Can Low Glycemic Diets and BMI Affect the Link Between Diabetes and Pancreatic Cancer?

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Pancreatic cancer is a nasty disease. Besides being among the top ten most prevalent cancers, the National Cancer Institute reports that the overall 5-year relative survival for pancreatic cancer was 5.5%.

Pancreatic cancer is also the eighth major form of cancer-related death worldwide, causing 227,000 deaths annually. Given these somewhat dismal statistics, it would seem logical to make every attempt to reduce the risk factors associated with this disease—at least those risks over which we have control, (i.e., age, gender, family history and genetic syndromes may influence risk, but there is nothing we can do about that).

The American Cancer Society indicates that controllable risk factors include:
- **Cigarette smoking**
- **Obesity**
- **Diabetes**
- **Occupational exposure (to certain pesticides, dyes, and chemicals)**
- **Diet**

In this article, we will examine the relationship between three of these risks: diabetes, diet (specifically, glycemic load) and obesity.

Diabetes

According to the Pancreatic Cancer Action Network, out of 23.6 million people in the United States that have Diabetes, 17.9 million have been diagnosed, and 5.7 million are unaware that they have the disease. Of particular interest is that about 80% of pancreatic cancer patients have glucose intolerance or actual diabetes . But what came first? The chicken or the egg? In-other-words, is diabetes a risk factor for pancreatic cancer, or is it the pancreatic cancer that causes diabetes? There is evidence to support both positions. For example, glucose transport is impaired in pancreatic cancer patients, and the insulin signaling cascade in skeletal muscle is impaired at multiple steps by pancreatic cancer. Likewise, insulin is released at a reduced rate in pancreatic cancer patients in response to stimuli that would normally result in a greater release .

These and other biochemical phenomena suggest that pancreatic cancer may be causing diabetes.

On the other hand. A review of epidemiologic studies indicates that long-standing diabetes increases the risk of pancreatic cancer by 40% to 100%, and recent-onset diabetes is associated with a 4- to 7-fold increase in risk, with the result being that 1% to 2% of patients with recent-onset diabetes will develop pancreatic cancer within 3 years. In addition, a meta-analysis, (i.e., a scientifically conducted review of multiple studies), of 36 studies on 9220 individuals with pancreatic cancer supported a modest causal association between type-II diabetes and pancreatic cancer.

Whether pancreatic cancer causes diabetes or diabetes is a risk factor for pancreatic cancer, high blood glucose levels appear to play a detrimental role . This was demonstrated in research where high glycemic-load foods were associated with an increased risk for pancreatic cancer.

Glycemic load

Glycemic load refers to a relatively high intake of carbohydrate-containing foods that are digested and absorbed quickly to induce sharp or prolonged rises in blood glucose. In examining 266 confirmed pancreatic cancer cases, researchers found elevated risks for pancreatic cancer were observed in the 90th versus 10th percentile of glycemic load during the first four years of follow-up. Other research also suggests that a diet high in glycemic load may increase the risk of pancreatic cancer in women who already have an underlying degree of insulin resistance. This is consistent with a study in which the consumption of sugar-sweetened soft drinks was found to be associated with a modest but significant increase in pancreatic cancer risk among women who have an underlying degree of insulin resistance.

Obesity

Obesity has also been reported to be associated with poorer prognosis in multiple cancers. A well-established association between pancreatic cancer risk and obesity has been confirmed.

In particular, overweight and obese patients are diagnosed with pancreatic cancer at a younger age than patients with normal weight. Overweight and obese patients have lower rates and duration of survival once pancreatic cancer is diagnosed.

Body mass index (BMI) is a measure of body fat based on height and weight. A BMI of 18.5–24.9 is considered normal, while a BMI of 25–29.9 is considered overweight. A BMI of 30 or greater is considered obese. In an analysis of 14 studies on 846,340 individuals, 2,135 individuals were diagnosed with pancreatic cancer during follow-up, and their BMI was noted. Compared to individuals with a BMI between 21-22.9, pancreatic cancer risk was 47% higher among obese (BMI ≥ 30) individuals. Also, those with a higher waist to hip ratio (WHR) had higher pancreatic cancer risk. In this analysis, higher BMI and WHR were associated with pancreatic cancer risk. The authors concluded that maintaining normal body weight may offer a feasible approach to reducing morbidity and mortality from pancreatic cancer.

