



Exploring Dietary Carbohydrate and Fiber Intake Patterns among Patients with Type 2 Diabetes and Diabetes Control

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Abstract

Background: Type 2 diabetes mellitus represents a significant health problem. Many studies have reported that intensive nutritional intervention by itself or in addition to medications is the best method to improve glycemic control in type 2 diabetes mellitus, helps improve diabetes outcomes by assisting patients in achieving a target glycated hemoglobin (HbA1c) level of <7.

Aim of Study: Exploring dietary carbohydrate and fiber intake pattern in patients with with non-insulin-dependent diabetes and its effect on diabetes control on sample of adults in Thi-qar Governorate /Iraq. **Methodology:** This cross-sectional study included 250 patients with non-insulin-dependent diabetes who were attending Thi-Qar Specialized Diabetes Endocrine and Metabolism Center (TDEMC), The data was gathered through in-person interviews with patients through questionnaires distributed on the basis of axes (Socio-demographic and health characteristics of participants, Assessment of carbohydrates and fibres intake patterns of patients. **Results:** The results of this study indicate that 88.4% of patients follow foods that contain unhealthy carbohydrates. While 11.6% of diabetic patients follow a healthy diet. Iin contrast, the results of this study indicate that 47.6% of patients follow healthy foods that contain fibers, 39.6% of patients

with T2DM follow neutral fiber diet. While 12.8% of diabetic patients follow a unhealthy fiber diet. A very high percentage (86.4%) of the patients with T2DM have high levels of HbA1c. The mean of HbA1c was 8.97 ± 2.237 (with range; 5.7-14.9). Additionally, the results found there were negative correlation between HbA1c with carbohydrates scores and fiber scores ($r = -0.504$ and $r = -0.312$) respectively. **Conclusion:** This cross-sectional study showed that there was negative correlation between HbA1c with carbohydrates scores and fiber scores.

Keywords: Dietary, Carbohydrate, Fiber, Type 2 Diabetes, Diabetes Control.

Introduction

Non-insulin-dependent diabetes is a complicated chronic metabolic disease known as type 2 diabetes mellitus (T₂DM). It is defined by the dysregulation of the metabolism of macronutrients (fat, protein, and carbohydrates) due to decreased insulin secretion with or without insulin resistance [1].

Diabetes is a significant public health concern in Iraq due to high prevalence of Type 2 diabetes, which is among the highest in the Middle East. Due to the influence of culture on diet, a large number of Iraqis consume excessive amounts of calories, especially from meals high in sugar and carbohydrates, which has raised their risk of type 2 diabetes [2]. Approximately 1.4 million Iraqis suffer from diabetes. In Iraq, the reported prevalence of type 2 diabetes varies from 8.5% (IDF—age-adjusted) to 13.9%. According to a local study that involved around 5400 residents of Basrah, Southern Iraq, the age-adjusted prevalence of diabetes among participants ages 19 to 94 was 19.7% [3].

The development of (T₂DM) is influenced by several factors, including metabolic, Genetics, obesity, a sedentary lifestyle, and unhealthful food. Therefore, controlling one's weight and food is essential for preventing, treating, and postponing the onset of (T₂DM). The cornerstone and one of the safest and most efficient ways to control blood sugar levels are still dietary interventions, sometimes called "Medical Nutrition Therapy [4,5]. Fibers are polymers of carbohydrates that are not absorbed or broken down in the human small intestine. Based on their use in food items and physiological impacts dietary fibers are traditionally divided into two categories: water-soluble and insoluble modes [6,7].

Dietary fiber has drawn a lot of interest from researchers studying glycemic management in patients with type 2 diabetes. Numerous epidemiological studies have found a connection between dietary fiber intake and the incidence of type 2 diabetes thus far, however these results are debatable. Although some research has demonstrated a protective relationship

between dietary fiber consumption and the incidence of type 2 diabetes, other studies have found no significant correlations [8].

Regarding the carbohydrate in food, Higher consumption, primarily from sugar and starchy carbohydrates, was linked to an increased risk of CVD and death. On the other hand, cutting back on carbohydrates, especially refined ones, may be more important today to lower mortality risk in certain people (such as those with type 2 diabetes and insulin resistance) [9].

