Table (2) Regarding smoking habit the highest frequency was among none smokers (70.7%), none passive smoking (46.3%), and those smoke more than one pack per day (18.3%). For the alcohol consumption habits the highest frequency among none alcoholic (91.3%), and those who consume alcohol on occasion (5%).

Table 2: Smoking and alcohol drinking habits among study participants.

Variables		No.	%
Smoking	Yes	88	29.3
	No	212	70.7
Passive Smoking (n=212)	Yes	73	24.3
	No	139	46.3
Number of Cigarette / day; groups (n=88)	0 (<10 cigarettes)	5	1.7
	1 (10-20 cigarettes)	28	9.3
	2 (> one pack)	55	18.3
Alcohol	Yes	26	8.7
	No	274	91.3
Duration of alcohol consumption (n=26)	one time / week	1	0.3
	2-4 times / week	1	0.3
	Every night	9	3.0
	on occasion	15	5.0

Table (3) Regarding the duration of diabetes mellitus in year the highest frequency was among those who have diabetes duration of 1-5 years (39%). About (66%) of patient had family history of diabetes compared to (34%) who do not have family history. Highest frequency among those who do not use insulin at all (81.3%). For those use insulin, highest frequency among those who use insulin twice daily (14.7%). Majority of patient used oral hypoglycemic (98.7%). And overweight (BMI 25-29.9 kg/m^2) was the highly prevalent among diabetes (52.3%).

Table 3: Clinical characteristics of DM of the study participants.

Variables		No.	%
Duration of DM in years	1 year	81	27.0
	1-5 years	117	39.0
	More than 5 years	102	34.0
Family history of DM		5	1.7
	Children	82	27.3
	Parents	1	.3
	Grandparents	63	21.0
	Brothers	47	15.7
	Sisters	102	34.0
	None		

Insulin use	Yes	56	18.7
	No	244	81.3
Number of insulin use / day (n= 56)	1	12	4.0
	2	44	14.7
	Not use insulin	244	81.3
Oral hypoglycemic use	Yes	296	98.7
	No	4	1.3
BMI	<18.5 kg/m²	1	0.3
	18.5-24.9 kg/m²	27	9.0
	25-29.9 kg/m²	157	52.3
	30-39.9 kg/m²	111	37.0
	≥ 40 kg/m²	4	1.3
Total		300	100.0

Table (4) shows those who eating meat once per week was (40%), for eating poultry the highest proportion was among those who eat poultry four to six times per week (36.3%). Regarding eating fish the highest percentage was among those who eat fish once per week (33.3%).

Table 4: Meat, poultry and fish eating habits of the participants.

Variables	Duration	No	%
How often eat red meat			
	Not eat meat	58	19.3
	4-6 /W	9	3.0
	2-3/W	58	19.3
	once weekly	120	40.0
	1-3 / Month	55	18.3
How often eat poultry			
	Daily	26	8.7
	4-6 /W	109	36.3
	2-3/W	95	31.7
	once weekly	61	20.3
	1-3 / Month	9	3.0

How often eat fish			
	4-6 /W	4	1.3
	2-3/W	64	21.3
	once weekly	100	33.3
	1-3 / Month	75	25.0
	Never	57	19.0
Total		300	100.0

Table (5) Regarding the frequency of eating vegetables the highest proportion was among those who eat vegetables daily (73.7%), eat fruits one to two per day (47%) same percentage for those who never eat fruits, regarding exercise habit the highest frequency among those who never do exercise (80.3%), and about (66%) who use salt in the food.

Table 5: Eating vegetable, fruit, salt and exercise habits of the participants.

Variables	Duration	No.	%
How often eat Vegetables	Daily	221	73.7
	4-6 /W	62	20.7
	2-3/W	9	3.0
	once weekly	3	1.0
	1-3 / M	5	1.7
How many eat fruit?	5 or more/day	5	1.7
	3-4 / day	13	4.3
	1-2 / day	141	47.0
	Never	141	47.0
How often exercise / week	No	241	80.3
	2 /week	15	5.0
	3/ week	22	7.3
	4/ week	21	7.0
	7/ week	1	0.3
Salt intake	Yes	198	66.0
	No	102	34.0
Total		300	100.0

Table (6) shows the distribution of the sample according to the diabetic treatment satisfaction questionnaire (DTSQ). Regarding the satisfaction with current treatment, (50.6%) were highly satisfied. Nearly (85%) were dissatisfied about their unacceptably high blood sugar recently, compared to (15%) that were moderately satisfied. And around (97%) were dissatisfied about their unacceptably low blood sugar recently. Regarding convenience with treatment recently, the highest proportion were moderately convenient (79.3%). For the recent flexibility of the treatment, the highest percentage showed moderately flexibility (49.4%). Understanding diabetes mellitus as a disease, (49.1%) showed moderately satisfied. For the recommendation of this form of treatment,

(56.1%) moderately recommend it, and for the continuation of the present form of treatment (64.3%) moderately recommend this.