A low glycemic diet

To review what we know so far, diabetes, glycemic load and obesity/BMI are all associated with an increased risk for pancreatic cancer. Interestingly, each of these risk factors can be significantly addressed through the use of a low glycemic diet. To understand how this works, let's take a look at the concept of glycemic index.

Glycemic index (GI) is a numerical system of measuring how fast a carbohydrate triggers a rise in circulating blood glucose—the higher the number, the greater the blood glucose response. So a low GI food will cause a small rise, while a high GI food will trigger a dramatic spike. In general, A GI of 70 or more is high, a GI of 56 to 69 inclusive is medium, and a GI of 55 or less is low. With regard to carbohydrate foods, those with more fiber are likely to have a lower GI. The fiber causes the food to break down more slowly in the digestive system, and also slows the absorption of any sugars it contains. The result is a slower increase in blood glucose levels. By contrast, simple or refined carbohydrates such as most desserts or white bread/white pasta, break down rapidly and yield their sugars quickly, so they will generally be higher on the GI.

There are a number of guide books which can help you identify the GI of various foods.

Low-GI diet and diabetes

In a review assessing the effects of low GI diets on glucose control in people with diabetes, researchers examined eleven clinical studies involving 402 type 1 or 2 diabetics whose diabetes was not already optimally controlled. When these diabetics followed the low-GI/low-GL diets, there was a statistically significant decrease in A1C levels. In addition, there were significantly fewer episodes of hypoglycemia (low blood glucose) in diabetics with a low-GI diet compared to those with a high-GI diet.

Furthermore, the proportion of participants reporting more than 15 episodes of hyperglycemia (high blood glucose) per month was significantly lower for those following a low-GI diet. The researchers in this review concluded that a low-GI diet can improve glucose control in diabetes without causing additional hypoglycemic episodes.
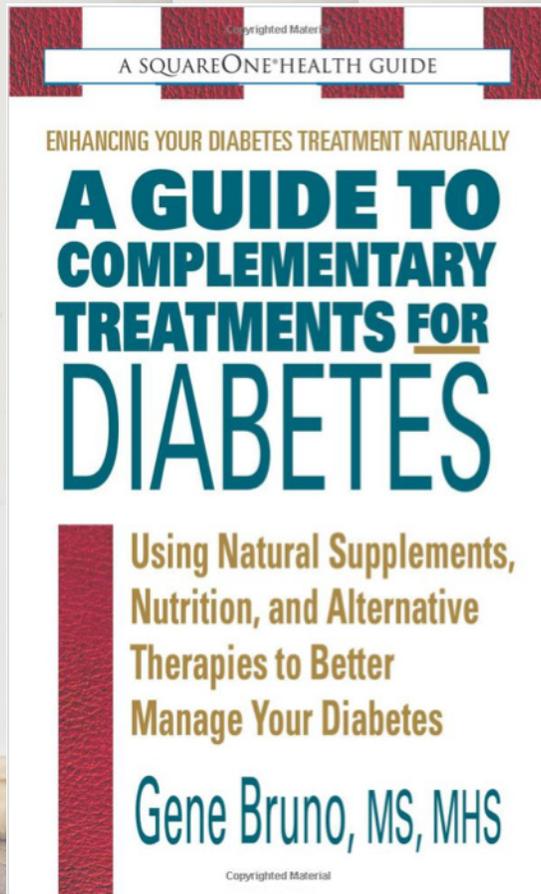
The importance of a low-GI diet for glucose control is further validated by population studies showing that high-GI and low fiber diets are associated with a potential risk for developing diabetes. Conversely, the available evidence suggests that eating a diet rich in whole grain cereals and vegetables and low in refined grains, sucrose and fructose contents (i.e., a low-GI diet) is beneficial in the prevention of diabetes.