Micha and colleagues discovered that a higher incidence of type 2 diabetes was associated with a lower intake of dietary fiber, and whole grains, as well as a higher intake of processed and unprocessed red meat, foods with a high glycaemic load, and sugar-sweetened beverages [10]. According to one research, a person's "carbohydrate tolerance" may play a role in determining the best diet for glycemic and weight control [11].

Methodology

Study Design and Population

This study is a cross-sectional study included Type 2 diabetes not using insulin for glucose control (managing diabetes oral medication and lifestyle changes) and they can provide informed consent and complete the required dietary and clinical assessments who were attending Thi-Qar Specialized Diabetes Endocrine and Metabolism Center

(TDEMC), a tertiary facility in Thi-Qar, Southern Iraq, patients came from all districts, sub-districts, and the city center. The data collect started from first September until the end of October 2024. Before collecting the data, official approval was obtained to conduct the study from the Southern Technical University and Thi-Qar Specialized Diabetes Endocrine and Metabolism Center (TDEMC).

Sampling Size:

Formula for calculating sample size was used to calculate the sample size. As a result, the minimum sample size for Patients with diabetes mellitus type 2 is **243**, while we have taken **250** to strengthen the study, as shown below:

$$n = \frac{Z^2 P(1 - P)}{d^2}$$

where:

n = sample size

Z = Z-score corresponding to the level of confidence (for a 95% confidence level, $Z \approx 1.96$)

P=Expected prevalence or proportion (In Iraq, a study by **Abusaib et al., (2020)** indicated that the overall prevalence of diabetes mellitus type 2 was **19.7%**) According to study by done by [12].

d = Precision ($d= 0.05$) (the maximum allowable difference between the sample proportion and the population proportion)

Data Collection

The data was collected through questionnaires distributed on the basis of axes following are: -

Sociodemographic and health characteristics of participants:

It consists of (10) items, related to the Socio-demographic characteristics of these patients which include (age, gender, marital status, residential area, education level, occupational status, socioeconomic status, Body mass index(BMI), Duration of DM, HbA1c).

Assessment of Carbohydrates-contain food consumption

1- Healthy Carbohydrates-contain food consumption: includes whole grains bread (barley, oat) and legumes (Beans, Lentils, Chickpeas) [13].

2- Unhealthy Carbohydrates-contain food consumption: includes processed or refined carbohydrate foods (white bread), includes processed or refined carbohydrate foods (white rice), High and Medium glycaemic fresh fruits (watermelon, pineapple, bananas (ripe), dates), Starchy vegetables (potatoes, corn) and Sugar sweetened beverages.

Assessment of fibers-contain food consumption

Includes fibers-contain food consumption low glycaemic fresh fruits (oranges, apples, peaches, pears, apricots, strawberries, cherries), leafy green vegetables, and non-starchy vegetables (tomatoes, eggplants, onions, peppers, cucumbers).

Scoring Criteria

➤ Carbohydrate:

The questions regarding assessment of Carbohydrates-contain food items” The rating

and scoring of items are four points Likert scale applied for rating Carbohydrates-contain food items.

For healthy foods; the four-point type Likert scales scored as (4) for 4 or more times a week, (3) for (2-3) times a week, (2) for Once a week, and (1) for Never. For unhealthy foods; the four-point type Likert scales scored as (1) for 4 or more times a week, (2) for (2-3) times a week, (3) for Once a week, and (4) for Never. The Carbohydrates-contain food items “With 7 food items, the minimum score was 7, and the maximum score was 28. A score between >65% was deemed healthy consumption (>23 score), while a score of less than 65% was regarded unhealthy consumption (= <23) [14].

➤ Fiber:

The questions regarding assessment of fiber-contain food items” The rating and scoring of items are four points Likert scale applied for rating fiber-contain food items.

For fiber foods; the four-point type Likert scales scored as (4) for **4 or more times a week**, (3) for **(2-3) times a week**, (2) for **Once a week**, and (1) for **Never**.

