



## Nutritional Education, Key in The Prevention of Diabetes

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### Abstract

Nutritional education constitutes a prioritized objective in the public policies of a significant number of countries, with emphasis on the educational sector; aimed at promoting healthy nutritional habits by promoting knowledge, skills and attitudes that result in improving the quality of life of people. This is fundamentally due to the rise in chronic non-communicable diseases such as diabetes mellitus and high blood pressure, which are sometimes associated with inadequate nutritional patterns from an early age. Therefore, it is necessary to provide important scientific and dietary knowledge that helps prevent and treat diabetes. This constitutes the objective of this work which is derived from the Institutional Project: Agroecological and Nutritional Education from the training process of the University of Sancti Spiritus, "José Martí Pérez".

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Diabetes mellitus is a chronic non-communicable disease that is not only hereditary, but is also associated with inadequate nutritional patterns from an early age. PAHO/WHO estimates that 62 million people in the Americas live with Type 2 Diabetes Mellitus (DM). This number has tripled in the Region since 1980 and is estimated to reach the 109 million mark by 2040, according to the Diabetes Atlas (ninth edition). Prevalence has increased more rapidly in low- and middle-income countries than in high-income countries.

Given this widespread problem, it is necessary for health professionals and institutions to take action to stop this situation and improve the health and quality of life of the population. One of the most effective tools to achieve this is through nutritional education, whose long-term results are very positive, since it has the ability to prevent potential health problems related to diet. The educational system has the task of incorporating healthy recipes into the study programs of the different levels of education aimed at preventing the disease and avoiding glycemic peaks, one of the great challenges for people who suffer from diabetes; carry out interventions from the earliest grades that allow promoting the concept of health from a comprehensive perspective, which includes habits and lifestyles, dietary patterns and hygiene habits; contribute to the knowledge of concepts such as: food, food, nutrition, nutrient, gas-

tronomy; educate in the sense of taste; make all these subjects compulsory in our educational system.

### What is diabetes mellitus?

According to the Pan American Health Organization (PAHO), diabetes mellitus is 'a chronic metabolic disease characterized by high levels of blood glucose (or blood sugar) that over time leads to serious damage.' There is a globally agreed target to stop the rise in diabetes and obesity by 2025. Mellitus means 'sweetened with honey' in Latin, alluding to the sweet taste of diabetic urine due to excess sugar.

Type 1 diabetes, known as juvenile diabetes or insulin-dependent diabetes, is a chronic condition in which the pancreas produces little or no insulin on its own. For people living with diabetes, access to affordable treatment, including insulin, is critical to their survival.

The most common is type 2 diabetes, usually in adults, which occurs when the body becomes resistant to insulin or does not produce enough insulin. The prevalence of type 2 diabetes over the past three decades has increased dramatically in countries of all income levels. Prediabetes means your blood glucose levels are higher than normal, but not high enough to be called diabetes. If you have prediabetes, you are more likely to develop type 2 diabetes.

### **What is insulin, what organ in our body produces it?**

Insulin is a polypeptide hormone, produced and secreted by the beta cells of the islets of Langerhans of the pancreas, a gland located in the abdominal cavity behind the stomach. Insulin's job is to reduce the level of sugar (glucose) in the blood, helping the sugar reach the cells and thus become less in the blood.

### **But how is the pancreas not an organ belonging to the digestive system?**

Yes, the pancreas is an exocrine gland because it secretes pancreatic juice which passes to the duodenum, the first portion of the small intestine, exercising its function in digestion, but it is also an endocrine gland capable of secreting insulin and glucagon into our body, these hormones regulate the concentration of glucose in the blood, respectively decreasing and increasing said concentration. That is why the pancreas is considered a mixed organ.

### **What damage can diabetes mellitus cause to the human body?**

Diabetes raises blood sugar to a higher level than normal. After many years, too much sugar in the blood can cause problems in the body. It can damage the eyes, causing diseases such as cataracts, glaucoma, damage to the blood vessels of the retina, and possibly leading to blindness. Eye damage caused by diabetes is called “diabetic retinopathy.”

