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**INDO AMERICAN JOURNAL OF  
PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.1423106>Available online at: <http://www.iajps.com>**Research Article****ANALYSIS OF EFFECT OF LOW CARBOHYDRATE DIET FOR  
DIABETES MELLITUS MANAGEMENT: A RESEARCH  
ANALYSIS**<sup>1</sup>Dr. Muhammad Adeel Bhutta, <sup>2</sup>Dr. Shahbaz Hussain, <sup>2</sup>Dr. Shahid Hussain Khan<sup>1</sup>Medical Officer at Multan Institute of Cardiology<sup>2</sup>Medical Officer at RHC Choti Zareen, Dera Ghazi Khan**Abstract:**

**Introduction:** Type 2 diabetes is characterized by a chronic metabolic disorder associated with relative insulin deficiency arising as a result of the secretion defect and / or insulin resistance. Today, the disorder is classified as a civilization disease and its incidence continues to increase. **Objectives of the study:** The purpose of the presented study is to verify the current state of knowledge concerning usage of low-carbohydrate diets in type 2 diabetes, and to present the benefits and risks associated with the given nutrition in these patients. **Methodology of the study:** The study was conducted at Dera Ghazi Khan. This area of Pakistan is considered to be the less aware area regarding awareness of diabetes. This study was conducted during January 2018 to February 2018. There was 100 patients which was visit the health center during this time period. We assess the nutritional and economic health of patients by asking some survey questions. **Analysis and results:** The data was collected from 100 male and females patients who visit the hospitals of Dera Ghazi Khan. The analysis of the data shows that diabetes is more common in females as compared to males. The reason is that because women have different conditions and working environment as compared to males. The relationship between dietary intake, BMI and diet quality among diabetic patients shows that people consume more protein and fat as compared to carbohydrates. Due to this reason they may suffer from other diseases parallel to diabetes. **Conclusion:** It is concluded that carbohydrate diet has direct effect on type 2 diabetes patients. Healthy eating pattern may lead towards the control of this diseases otherwise the condition get worse.

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**INTRODUCTION:**

Type 2 diabetes is characterized by a chronic metabolic disorder associated with relative insulin deficiency arising as a result of the secretion defect and / or insulin resistance. Today, the disorder is classified as a civilization disease and its incidence continues to increase. In 2000, the number of patients with type 2 diabetes worldwide was 175 million [1]. It is estimated that by 2030 this number will increase to 336 million patients. Currently in Poland, there are at least 1.6 million people with the illness, representing 5.6% of the Polish population. Nonetheless, past research recommends that dietary adherence is seemingly among the most troublesome foundations of diabetes administration [2]. Type 2 diabetes usually occurs after 30 years of age, and its development is accompanied by numerous metabolic defects, such as hyperglycemia and disturbances in the metabolism of lipids and proteins [3]. Hyperglycemia is the cause of intensification of the processes gluconeogenesis, glycogenolysis and lipolysis, thereby increasing the concentration of acetyl-CoA; the excess is converted into ketone compounds. In addition, excessive synthesis of triglycerides and cholesterol in the liver increases the release of lipoproteins into the bloodstream. In patients with type 2 diabetes an increased concentration of low density lipoprotein (LDL), and intensified the processes of oxidation and glycation of these molecules is observed [4].

Higher HEI scores demonstrate nearer adherence to current dietary rules for singular food and supplement gatherings. For the sufficiency segments, for example, vegetables and natural product, a higher score demonstrates higher utilization [5]. Dietary proposals depend on the useful effects of devouring products of the soil and expressly stress their constructive outcomes of decreasing corpulence and certain sorts of growths. The last three segments of the HEI incorporate refined grains, sodium, and discharge (calories from strong fats, liquor, and included sugars) and a higher score demonstrates bring down utilization [6].

**Background of the study**

According to the present Polish food pyramid, the traditional diet involves consuming large quantities of carbohydrates in the form of whole grains and no grain cereal products. Simultaneously, dietary recommendations include a significant amount of fruits and vegetables. At the top of the pyramid are the foods rich in protein and fats. Experts also attribute an important role to daily physical activity. A properly composed diet should contain specific

nutrients, such as carbohydrates, proteins and fats in appropriate proportions. Diabetes is considered to be one of the most common disease in Pakistan. Almost every 4<sup>th</sup> individual is suffering from this disease, but the environment of Pakistan does not allow the people to control their sugar level in daily routine. The reason is that because we are habitual of eating a lot of protein and fat in our daily diet [7].

**Objectives of the study**

The purpose of the presented study is to verify the current state of knowledge concerning usage of low-carbohydrate diets in type 2 diabetes, and to present the benefits and risks associated with the given nutrition in these patients.

**Methodology of the study**

The study was conducted at Dera Ghazi Khan. This area of Pakistan is considered to be the less aware area regarding awareness of diabetes. This study was conducted during January 2018 to February 2018.

**Data collection**

There were 100 patients which was visit the health center during this time period. We assess the nutritional and economic health of patients by asking some survey questions. From the large pool of data we select health status, diet quality, lifestyle, food culture, food security, and demographic information of the selected patients. The economic and health status describe the level of awareness regarding disease.

