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Dietary Knowledge Among Female Diabetic Patients in Amman, Jordan

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ABSTRACT

The aim of this study was to assess dietary knowledge among females with diabetes in Amman, Jordan. We performed a cross-sectional study of diabetic patients attending outpatient diabetes clinics, at several hospitals in Amman . A questionnaires and 24-hour dietary recall were completed by the participants. The study used a face to face interview during which a questionnaire was filled by the investigator about knowledge and attitudes of diabetic patients. The study sample was composed of 180 females. Most of the patients have diabetes for more than two years (78.3%) and had a positive family history of diabetes as a first degree relative. About 50% suffered from diabetes related health disease and about half of the patients were overweight and 32.2% were obese. More than half of patients (56.1%) gave wrong answers for meals recommended for diabetes/day and that should be used with hypoglycemia (44.5%), food rich in protein (47.6%), number of snacks (50.6%) and their role (43.1%), drinks permitted with unlimited amounts (61.4%) and suitable time to drink juice (78.1%). Most of the patients gave correct answers for food rich in fats (48.4%), cholesterol (47.8%), and controlling blood sugar (51.7%), right and number of snacks recommended (68.7%) and food which raises blood sugar (49.1%). According to the results, the dietary knowledge of diabetic patients is inadequate and need improvement. The study recommends that there is a need to set up a health education programme on diabetes mellitus which would also include a self-monitoring programme.

Keywords: Dietary knowledge , Diabetes mellitus , Food items , Jordan.

INTRODUCTION

Diabetes mellitus (DM) is a major health problem worldwide, that requires continuing medical care and ongoing patient self-management, education and support[1]. According to WHO , the global average prevalence is around 10% [2]. However the Arab countries have a higher prevalence of diabetes than the global average. Based on a study in 2010, in Jordan the prevalence of type 2 DM was 17.1% [3]. The prevalence rates of DM in the United Arab Emirates, Bahrain, Saudi Arabia and Kuwait were 20.1%, 20.1%, 30%, and 14.8% respectively [4,5] .

Suitable dietary practices are basic and integral part treating DM and may reduce the development of disease complications [6]. In Jordan, around 45% of 195 diabetic patients previously diagnosed, had unsatisfactory glycemic control[3]. It is documented that poorly controlled diabetes leads to serious complication[7-11].

It was documented that diet control can improve glycemic control [12-15] . Adherence of diabetic patients to diabetic medications, to dietary advice and to physical exercise has been found to have a large effect on the degree of diabetic control [3,16,17] .The aim of this study was to assess

dietary knowledge among female diabetic patients in Amman, Jordan.

METHODS

A convenience sampling technique was used to approach adult patients with DM , attending outpatient clinics from different hospitals in Amman, Jordan. One hundred and eighty diagnosed female diabetics were randomly selected with the help of the chief dietician at each hospital. Dietary knowledge was assessed by 14 multiple choice questions including food that raises and control blood sugar, food sources of nutrients, meals and snacks recommended. The response to each dietary knowledge question was scored from 0-2. With 2 for correct answer, 1 for incorrect and incomplete answer and 0 for wrong and don't answer. Total dietary score was ranged from 0 – 28 and was leveled as good when score is 20-28, fair 10-19 and poor 0-9. Perceived benefits items were measured as questions formatted as 3 points Likert scale with 3 for high perceived benefit. Total perceived benefits score was 12 – 36, which leveled into: 30 – 36 high perceived benefit, 21 – 29 moderate perceived benefit and 12– 20 low perceived benefits. Patients' files were reviewed to collect data on weight and height. The 24 hour recall was used to evaluate the food consumption pattern. The evaluation of the daily food intake was made by using ESHA Food Processor[18] , as well as Food Composition Tables for use in the Middle East [19] and Food Composition Tables for Kingdom of Bahrain[20]. .

Statistical Methods

Data analysis was carried out by using the SPSS software package version 16. Absolute and relative frequencies and means were used as descriptive statistics. Multiple regression was used to identify the variables related to knowledge. The internal consistency of the questionnaire was checked by Cronbach's alpha and it was considered good (0.87 for total knowledge).

RESULTS

The study sample was composed of 180 females. As shown in Table (1), the majority of the patients were married (82.7%) in the age group 41-50 years (49.2%) and were housewives (62.9%). The patients were uniformly distributed across different education levels and the majority with monthly family income between 300 and less than 800 Jordanian Dinar (JD) (1 US$ = 0.71 JD). Most of the patients have diabetes for more than two years (78.3%) and had a positive family history of diabetes as a first degree relative. About 50% suffered from diabetes related health disease and about half of the patients were overweight and about 32% were obese. Table (2) shows dietary knowledge of diabetic patients. More than half of patients gave wrong answers for meals recommended for diabetes/day (56.1%) and that should be used with hypoglycemia (44.5%), food rich in protein (47.6%), number of snacks (50.6%) and their role (43.1%), drinks permitted with unlimited amounts (61.4%) and suitable time to drink juice (78.1%). Most of the patients gave correct answers for food rich in fats (48.4%), cholesterol (47.8%), and controlling blood sugar (51.7%), right and number of snacks recommended(68.7%) and food which raises blood sugar (49.1%).