The fiber-contain food items “With 3 food items, the minimum score was 3, the maximum score was 12 and, and the median score was 8. A score between 50 and 74% was deemed neutral consumption (8-10), less than 50% was deemed unhealthy consumption (<8), while a score of more than 75% was regarded healthy consumption (>10) [15].

Statistical Analysis

The information for each item on the questionnaire was copied to code sheets, the data was input into a personal

computer, and the statistical package from SPSS-27 was used to evaluate the data. Simple statistics like frequency, percent's, average, standard deviation, and range displayed the data. A Chi-square test (χ^2 -test) or Fisher exact test was utilized to identify the significance of qualitative data percentage differences. The P-value was considered statistically

significant when it was equal to or less than 0.05 (16).

Ethical Considerations

- Obtain informed consent from all participants.
- Ensure confidentiality of patient data. The participants were ensured that all the data collected were used for research purpose only.

Results:

Table (3.1): Socio-demographic and health characteristics of participants

Sociodemographic characteristics of patients with DM		No.	%
Age groups	32-40 years	24	9.6
	41-49 years	64	25.6
	50-58 years	83	33.2
	59-67 years	56	22.4
	>67 years	23	9.2
	Mean± SD (Range)	53.3±9.8 (32-75)	
Gender	Male	86	34.4
	Female	164	65.6
Marital status	Single	4	1.6
	Married	212	84.8
	Divorced	4	1.6
	Widow	30	12.0
Residential area	Urban	201	80.4
	Rural	49	19.6
Education level	Illiteracy	100	40.0
	Read & write	34	13.6
	Primary graduate	45	18.0
	Intermediate graduate	34	13.6
	Secondary graduate	9	3.6
	Collage and higher studies	28	11.2
Occupational Status	Government employed	36	14.4
	Self- employed	42	16.8
	Retired	19	7.6
	house wife	153	61.2

Socioeconomic status	Low	121	48.4
	Medium	86	34.4
	High	43	17.2
BMI categories	Underweight (<18.5)	-	-
	Normal weight (18.5-24.9)	34	13.6
	Overweight (25-29.9)	89	35.6
	Obesity (>=30)	127	50.8
Duration of DM	1-5 years	127	50.8
	6-10 years	65	26.0
	11-15 years	31	12.4
	16-20 years	19	7.6
	>20 years	8	3.2
HbA1C categories	controlled (5.7-6.4%)	34	13.6
	uncontrolled (>6.4%)	216	86.4
	Mean± SD (Range)	8.97±2.237 (5.7-14.9)	

In Table (3.1), From the results, we note that most of the type 2 diabetes patients participating in the study were aged 50-58 years, representing the highest percentage (33.2%), while the lowest percentage (9.2%) of patients were aged 67 years and older. The mean age was 53.3±9.8 (range 32-75). Regarding gender, the percentage of females was 65.6% compared to 34.4% of males. Regarding the marital status of the study participants, 84.8% were married, followed by widows (12.0%), singles (1.6%), and divorced (1.6%). Most of the study sample members lived in urban areas by (80.4%), compared to who lived in rural areas (19.6%). Regarding the educational level of the study sample, the highest percentage to was illiterate (40.0%), while the lowest percentages to were those with a bachelor's or postgraduate degree (11.2%) and high

school (3.6%). Regarding professional status, the highest percentage (61.2%) of participants were housewives, 16.8% were self-employed, 14.4% were employed, and 7.6% were retired. Regarding socioeconomic status, the highest percentage (48.4%) of participants had a low socioeconomic status, 34.4% had a medium socioeconomic status, and 17.2% had a high socioeconomic status. The current results also found that most participants in the study were obese by (50.8%), while those who were overweight amounted to (35.6%), while the lowest percentage (13.6%) of participants had a normal weight. Also, the results of the study reveal that more than half of patients their duration of disease with T2DM was 1-5 years (50.8%), followed by 6-10 years (26.0%), 11-15 years (12.4%), 16-20 years (7.6%), and >20 years (3.2%).