Low-GI diet and obesity

A number of studies have shown that a low-GI diet is effective for promoting weight loss in obese individuals with or without diabetes . For example, in one study those following the low-GI diet lost 7.8% of their body weight compared with 6.1% in those following a low-fat diet. Likewise, triglyceride levels were down 37% in the low-GI group compared with 19% in the low-fat group (high triglyceride levels are a risk factor in heart disease). Levels of a factor that increases blood clots (plasminogen activator inhibitor) were also decreased by 39% in the low-GI group but increased 33% in the low-fat group.
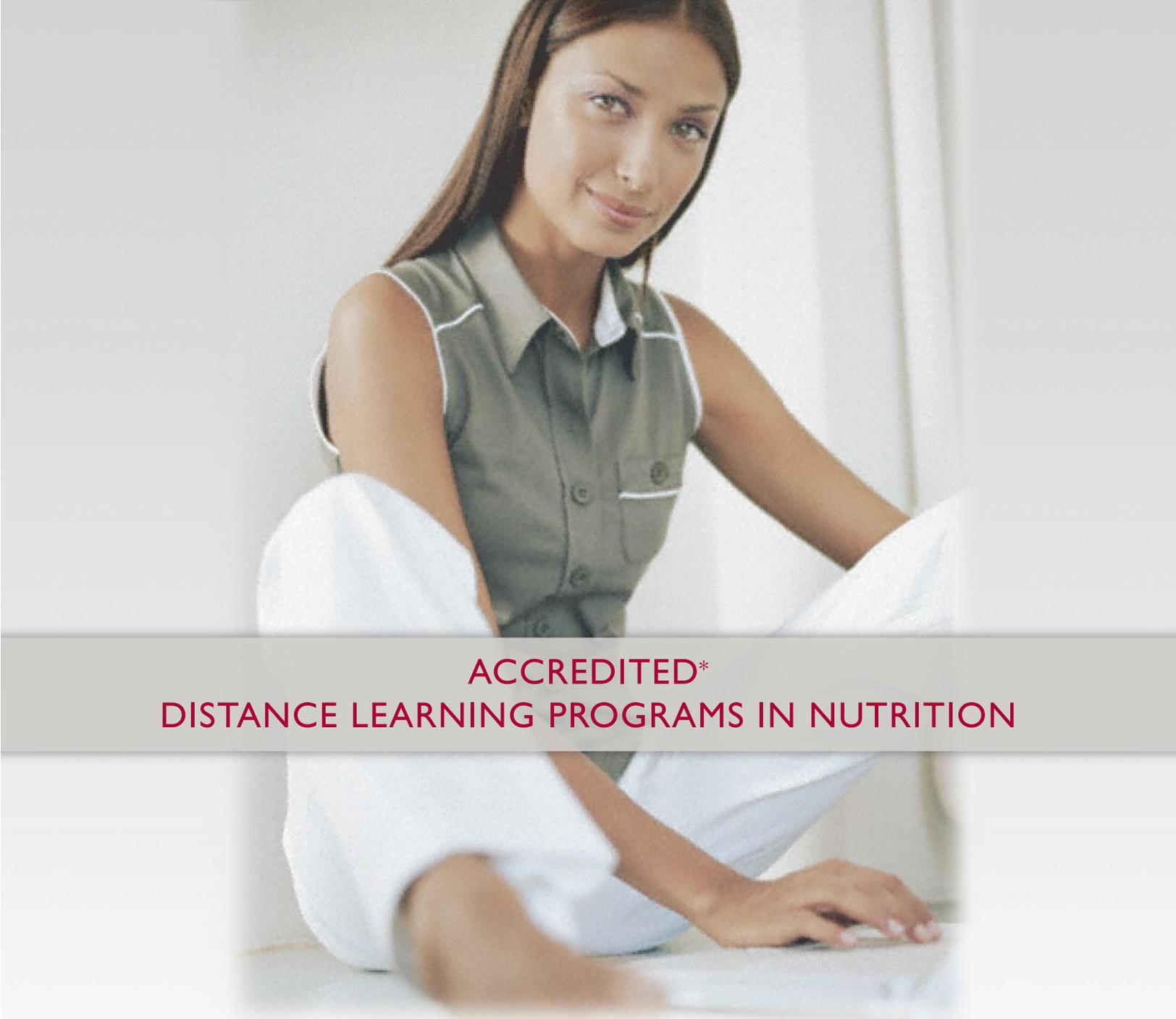
Conclusion

Epidemiological research suggests that low-GI diets may help prevent pancreatic cancer, and may also increase survival time in those with pancreatic cancer. Clearly, keeping blood glucose levels under control has value for diabetes prevention and weight control, and their relationship to pancreatic cancer risk. If you need guidelines for a low-GI diet, see my book, A Guide to Complementary Treatments for Diabetes (©2010, Square One Publishers).

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