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AN EXECUTIVE GUIDE TO DIABETES UNDER NUTRITIONAL ASPECTS

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ABSTRACT Diabetes mellitus is a chronic metabolic disease that affects the body's capacity to control blood sugar levels and is typified by elevated blood glucose levels brought on by either insulin resistance, decreased insulin secretion, or both. Following dietary recommendations is essential for diabetes management. Lowering drug use, preventing problems (such as renal, eye, and cardiovascular illnesses), increasing blood glucose control, reaching ideal weight, and improving quality of life. Medical Nutrition Therapy (MNT) for diabetes is a personalized nutrition plan to manage diabetes, improve blood glucose control, and prevent complications. A thorough framework describing dietary suggestions and tactics for controlling diabetes, encouraging ideal blood glucose regulation, and averting complications can be found in the Guide to Diabetes under Nutrition Aspects. Reviewing the available, clinically relevant data on dietary treatments for the treatment of type 1 and type 2 diabetes and its complications is the goal of this review.

Keywords: *Diabetes; Nutritional guidelines; Medical Nutrition Therapy (MNT); Blood glucose; Fats*

INTRODUCTION

Millions of individuals worldwide suffer from diabetes, a chronic illness. It is a disorder brought on by the body's inability to make or use insulin, a hormone that controls blood sugar levels. Because of this, diabetics frequently have elevated blood sugar levels, which, if left untreated, can result in several issues (Balaji, Duraisamy, & Kumar, 2019). Nutrition is one of the most crucial components of diabetes care. People with diabetes can effectively control their blood sugar levels and lower their risk of problems by making educated meal choices. This guide will examine the essential nutritional factors to take into account when controlling diabetes, such as the function of protein, lipids, and carbs, as well as the significance of portion management and consistent exercise (Association, 2014).

Carbohydrates are the body's main source of energy and are found in a wide variety of foods, including fruits, vegetables, whole grains, and legumes (Holesh, Aslam, & Martin, 2023; Younus, Saeed, & Sajid, 2024). The breakdown of carbohydrates in the body produces glucose, which is then used as an energy source by the body's cells. However, low blood sugar, a feature of diabetes, can result from an excess of glucose in the blood. Choosing foods with a glycemic index (GI) and keeping an eye on carbohydrate intake is crucial for diabetics (Marinangeli et al., 2019). The rate at which a food elevates blood sugar levels is indicated by its GI. Foods with a high GI cause blood sugar levels to rise quickly, whereas foods with a low GI cause them to rise more slowly (Staff, Husney, Thompson, & Romito, 2020). Proteins and fats should also be taken into account by diabetics.

Fats can lessen the effect on blood sugar levels by slowing down the absorption of carbohydrates. Saturated and trans fats can raise the risk of heart disease, so it's crucial to restrict them and choose healthy fats like those in nuts, seeds, and olive oil. Because it can help control blood sugar levels and encourage fullness, protein is also crucial for managing diabetes (Munekata et al., 2021). Good sources of protein include lean meat, poultry, fish, beans, and legumes. In addition to monitoring carbohydrate intake and choosing healthy fats and protein, people with diabetes should also pay attention to portion control and regular physical activity (Gray & Threlkeld, 2015). Regular exercise can assist increase insulin sensitivity and blood sugar levels, but eating too much or too little can cause blood sugar to vary. In this study, we evaluate dietary recommendations from the Executive Guide to Diabetes, highlighting their applicability, body of evidence, and relevance for professionals attempting to balance their busy schedules with optimal health.

The crucial role of nutrition in diabetes management:

Because diet has a direct impact on blood sugar levels, it is essential for managing diabetes. Blood sugar levels can be kept

steady, spikes and crashes can be avoided, and problems can be decreased with a well-balanced diet (Munekata et al., 2021). People with diabetes must restrict processed foods and added sugars, choose foods high in nutrients, and keep an eye on their carbohydrate intake. People with diabetes can create a customized nutrition plan that fits their requirements and objectives with the assistance of a registered dietitian or certified diabetes educator (Health & Services, 2017).

Key nutritional strategies for diabetes control:

Some key nutritional strategies for diabetes control include choosing complex carbohydrates such as whole grains, fruits, and vegetables; incorporating lean proteins; selecting healthy fats; and increasing fiber intake. Additionally, it is important to limit processed foods, added sugars, and saturated fats. It is also important to monitor portion sizes and to choose foods that are low in sodium and cholesterol (Health & Services, 2017). Integrate insulin regimens into regular food and exercise routines for young people with type 1 diabetes to ensure they have enough energy to support normal growth and development. To support dietary and exercise modifications that lower insulin resistance and enhance metabolic status in young people with type 2 diabetes.

Carbohydrates Management-Choosing right source:

People with diabetes must control their carbohydrate intake since it has the biggest effect on blood sugar levels. Stable blood sugar levels can be achieved by selecting the appropriate types of carbs, such as whole grains, legumes, and non-starchy vegetables (Hartigan, 2024). When referring to common food carbohydrates, the terms sugar, starch, and fiber are preferred. Examples of poorly defined phrases that should be avoided include simple sugars, complex carbohydrates, and fast-acting carbohydrates. Additionally, it's critical to keep an eye on the glycemic index and glycemic load of foods so that people can make well-informed decisions regarding their intake of carbohydrates (Sami, Ansari, Butt, & Ab Hamid, 2017). The significance of having foods containing carbohydrates, especially from whole grains, fruits, vegetables, and low-fat milk, in the diet of individuals with diabetes, is supported by studies conducted on both healthy persons and those at risk for type 2 diabetes.