Table 6: Diabetic treatment satisfaction of the participants according to DTSQ.

Variable		No.	%
Satisfaction with current treatment			
Dissatisfied	(0-1)	1	.3
Moderately satisfied	(2-4)	146	48.7
Satisfied	(5-6)	152	50.6
How often have you felt your blood sugars have been unacceptably high recently?			
Not felt	(0-1)	254	84.7
Moderately felt	(2-4)	45	15.0
How often have you felt that your blood sugars have been unacceptably low recently?			
Not felt	(0-1)	292	97.3
Moderately felt	(2-4)	7	2.4
How convenient have you been your treatment to be recently?			
Inconvenient	(0-1)	3	1.0
Moderately convenient	(2-4)	238	79.3
Convenient	(5-6)	58	19.3
How flexible have you been finding your treatment to be recently?			
Inflexible	(0-1)	4	1.3
Moderately flexible	(2-4)	148	49.4
Flexible	(5-6)	147	49.0
How satisfied are you with your understanding of your diabetes?			
Dissatisfied	(0-1)	7	2.3
Moderately satisfied	(2-4)	147	49.1
Satisfied	(5-6)	145	48.3
Would you recommend this form of treatment to someone else with your kind of diabetes?			
Not recommend	(0-1)	2	0.7
Moderately recommend	(2-4)	168	56.1
Recommend	(5-6)	129	43
How satisfied would you to be continue with your present form of treatment?			
Dissatisfied	(0-1)	2	0.7
Moderately satisfied	(2-4)	193	64.3
Satisfied	(5-6)	104	34.7
Total		299	99.0

Table (7) Regarding age in year, highest percentage was among those above 50 years of age and moderately satisfied (71.6%) p-value (0.01) ,for the gender, highest frequency among female and satisfied 92 (58.6%) p-value (0.287), married and satisfied 174 (60.6%) p-value (0.361), same frequency among employed and satisfied 58 (71.6%), housewife and moderately satisfied 58 (43.9%) p-value (0.216), illiterate and moderately satisfied 56 (58.3%) p-value (<0.001), inside city center and satisfied 150 (63.6%) p-value (0.019), moderate income and satisfied 157 (59.5%) p-value (0.298).

Table 7: Association between socio-demographic characteristics with treatment satisfaction scores.

Variables		Treatment satisfaction			P-Value
		Dissatisfied (%)	Moderately satisfied (%)	Satisfied (%)	
Age in year	≤50	5 (100%)	33 (28.4%)	70 (42.1%)	0.01
	>50	0 (0.0%)	83 (71.6%)	103 (57.9%)	
Gender	Female	1 (0.6%)	64 (40.8%)	92 (58.6%)	0.287
	Male	4 (2.8%)	52 (36.6%)	86 (60.6%)	
Marital Status	Married	5 (1.7%)	110(38.1%)	174(60.2%)	0.361
	Widow	0 (0.0%)	6 (60.0%)	4 (40.0%)	
Occupation	Employed	2 (2.5%)	21 (25.9%)	58 (71.6%)	0.216
	Free work	2 (3.1%)	27 (41.5%)	36 (55.4%)	
	Student	0 (0.0%)	0 (0.0%)	1 (100.0%)	
	Housewife	1 (0.8%)	58 (43.9%)	73 (55.3%)	
	Retired	0 (0.0%)	10 (50.0%)	10 (50.0%)	
Educational level	Illiterate	0 (0.0%)	56 (58.3%)	40 (41.7%)	<0.001
	Read and write	1 (5.3%)	5 (26.3%)	13 (68.4%)	
	Primary	3 (3.8%)	31 (38.8%)	46 (57.5%)	
	Secondary	1 (1.8%)	19 (34.5%)	35 (63.6%)	
	Institute & University	0 (0.0%)	5 (21.6%)	44 (78.4%)	
Residency	Inside city center	3 (1.3%)	83 (35.2%)	150(63.6%)	0.019
	Outside city center	2 (3.2%)	33 (52.4%)	28 (44.4%)	
Socio-economic level	Low	1 (4.3%)	11 (47.8%)	11 (47.8%)	0.298
	Moderate	4 (1.5%)	103(39.0%)	157(59.5%)	
	High	0 (0.0%)	2 (16.7%)	10 (83.3%)	