**Statistical analysis**

The collected data were analyzed using SPSS software. The results are presented as a mean with 95% confidence interval limits or standard deviations. The significant value for  $P < .05$  was accepted as statistically significant.

**Analysis and results**

The data was collected from 100 male and females patients who visit the hospitals of Dera Ghazi Khan. The analysis of the data shows that diabetes is more common in females as compared to males. The reason is that because women have different conditions and working environment as compared to males

We also collect the basic characteristics of patients and compared these values with normal values. So we can find that diseases person have more blood pressure value as compared to normal. People who suffer from diabetes also suffer from high blood pressure problem (Table 1).

Table 1 explains the demographical conditions of the

patients. This table explains the co-efficient and standard error values. The level of confidence

interval is 90 and 95 in this table for the significant value.

**Table 01:** Demographic characteristics and history of patients

Variables	Co-efficient	SE
Blood pressure	0.048	0.35
Healthy eating index (HEI)	-0.059	0.05
Smoker	0.060	0.80
Food security	0.106	0.12
Drinker	-0.343	0.08
Belong to city area	0.057	0.01
Belong to rural area	0.59	0.70
BMI	0.5460.24	

Indicate significance at the 99, 95, and 90% level.

Table 02 explains the relationship between dietary intake, BMI and diet quality among diabetic patients. It shows that people consume more protein and fat as compared to carbohydrates. Due to this reason they may suffer from other diseases parallel to diabetes.

**Table 02:** Relationship between supplement intake, BMI, and diet quality among diabetes patients.

Variables	Co-efficient	SE
<b>Dietary supplements</b>		
Carbohydrate	0.019	0.03
Protein	0.061	0.08
Amino acid	0.106	0.19
Fat	0.434	0.02
lipids	0.057	0.01
<b>Body Mass Index</b>		
BMI of diseased person	0.29	0.07

Table 03 explains about the total calorie count of different types of food. It explains that addition, the two-week low carbohydrate diet in patients with type 2 diabetes reduced concentrations of insulin and leptin and increased the concentration of ghrelin. Similar effects were observed in the long-term use of nutritional obese model. In the case of leptin, the biggest changes were observed in men

**Table 03:** Daily Consumption of Food Groups in Patients with Type 2 Diabetes According to Eating Patterns

Food Groups (% of Total Caloric Intake)	Eating Patterns		P Value
	Unhealthy (n = 100)	Healthy (n = 97)	
Whole carbohydrates	0.0 (0.0–2.4)	10.1 (3.5–17.5)	0.001
Fried foods	1.5 (0.1–5.2)	0.9 (0.0–4.3)	0.450
Dairy	8.0 (3.9–11.7)	11.0 (7.4–16.1)	0.001
Sweets and desserts	3.2 (0.5–7.2)	2.1 (0.3–4.7)	0.032
Red meat	10.0 (6.1–13.6)	11.4 (6.1–14.8)	0.217
Fish	0.0 (0.0–0.1)	0.0 (0.0–1.4)	0.035
Fruits	12.4 (7.7–16.3)	16.7 (12.5–21.6)	0.001
Vegetables	2.3 (1.5–3.6)	3.5 (2.5–5.7)	0.001
Vegetable oils	2.2 (1.3–4.9)	2.5 (0.6–4.6)	0.218

## DISCUSSION:

Despite the identified benefits of different modifications of low-carbohydrate diet in type 2 diabetes, attention should be paid to existing threats appearing both in the short-term and long-term use of this model of nutrition. A low-carbohydrate diet is deficient and may be the cause of hypo-vitaminosis [9]. This results from lower participation in the

described diets, compared with a traditional or diabetic, fruit and vegetables, the main sources of vitamins, among others antioxidants. This is detrimental for healthy people, and especially for diabetic patients. A worrying consequence of low carbohydrate diets is the deficit in vitamin C [10]. Type 2 diabetes is associated with oxidative stress and limiting the supply of this compound may further

deepen the existing imbalance of antioxidant oxidation system. This study focuses on the investigating the linkage between diabetes, diet-health behavior, and health outcomes that are frequently discussed in the context of diabetes management, public health, and diet quality and BMI [11]. It is realized that carbohydrates are the supplements that most influence blood glucose levels. Be that as it may, up to now there is no agreement prove about the perfect measure of carbohydrate intake for individuals with diabetes [12]. Truth be told, in the present investigation, the carbohydrate utilization did not vary between the unhealthy and healthy gathering. The relationship between healthy eating pattern and glycemic control could be better clarified by the nature of carbohydrate intake than the measure of this macronutrient. In concurrence with this, we exhibited a higher utilization of entire carbohydrates, natural products, and vegetables in this gathering of patients. As an outcome, these patients devoured diets with a lower glycemic record and glycemic stack esteems as contrasted and patients in the unhealthy eating pattern. Presently, diets with a low glycemic list have been related with enhanced glycemic control [13].