Protein powder- lean options for blood sugar balance:

For diabetics trying to control their blood sugar levels, protein powder can be a helpful supplement. When paired with a healthy diet and frequent exercise, lean protein sources, such as whey or plant-based protein powders, can help regulate blood sugar levels and encourage satiety. Selecting protein sources that are low in salt and saturated fats is crucial (Silva et al., 2013). Protein intake is 15–20% of the average energy intake in the United States, is fairly constant from infancy to old age, and seems to be similar in individuals with diabetes (Wu, 2016).

Insulin resistance and deficiency were thought to have a greater impact on glucose metabolism in diabetics than on anomalies in protein metabolism. Numerous investigations on both healthy persons and people with type 2 diabetes under control have shown that protein does not increase plasma glucose levels because the glucose it contains does not reach the bloodstream. Moreover, the peak glucose response to carbs alone is similar to that of carbohydrates + protein, suggesting that protein does not slow down the absorption of carbohydrates (Roberts, Desbrow, Grant, Anoopkumar-Dukie, & Leveritt, 2013). The type 1 diabetic subjects exhibited similar rates of euglycemia restoration after hypoglycemia, time to peak glucose levels, and subsequent rate of glucose decline after receiving medication with either carbohydrate alone or carbohydrate protein.

Healthy fat- Unsaturated choices for Optimal Health:

Healthy fats, such as unsaturated fats from foods like avocados, almonds, and olive oil, can help people with diabetes maintain their best possible health. These fats can promote general heart health and help regulate blood sugar. Trans and saturated fats should be avoided as they raise the risk of heart disease (Islam et al., 2019). In metabolic study diets, when weight and energy intake are held constant, diets that are high in carbohydrates and low in saturated fat, or that are enhanced with cis-monounsaturated fatty acids (monounsaturated fat), lower plasma LDL cholesterol. In metabolic experiments, low-saturated fat (i.e., 10% of energy) high carbohydrate diets increase postprandial levels of insulin, triglycerides, and plasma glucose and, in certain circumstances, lower plasma HDL cholesterol when compared to isocaloric high monounsaturated fat diets (Basset-Sagarminaga et al., 2023).

Low-fat diets:

In studies evaluating the effect of ad libitum energy intake as a function of dietary fat content, low-fat, high-carb diets are associated with a brief decrease in energy intake and a minor fall in body weight to a new equilibrium weight (Bolla, Caretto, Laurenzi, Scavini, & Piemonti, 2019). This modest weight reduction results in a decrease in plasma total cholesterol and triglycerides and an increase in HDL cholesterol. Long-term low-fat, high-carb diets have been linked to modest weight loss and no increase in plasma triglycerides, which supports this.

Fiber role- Regulating blood sugar / promoting Satiety:

Fiber is crucial for controlling blood sugar levels and encouraging fullness. Eating a diet rich in fiber from foods like fruits, vegetables, whole grains, and legumes can assist support weight management and enhance blood sugar regulation (Bashir, Ramza, & Mustafa, 2023). To prevent digestive problems, it's crucial to increase fiber consumption gradually. Consuming a variety of foods high in fiber, such as fruits, vegetables, whole grains, and other foods that include vitamins, minerals, and other nutrients essential for a healthy lifestyle, is recommended for the general public and for those with diabetes. Subsequent short-term research including substantial amounts of fiber in a small number of people with type 1 diabetes revealed a favorable effect on glycemia, despite subsequent studies reporting mixed effects

on lipids and glycemia. It appears that in individuals with type 2 diabetes, consuming very large levels of fiber is necessary to provide metabolic effects on plasma lipids, hyperinsulinemia, and glycemic control (Jung & Choi, 2017).

Mind full - eating for diabetes management:

Eating mindfully entails taking your time, enjoying every bite, and being aware of your body's signals of hunger and fullness. People with diabetes can improve their blood sugar control and create healthier eating habits by engaging in mindful eating. It's crucial to eat mindfully and pay attention to your body's signals of hunger and fullness (Baradia & Ghosh, 2021).

CONCLUSION

Taking into account the person's nutritional condition, lifestyle, and preferences, an executive diet for diabetes management should be customized to meet their unique needs and objectives. At the forefront should be a customized dietary plan created in conjunction with a qualified diabetes educator or registered dietitian, taking into consideration the patient's medical background and any additional health issues they may have. Whole, nutrient-dense meals like fruits, vegetables, lean meats, whole grains, and healthy fats should be the main focus of the executive diet. Along with controlling blood sugar levels, these meals are high in vital nutrients and can promote general health and wellbeing. In conclusion, an executive diet for diabetes management should be personalized, focused on whole, nutrient-dense foods, incorporate carbohydrate counting, utilize technology, and provide ongoing support and education. People can enhance their general health, blood sugar control, and quality of life by managing their diabetes in a distinctive and comprehensive way.

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