Table 3 shows the perceived benefits of diabetic patients. Most of the patients perceived benefits of adherence of dieting regime (93.5%), regulating time and quantities of meals(65%), exercising (97.2%) and maintain or reducing weight (96.2%). A considerable percentage believed they should avoid starches food (51.3%) and honey will not affect blood sugar (57.4%). The benefit of herbal and traditional description in the management of diabetes is strong (48.9%). The assessment of daily nutrient intake of diabetic patients (Table 4) showed that the mean total energy intake was 1781.2 ± 671kcal, the percentage of total calories from carbohydrate 56%, protein 14% and fat 30%. The mean dietary fiber intake was 24.3 ± 10.4 (gm). The percentage of total calories from carbohydrate was more than the American Diabetic Association guidelines (ADA 2007), (48 % of energy) , while the percentage of total calories from protein and fat was within the ADA recommendations (10-20% and < 35 % of energy, respectively).

The result of the multiple regression analysis (Table 5) showed that occupation (p-value= 0.037), duration of diabetes (p-value= 0.001), family diabetes history (p-value= 0.014) and education level (p-value= 0.001) were the factors most influencing

Table1: Socioeconomic characteristics, medical and family history of the sample (N=180)

Variables	N (%)
Marital status	
Married	149 (82.8)
Not married	31 (17.2)
Age (years)	
≤ 40	54 (30.2)
41 – 50	89 (49.2)
> 50	37 (21.6)
Occupation	
Housewife	111 (62.9)
Working	69 (38.1)
Education level	
Illiterate	36 (20.0)
Primary and intermediate	58 (32.2)
Secondary	48 (26.7)
Graduate and above	38 (21.1)
Family income (J.D.)	
< 300	20 (11.1)
300 - < 500	78 (43.3)
500 – 800	52 (28.9)
> 800	30 (16.7)
Duration of diabetes (years)	
< 2	39 (21.7)
2 – 5	78 (43.3)
> 5	63 (35.0)
Family history of diabetes	
None	47 (26.1)
Relative 1st degree	129 (71.7)
Relative 2nd degree	4 (02.2)
Related health diseases	
Heart disease	8 (9.9)
Eye disease	21 (25.9)
Stroke	2 (2.5)
Neuropathy	7 (8.6)
Kidney disease	9 (11.1)
Thrombosis	6 (3.3)
Obesity	27 (33.3)
Body mass Index (Kg/m2)	
Normal	32 (17.8)
overweight	90 (50.0)
Obese	58 (32.2)
weight (kg) 79.2 ± 12.1	
height (cm) 157 ± 7.1	

knowledge. Those factors explained 35.4% of the total variation in knowledge.

DISCUSSION

In the past years many countries, have been experiencing a nutritional transition in food choices from the typical Mediterranean diet to the fast food pattern[21]. The rapid change in physical activity and food habits has led to the coexistence of many nutritional problems that underlies many chronic diseases. As populations become more urbanized, and as lifestyles shift towards reduced physical activity and increased food consumption, the prevalence of obesity is expected to rise.

We found in this study (Table 2) that more than half of patients gave wrong answers for meals recommended for diabetes/day (56.1%) and that should be used with hypoglycemia (44.5%), food rich in protein (47.6%), number of snacks (50.6%) and their role (43.1%), drinks permitted with unlimited amounts (61.4%) and suitable time to drink juice (78.1%). This is comparable to the results of a study conducted in Saudi Arabia by Z. Saadia, et al.[22] who reported 90% of patients answered 50% of the knowledge questions correctly Still a large proportion of population that is almost 40.3% were not able to score above 10. In another study , it was reported that only 40% of diabetic patients had good compliance with their diet[23]. Improving the Knowledge of the diabetics in our society will not be an easy task. Great efforts would be needed by health teams to enhance education of the diabetic patient in order to promote compliance.

It is reported that patients had low level of knowledge in Iran[24], United Arab Emirates[25], Kuwait[26] and in Nigeria[27]. On the other hand, a good level of knowledge was found among patients in Pakistan[28] , Malaysia[29] and in Qatar[30]. It was found that a good level of knowledge regarding DM, affect patients' adherence to pharmacological therapy[31,32],self-care activities[33] and good glycemic control [11,34,35].