Finally, 86.4% of patient's study participating with type 2 diabetes had high levels of glycated hemoglobin. The

mean glycated hemoglobin (HbA1c) was 8.97 ± 2.237 (range: 5.7–14.9).

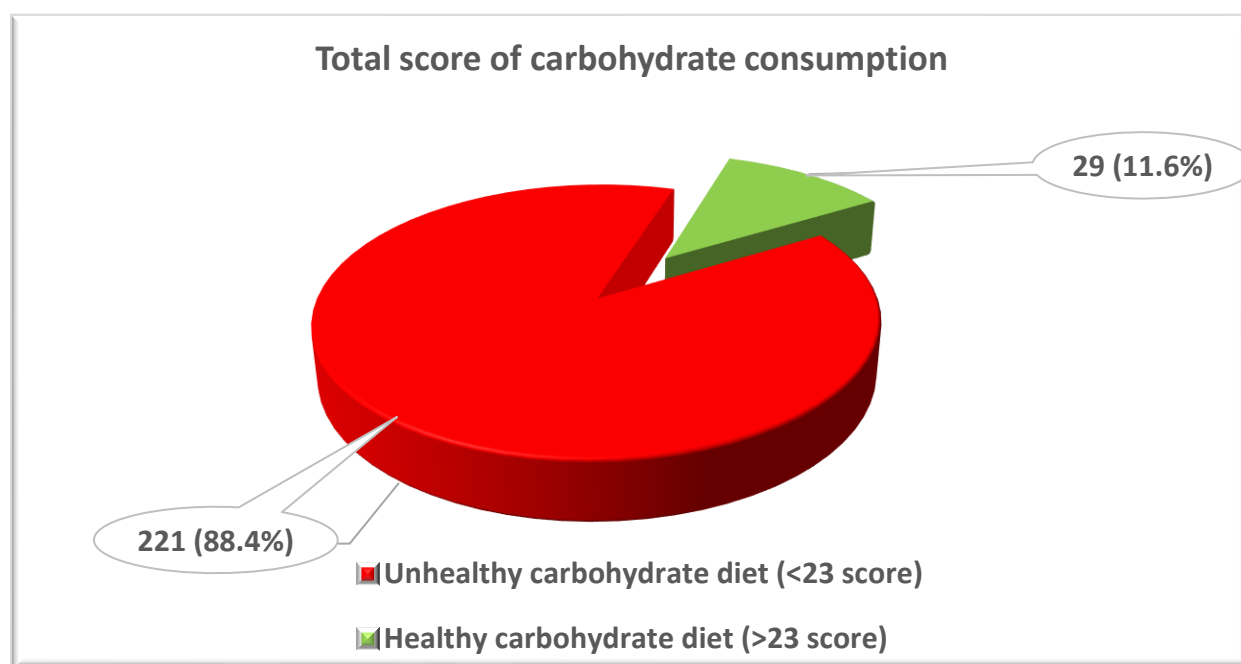
Table (3.2): The distribution of patients with T2DM according to their responses about Carbohydrates-contain food consumption

Carbohydrates-contain food items	Never		Once a week		(2-3) times a week		4 or more times a week	
	No.	%	No.	%	No.	%	No.	%
How often do you eat Whole grains bread (barley, oat)	148	59.2	2	0.8	25	10.0	75	30.0
How often do you eat processed or refined carbohydrate foods (white bread)	59	23.6	1	0.4	11	4.4	179	71.6
How often do you eat processed or refined carbohydrate foods (white rice)	42	16.8	5	2.0	34	13.6	169	67.6
How often do you eat High and Medium glycaemic fresh fruits (watermelon, pineapple, bananas (ripe))	81	32.4	87	34.8	57	22.8	25	10.0
How often do you eat Starchy vegetables (Potatoes, Corn)	145	58.0	51	20.4	46	18.4	8	3.2
How often do you eat Legumes (Beans, Lentils, Chickpeas)	81	32.4	106	42.4	60	24.0	3	1.2
How often do you drink Sugar sweetened beverages	130	52.0	68	27.2	44	17.6	8	3.2