Another supplement likely identified with the best watched glycemic control in our investigation is dietary fiber. In like manner, in our patients in the healthy eating pattern, a higher aggregate, dissolvable, and insoluble fiber utilization was watched. It has just been exhibited that a high fiber intake was related with better glycemic control in patients with diabetes. In any case, up to now, the advantageous effects of fiber intake, particularly solvent fibers, couldn't be detached from the effects of glycemic list and glycemic stack in light of the fact that most foods that have a low glycemic file additionally have a high fiber content [14].

Consumption of products low in carbohydrates and high percentage of protein can lead to deficiencies in water and electrolyte balance [15]. Deficiency of calcium, magnesium, potassium and copper, with an excess of sodium, phosphorus, iron and zinc in the blood, are frequently observed. The main reason for these disparities is a disorder of acid base balance, resulting from the deficiency in the diet of vegetables and excess animal proteins rich in sulfur amino acids [16].

### CONCLUSION:

It is concluded that carbohydrate diet has direct effect on type 2 diabetes patients. Healthy eating pattern may lead towards the control of this diseases

otherwise the condition get worse. And healthy eating pattern include balanced carbohydrate, protein and fats and theses are associated with plasma glucose level.

### Author's contribution

All the authors contributed equally.

### REFERENCES:

1. A jala O, English P, Pinkney J. Systematic review and meta-analysis of different dietary approaches to the management of type 2 diabetes. *Am J Clin Nutr.* 2013;97(3):505–516.
2. Newby PK, Tucker KL. Empirically derived eating patterns using factor or cluster analysis: a review. *Nutr Rev.* 2004;62(5):177–203.
3. Ocké MC. Evaluation of methodologies for assessing the overall diet: dietary quality scores and dietary pattern analysis. *Proc Nutr Soc.* 2013;72(2):191–199.
4. Viana LV, Gross JL, Camargo JL, Zelmanovitz T, da Costa Rocha EP, Azevedo MJ. Prediction of cardiovascular events, diabetic nephropathy, and mortality by albumin concentration in a spot urine sample in patients with type 2 diabetes. *J Diabetes Complications.* 2012;26(5):407–412.
5. Hallal PC, Matsudo SM, Matsudo VKR, Araújo TL, Andrade DR, Bertoldi AD. Physical activity in adults from two Brazilian areas: similarities and differences. *Cad Saude Publica.* 2005;21(2):573–580.
6. Sarmento RA, Riboldi BP, da Costa Rodrigues T, de Azevedo MJ, de Almeida JC. Development of a quantitative food frequency questionnaire for Brazilian patients with type 2 diabetes. *BMC Public Health.* 2013;13:740.
7. Wang Q, Xia W, Zhao Z, Zhang H. Effects comparison between low glycemic index diets and high glycemic index diets on HbA1c and fructosamine for patients with diabetes: a systematic review and meta-analysis. *Prim Care Diabetes.* 2015;9(5):362–369.
8. Oza-Frank R, Cheng YJ, Narayan KM, Gregg EW. Trends in nutrient intake among adults with diabetes in the United States: 1988–2004. *Journal of the American Dietetic Association.* 2009 Jul; 109(7):1173–1178.
9. Meloni C, Morosetti M, Suraci C, et al. Severe dietary protein restriction in overt diabetic nephropathy: benefits or risks? *J. Ren. Nutr.* 2002 Apr; 12(2):96–101.
10. Kopple JD. National kidney foundation K/DOQI clinical practice guidelines for nutrition in chronic renal failure. *American journal of kidney diseases : the official journal of the National Kidney Foundation.* 2001 Jan; 37(1 Suppl

- 2):S66–S70.
11. Azadbakht L, Esmailzadeh A. Soy-protein consumption and kidney-related biomarkers among type 2 diabetics: a crossover, randomized clinical trial. *Journal of renal nutrition : the official journal of the Council on Renal Nutrition of the National Kidney Foundation*. 2009 Nov; 19(6): 479–486.
  12. Silva FM, Kramer CK, de Almeida JC, Steemburgo T, Gross JL, Azevedo MJ. Fiber intake and glycemic control in patients with type 2 diabetes mellitus: a systematic review with meta-analysis of randomized controlled trials. *Nutr Rev*. 2013;71(12):790–801.
  13. Shai I, Schwarzfuchs D, Henkin Y, Shahar DR, Witkow S, Greenberg I, et al. Dr.P.H. for the Dietary Intervention Randomized Controlled Trial (DIRECT) group weight loss with a low-carbohydrate, mediterranean, or low-fat diet. *N Engl J Med*. 2008; 359: 229–234.
  14. Volek JS, Sharman MJ. Cardiovascular and hormonal aspects of very-low-carbohydrate ketogenic diets. *Obesity Research* 2004; 12: 115–123.
  15. Daly ME, Paisey R, Millward BA, Eccles C, Williams K, Hammersley S, McLeod KM, Gale T.J. Short-term effects of severe dietary carbohydrate restriction advice in Type 2 diabetes- a randomized controlled trial. *Diabet Med*. 2006; 23: 15–20.
  16. Daly ME, Piper J, Paisey R, Darby T, George L, Ball C, Vaezi A, Williams K, Gale TJ. Efficacy of carbohydrate restriction in obese Type 2 diabetes patients. *Diabet Med*. 2006; 23(2): 26.