Diet which contains high fat may cause a problem for people with diabetes[36]. The more fat there is in the diet, the more difficult it is going to be for insulin to get the glucose into the cells [36] . Our results showed that the mean dietary fiber intake

Table 2: Dietary Knowledge of diabetic patients (N=180)

Dietary Knowledge Questions	Answer Correct	Incomplete	Wrong or don't know
Which food raises the blood sugar level 1) vegetables 2) dates 3) rice 4) fats 5) don't know	88 (49.1)	59 (32.8)	33 (18.3)
Which food is rich in fat? 1) cucumber 2) Cheese 3) nuts 4) bread 5) don't know	105 (58.4)	50 (27.7)	25 (13.9)
Which food is protein? 1)Fish 2) sweet 3) oil 4) apple 5) don't know	79 (43.7)	15 (8.3)	86 (47.6)
Which food is high in cholesterol? 1) liver 2) kidney 3) eggs 4) all 1,2,3 5) don't know	86 (47.8)	11 (6.1)	83 (46.1)
Which food helps in controlling the blood sugar? 1) Fiber 2) fats 3) protein 4) all1,2,3 5) don't know	93 (51.7)	76 (42.1)	11 (6.1)
Which food is high in fiber? 1) whole wheat 2) vegetables 3) fruits 4) faba bean 5) all 1,2,3 6) don't know	52 (28.7)	103 (57.1)	25 (13.9)
How many meals are recommended for diabetics/day 1) one 2) 2 3) 3 4) 4 5) don't know	79 (43.9)	0	101 (56.1)
How many times a diabetic is recommended to take snacks between recommended meals? 1) 1 2) 2 – 3 3) > 3 4) don't know	79 (43.7)	0	83 (50.6)
Type of snacks recommended 1) Milk 2) sweets 3) vegetables 4) fruits 5) Sandwich 6) don't know	124 (68.7)	39 (21.4)	17 (9.4)
Role of snack in diabetic diet 1)Prevent hypoglycemia 2) Prevent hyperglycemia 3)Don't know	98 (54.5)	3 (2.3)	78 (43.1)
Drinks permitted with unlimited amounts 1)low fat milk 2) sugar or tea with no sugar 3) juice with no sugar 4) don't know	32 (17.8)	37 (20.6)	111 (61.4)
Suitable time to drink juice 1) Before meals 2) as snack 3) With meals 4) don't know	37 (20.4)	2 (1.1)	141 (78.1)
What are the symptoms of hypoglycemia 1) Thirsty 2) frequent urinating 3) lost of appetite 4) hungry and blood beating 5) don't know	71 (39.2)	47 (26.1)	62 (34.5)
Which food should be used with hypoglycemia 1) Diet Pepsi 2) Juice 3) two-sugar cubes 4) cheese 5) don't know	70 (39.1)	30 (16.7)	80 (44.5)

Table 3: Dietary perceived benefits of diabetic patients (N=180)

	Agree	Disagree	Don't know
Adherence of dieting regime improves sugar	168 (93.5)	8 (4.7)	4 (2.2)
It is importance to regulate time and quantities of meals	117 (65)	41 (22.8)	22 (12.1)
Use brown bread will not raise sugar blood sugar (BS)	100 (55.3)	43 (23.9)	37 (20.8
Dates will not affect (BS)	27 (15)	148 (82.2)	5 (2.8)
Honey will not affect (BS)	103 (57.4)	19 (10.6)	58 (32.1)
Drinks tea after meals will prevent BS absorption	15 (8.1)	79 (43.9)	86 (47.6)
Diabetic should avoid all starches	92 (51.3)	18 (10)	70 (38.9)
Diabetic should avoid all fruits as it raise BS	18 (10)	124 (68.7)	38 (21.3)
Foods that have bitter and sour taste may benefit diabetes	53 (29.6)	22 (12.2)	105 (58.6)
Regular exercise may benefit diabetes	175 (97.2)	0	5 (2.8)
It is importance to maintain or reduce your weight	173 (96.2)	7 (3.8)	0
Herbals & traditional prescriptions may benefit diabetic management	88 (48.9)	52 (28.9)	40 (22.2)

Table 4: Daily food intake of diabetic patients (N=180)

	Energy (kcal)	Carbohydrates (gm)	Fat (gm)	Protein (gm)	Fiber (gm)
Mean ±SD	1781.2 ±671	264 ± 83.9	61.4 ±37.1	81.5 ± 31.2	24.3±10.4

Table 5: Results of multiple regression of factors influencing total knowledge score (N=180)

Factors	Total knowledge	p-value
Education level	1.66	0.001
Family diabetes history	1.21	0.014
Duration of diabetes	2.43	0.001
Occupation	0.878	0.037

was 24.3 ± 10.4 (gm) (table 4) . Dietary fiber helps to slow the release of sugar into the bloodstream, thus helping to keep the blood sugar levels normal [36] .

Diet is an important part in the treatment of a diabetic patient. Following a healthy lifestyle , managing the weight and eating a balanced diet, will improve the patient's health enormously.

CONCLUSION

The dietary knowledge of diabetic patients among female Jordanians is inadequate and need improvement. Education and counseling about all the aspects of diabetes are needed. Studies with wider scope and much large sample size are recommended to confirm findings and explore relevant features .

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