In Table (3.2), the current results found that the highest percentages (59.2%, 58.0% and 52.0%) of patients did not consume food items such as “Whole grains bread (barley, oat)”, “Starchy vegetables (Potatoes, Corn)” and “Sugar sweetened beverages” respectively. While the results found that the highest percentages (34.8% and 42.4%) of patients who eat carbohydrates-contain food items once a week, such as “High and Medium

glycaemic fresh fruits (watermelon, pineapple, bananas (ripe))”, and “Legumes (Beans, Lentils, Chickpeas)” respectively. Finally, the highest percentages (71.6% and 67.6%) of patients eat carbohydrates-contain food items 4 or more times a week, such as “processed or refined carbohydrate foods (white bread)”, and “processed or refined carbohydrate foods (white rice)” respectively.

Figure (3.1): Pie chart illustrates the total carbohydrate consumption score of the participants



In Figure 3.1, the results of this study indicate that 88.4% of patients follow foods that contain unhealthy

carbohydrates. While 11.6% of diabetic patients follow a healthy diet.

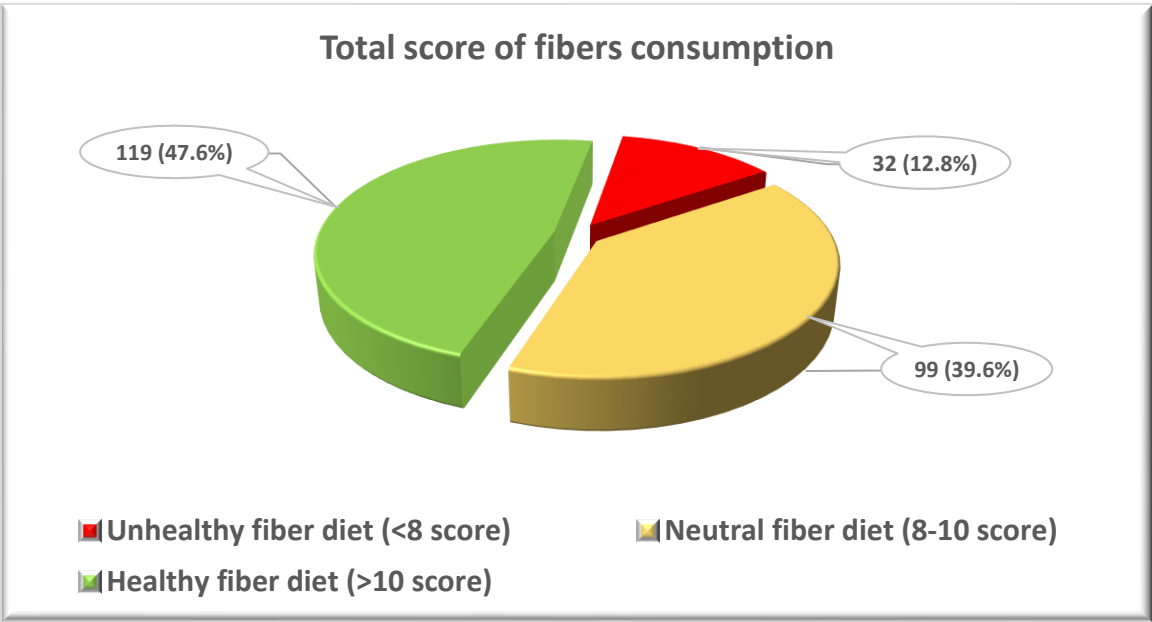
Table (3.3): The distribution of patients with DM according to their responses about fibres-contain food consumption

Fibers-contain food items	Never		Once a week		(2-3) times a week		4 or more times a week	
	No.	%	No.	%	No.	%	No.	%
How often do you eat Low glycaemic fresh fruits (oranges, apples, peaches, pears, apricots, strawberries, cherries)	14	5.6	72	28.8	99	39.6	65	26.0
How often do you eat Leafy green vegetables	5	2.0	5	2.0	91	36.4	149	59.6
How often do you eat non-starchy vegetables (Tomatoes, Eggplants, onions, peppers, cucumbers)	2	0.8	16	6.4	34	13.6	198	79.2