Dicussion

The present cross-sectional study identified lifestyle and satisfaction with treatment in patients with type 2 DM in the Sulaimani city. About (52.3%) of the participants were females, which was disagree with a study conducted in Turkey[20] Regarding marital status, (96.7%) of the participants were married, which was agreed with a study, conducted in Turkey[20] while disagreed with a study done in Lebanon[21] Regarding occupation, most of the participants were housewives (44%), while in the study of Turkey[20] most of the participants were workers and in a study in Iran[22] most of them among retirees. For the residency; most of the participants live inside city center (78.7%) This indicates that the prevalence of DM may also be related to urbanization in Sulaimani. These findings are consistent with studies done in Jordan[23] in Iran[22], in United Arab Emirates[24]. in India[25], and in Palestine[26]. A possible explanation for the higher prevalence of DM in urban could be due to the increasing cardiovascular risk factors in the urban area, due to the changes caused by increased fat and caloric intake and decreased activity, with a sharp rise in a sedentary lifestyle, such as increased usage of televisions and computers, car ownership, an increase in the consumption of a high fat caloric-dense food and refined sugar. Furthermore, the increase in the population growth rates caused some social difficulties, such as unemployment, that resulted in a migration from rural to municipal regions. About the economic status, most of the participants were among moderate economic status (88.3%), which is agreed with a study conducted in Turkey[20] in that study (82%) of the participants had moderate economic status. And disagreed with study of Iran[22] in which most of them were among low economic status. Most of the participants (32%) were illiterates and illiteracy has an association with DM in this study, which is consistent with studies done in Jordan[23], and in Iran[22]. Regarding smoking habit, most of the participants were not smokers (70.7%), this disagreed with many studies conducted in Brazil[27], in Switzerland[28] and in USA[29] About duration of diabetes in years, those who had diabetes mellitus for about 1-5 year accounts (39%) of the participants, which was not consistent with a study done in Turkey[20.]About (66%) of the participants had family history of diabetes. this agreed with studies done in USA[30]. This raises the importance of environmental intervention in the prevention of diabetes in high-risk group, For insulin use in the treatment of type 2 diabetes, only (18.7%) of the participants use insulin, which was not consistent with a study done in Turkey[20] While for the BMI of the participants, (52.3%) of them among overweight, these findings are consistent with studies in Iran[22], and in Turkey[31] .Regarding co-morbidities, (85.7%) of the participants had co-morbidities in general , among which hypercholesterolemia was the most common co-morbid diseases (78.3%),while in the study done inTurkey[20] only (53%) of the participants had co-morbidities in general and hypertension was the most common co-morbid diseases (53.3%). Regarding meat eating habits of the participants, (80.7%) of participants eats meat,

among them (40%) eats meat once weekly, The relationship between red meat intake similar finding found in study done in Japan[32] & in USA[33] .About eating vegetables, (73.7%) of the participants eats vegetables daily, (47%) of them eats 1-2 fruits per day. Regarding exercise habit, (80.3%) of the participants did not do exercise, these findings were in contrast with studies done in Finland[34] and in Brazil[35].Regarding continuation of the same treatment (34.7%) of the participants highly satisfied to continue the same type of the treatment which is not consistent with the study done in USA[36] in that study (96%) of the participants said they would like to continue same treatment. Being unemployed was associated with significantly lower score levels in each dimension of treatment satisfaction scores, a result of study done in Italy[37], while in our study (55.3%) of study participants were housewives and highly satisfied with the treatment.

Conclusions

Most of the participants eat meat once weekly, poultry 4-6 per week, fish once weekly, vegetables daily, fruits 1-2 per day, use salt in food, not doing exercise. Generally most of them satisfied with the treatment highly satisfied with current treatment and continue with it. Dissatisfied with unacceptably high or low blood sugar, moderately convenient with recent treatment and moderately satisfied with their understanding of diabetes mellitus. There was association between socio-demographic characteristics (age, education level and residency) with the treatment satisfaction scores.

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