Kidneys, high blood sugar levels caused by diabetes can damage the blood vessels of the kidneys and nephrons, their anatomofunctional structure, and make them stop working as they should. The kidneys are full of tiny blood vessels. Over time, high blood sugar levels can cause these blood vessels to narrow and become clogged. As the kidneys receive less blood, less waste and extra fluid leave the body. Kidney disease caused by diabetes is called “diabetic kidney disease.”

Nerves, nerve damage from the disease causes different symptoms that can range from pain and numbness in the feet to problems with the functions of internal organs, such as the heart and bladder. Nerve damage caused by diabetes is called “diabetic neuropathy.”

Diabetes can increase the risk of some skin conditions such as bacterial and fungal infections. Clinically they appear as hard, orange papules with an erythematous halo on the skin, grouped together, with a sudden appearance and located on the knees, elbows, buttocks and trunk. Diabetes can damage the nerves in your feet, preventing you from feeling pain. It can cause poor blood circulation, making it difficult for sores to heal or an infection to resolve. If

the sores do not heal and become infected, this can lead to amputation.

**Heart:** People with diabetes are more likely to have heart failure, a condition in which the heart cannot pump blood effectively.

Sugar “sticks” to small blood vessels and makes it difficult for blood to reach the organs.

### **Carbohydrates are the main nutrient that generates energy for the body, however, they are the ones that trigger increases in blood glucose. How is this possible?**

There are “simple” and “complex” carbohydrates. Simple ones are quickly converted into energy, increasing your blood glucose level more easily. They can be from natural foods such as fruits and milk, as well as products that contain refined sugar such as cookies, candies, pastries, other desserts, and also sugary drinks. The latter are the least nutritious.

Complex carbohydrates or “healthy carbs” take longer to convert to glucose because of their molecular structure or because they have higher amounts of fiber, which helps reduce the rate at which carbohydrates are digested and the rate at which they increase their glucose levels. These carbohydrates also tend to be more nutritious. Examples: Plant-derived foods that provide fiber, vitamins, minerals, and phytochemicals, such as whole grains, beans, vegetables, and fruits. The natural sugar in whole fruits is healthy because it is packed with fiber, antioxidants, and other important nutrients.

Whether we have type 1 or type 2 diabetes, choosing the right foods is an important way to keep your blood glucose at a level that is healthy. By controlling the level of glucose in the blood, the probability of having serious health problems due to diabetes is reduced, such as damage to the different organs mentioned above. And if you have prediabetes or are at risk for diabetes, eating foods that keep your blood glucose levels healthy can help prevent type 2 diabetes in the future. Hence the need for nutritional education that helps avoid greater evils.

### **What foods and drinks should we limit to prevent diabetes?**

Nutrition plays a very important role in the health of the population and establishing prevention and intervention programs would improve the quality of life. A healthy diet, regular physical activity, maintaining a normal body weight, and avoiding tobacco use are ways to prevent or delay the onset of diabetes.

We should consume carbohydrate-rich foods and drinks less frequently or in smaller quantities. Sugary foods such as candy, cookies, cakes, ice cream, sweetened cereals, and canned fruits with added sugar. Drinks with added sugars, such as juices, regular sodas, and regular sports or energy drinks. White rice, tortillas, breads and pastas, especially those made with white flour.

Starchy vegetables, such as white potatoes, corn, and peas. Fried foods and other products high in saturated fat. Reduce foods high in sodium (salt). Avoid excessive ingestion of alcoholic beverages.

### **Why is nutritional education key in the prevention of diabetes?**

Nutritional education is a permanent process for the development of knowledge, skills and attitudes, based on analysis, reflection and debate of the problems existing in the individual's environment.

Diabetes is a disease that can cause death if it is not well treated or prevented, so awareness must be promoted in educational systems and other spaces to incorporate healthy lifestyles. When the population becomes aware and takes responsibility for their health care following scientific recommendations, they improve eating habits, nutritional status and long-term health status.

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