In Table (3.3), the current results found that the highest percentages (59.6%, and 79.2%) of patients eat fibres-contain food items 4 or more times a week, such as “Leafy green vegetables”, and “non-starchy vegetables (Tomatoes, Eggplants, onions, peppers, cucumbers)” respectively. While 39.6% of patients eat fibres-contain food items 2-3

times a week, such as “Low glycaemic fresh fruits (oranges, apples, peaches, pears, apricots, strawberries, cherries)”. The lowest percentages of participants (2% and 0.8%) responded that they never ate fibre-rich foods, such as green leafy vegetables and non-starchy vegetables, respectively.

Figure (3.2): Pie chart illustrates the total fibre consumption score of the participants



In Figure 3.2, the results of this study indicate that 47.6% of patients follow healthy foods that contain fibres, 39.6%

of patients with T2DM follow neutral fibres diet. While 12.8% of diabetic patients follow an unhealthy fibres diet

Table (3.4): Correlation between HbA1c and food patterns

Correlation			
		Carbohydrate scores	Fibre scores
HbA1c	R	-0.504**	-0.312**
	P-value	<0.001	<0.001
	N	250	250
**. Correlation is significant at the 0.01 level (2-tailed).			

In Table 3.4, the results found there were negative correlation between HbA1c with

Carbohydrate scores and fibre scores (r=-0.504 and r=-0.312,) respectively.

Discussion

The results of this study indicate that most patients with T2DM were older age. These results agreed with the study findings conducted in Jazan, Saudi Arabia by [17], which found that most of the T2DM belonging to age groups of (51-60 years) with (30.5%), followed by those aged 41-49 years (28.6%). Also, another study in Baghdad, Iraq by [18], that showed the role of ageing in the development of diabetes type 2 which reported that 92 % of patients fall within age groups (50 – 60 years), followed by 8 % of patients fall within age groups <50 years. The increase in the older age groups among the samples of this study may be because type 2 diabetes is mostly associated with the elderly, which increases the frequency of these advanced age groups. This explanation is supported by [19], which reported that diabetes type 2 was more prevalent among the older respondents compared with the younger age groups.

In this study, the majority of the study sample comprises females, representing 164 (65.6%) of the total sample size. This result agreed with study findings conducted by [20], which reveals that most of participants were females (56.9%). Other study conducted by [17], which reveals that half of participants were females (55.6%)? A possible reason for this result could be that women are less active than men and follow a sedentary lifestyle, and therefore may be overweight or obese. Women are also less aware than men of the risks of physical

inactivity and the damage caused by obesity and its complications, so they are more likely to develop diabetes. This explanation is supported by [21], which revealed that the most prominent risk factor to T2DM, which is obesity, is more common in women.

Regarding to marital status, a high proportion of the patients with T2DM were married. These results are similar to findings of study done by [22], which indicated that the majority (85.7%) of the study sample were married. Also, other recent study conducted by [23], which indicated that the majority (72%) of the study sample were married. A possible explanation for this increase in married people in this study may be logical because most of the sick participants are from the older age groups.

In this study, the results reported that most patients with T2DM living in urban areas. This finding supported by study conducted by [24], which found the most of the patients living in urban. Also, other recent study conducted by [25], which found the same results. The possible explanation for this increase in the number of residents in urban areas may be due to many factors, including the availability of health institutions equipped with the best technology and the most skilled doctors and easy access to them by residents of urban areas, which facilitates early diagnosis of many cases of diabetes and their increase in urban areas compared to rural areas that lack early detection programs and difficulty in access to

health facilities. Additionally, this high prevalence of diabetes in urban can also due to reflects the consequences of urbanization, the change in eating habits linked to it and sedentary lifestyle.

Concerning to the level of education of type 2 diabetic patients, it is demonstrated that the highest percentage of them illiterate, they accounted (40.0%) for the study sample. This explanation supported by [26]. which found that there was a greater prevalence of the microvascular disease in illiterate diabetes patients. This was associated with the higher prevalence of poor-quality diet and sub-optimal diabetes control.

In regard to the participants' occupational status, it was found that the largest proportion of the study sample consisted of individuals who identified as housewives (61.2%). This results are similar to the result obtained from study carried out by [27]. which indicated that the majority of the study sample were housewives.

About socioeconomic status, a majority of patients (48.4 %) have low socioeconomic status, this result agreed with study findings conducted by [24]. which reveals that most of patients have low socioeconomic status. Also, other study conducted by [28]. these study reported that majority of patients have insufficient income with low socioeconomic status. A possible explanation for this increase in the number of low socio-economic status

people visiting the hospital may be due lack of knowledge in blood sugar control, and a lack of healthy diet quality due to high cost, all of which are associated with a lot of diseases including cardiovascular diseases that make people attending frequent to hospitals.

The present results found that more than half of patients (50.8%) with T2DM were obese. This results were similar to the result obtained from study carried out by [29]. which reveals that most of participants were obese. Another study conducted by [30]. also supported these results. This may be due to the direct correlation between obesity and T2DM. According to a study by [31], reported that the relationship between obesity and diabetes is of such interdependence that term 'diabesity' has been coined. Major factors causative towards 'diabesity' include chronic overconsumption of energy-dense food, lifestyle, genetic makeup and environment play important roles in adipose tissue function or dysfunction. T2DM is characterized by impaired fat metabolism in adding up to glucotoxicity. Overconsumption of energy-dense foods results in excessive fat deposition and enhanced insulin resistance.

The current results found that more than half of patients (59.2%) did not consume whole grains bread (barley, oat). These results agreed with the study findings conducted by [32]. which found that only 18% of the study patients consumed

wholegrain cereals. Also, these results were agreed with recent study done by [33]. which indicates that healthy carbohydrates consumption is low among T2DM.

In this study, the highest number of patients eat processed or refined carbohydrate foods (white bread and white rice) 4 or more times a week. These results consisted with the study findings conducted by who revealed that the daily intake of processed or refined carbohydrate foods exceeded the maximum recommended daily intake. The highest portion came from rice while Breads were second in terms of their daily consumption.

The results indicate that the proportion of participants who consume high and medium glycaemic fresh fruits (67.6%) at varying frequencies (34.8%, 22.8 %, and 10.0%) once a week, 2-3 times a week, 4 or more times, respectively, is significantly higher than that of non-consumers (32.4%). This results were similar to the result obtained from study carried out by [34], which found that a highest percentage (87.8%) of patients showed a habit of taking high to moderate glycemic index items. But, these results were incompatible with study done by [35]. which found that low percentage of patients consumed high and medium glycaemic fruits. This may be a result of the influence of economic factors, the availability of fresh fruits, perceptions and awareness of their effect on blood sugar levels, which leads to an increase or decrease in their consumption.

In this study, most patients with T2DM follow foods that contain unhealthy carbohydrates. These results aligned with study carried out by [36]. which showed that foods that contain unhealthy carbohydrates intake was high among Saudi patients with type 2 diabetes. Also, these results were compatible with recent study done by [37], which reported that the diabetic group consumed unhealthier carbohydrates than the healthy group. This may be due to a lack of nutritional knowledge, dietary habits, economic constraints, and limited availability of better options. In addition, many traditional diets are based on unhealthy carbohydrate-rich meals, which makes them difficult to change.

The results found there were negative correlation between HbA1c with Carbohydrate scores. A significant negative correlation between HbA1c and carbohydrate scores suggests that higher carbohydrate intake, particularly of better quality with low glycemic index, is associated with lower HbA1c levels, highlighting the potential role of carbohydrate quality in glycaemic control. These result agreed with study carried out in Babil, Iraq by [38], who showed a highly statistically significant association between intake of grains and starch food and glycemic control, that also agreed with the international expert on carbohydrate research held a scientific summit revealed that diets with low glycemic index and low glycemic load are considered as preventive and management tools of the diseases, obesity and insulin resistance.

Another study conducted by [39], reported that a greater intake of carbohydrates from whole grains, and carbohydrates from non-starchy vegetables was significantly associated with a lower risk of T2DM. This relationship may be explained that foods such as whole grains with a low glycemic index (GI) may help patients lower or manage their blood sugar levels.

The results found there were negative correlation between HbA1c with fiber scores, this indicate that higher fibers intake, is associated with lower HbA1c levels, highlighting the potential role of fibers quality in glycaemic control. This result agreed with study carried out by [40], concluded that higher-fibre diets are an important component of diabetes management, resulting in improvements in measures of glycemic control, blood lipids, and body weight reduction.

Conclusion

The results of this study revealed that vegetables and fruits were consumed 2-4 times or more per week. In contrast, most patients were follow foods that contain unhealthy carbohydrates. in addition, higher glycated hemoglobin (HbA1c) levels were associated with unhealthy carbohydrate and fibers consumption.

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استكشاف أنماط تناول الكربوهيدرات والألياف الغذائية لدى مرضى السكري من النوع الثاني والسيطرة على السكري

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الجامعة التقنية الجنوبية / كلية التقنية الصحية والطبية البصرة / العراق^{1,2,3}

طبيب الغدد الصماء للبالغين، مركز ذي قار التخصصي للسكري والغدد الصماء والتمثيل الغذائي (TDEMC)، مديرية صحة ذي قار/ العراق⁴.

الخلاصة

الخلفية العلمية: يُمثل داء السكري من النوع الثاني مشكلة صحية خطيرة. وقد أشارت العديد من الدراسات إلى أن التدخل الغذائي المكثف، سواءً بمفرده أو مع الأدوية، هو أفضل طريقة لتحسين السيطرة على نسبة السكر في الدم لدى مرضى السكري من النوع الثاني، ويساعد على تحسين نتائج علاج السكري من خلال مساعدة المرضى على تحقيق مستوى الهيموغلوبين السكري المستهدف الذي يقل عن (7). **هدف الدراسة:** استكشاف أنماط تناول الكربوهيدرات والألياف الغذائية لدى مرضى السكري غير المعتمد على الأنسولين وأثرها على السيطرة على داء السكري، وذلك على عينة من البالغين في محافظة ذي قار/العراق. **المنهجية:** شملت هذه الدراسة المقطعية 250 مريضاً مصاباً بداء السكري غير المعتمد على الأنسولين، ممن يراجعون مركز ذي قار التخصصي للسكري والغدد الصماء والاستقلاب. جُمعت البيانات من خلال مقابلات شخصية مع المرضى عبر استبيانات موزعة على محاور (الخصائص الاجتماعية والديموغرافية والصحية للمشاركين، وتقييم أنماط تناول الكربوهيدرات والألياف لدى المرضى). **النتيجة:** تشير نتائج هذه الدراسة إلى أن 88.4% من المرضى يتبعون أطقمة تحتوي على كربوهيدرات غير صحية، بينما يتبع 11.6% من مرضى السكري نظاماً غذائياً صحياً. في المقابل، تشير نتائج هذه الدراسة إلى أن 47.6% من المرضى يتبعون أطقمة صحية تحتوي على ألياف، و39.6% من مرضى السكري من النوع الثاني يتبعون نظاماً غذائياً يحتوي على ألياف محايدة، بينما يتبع 12.8% من مرضى السكري نظاماً غذائياً يحتوي على ألياف غير صحية. أظهرت نسبة عالية جداً (86.4%) من مرضى السكري من النوع الثاني مستويات عالية من الهيموغلوبين السكري. بلغ متوسط الهيموغلوبين السكري (8) (بمدى يتراوح بين 5.7 و14.9). كما أظهرت النتائج وجود علاقة عكسية بين الهيموغلوبين السكري ودرجات الكربوهيدرات ودرجات الألياف ($r = 0.804$) و($r = -0.312$) على التوالي. **الاستنتاج:** أظهرت هذه الدراسة المقطعية وجود علاقة سلبية بين الهيموغلوبين السكري التراكمي ودرجات الكربوهيدرات ودرجات الألياف.

الكلمات المفتاحية: النظام الغذائي، الكربوهيدرات، الألياف، مرض السكري من النوع الثاني، السيطرة على مرض السكري.