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## Study on the state of knowledge of medical students about the glycemic index of popular food products in Poland. A survey study

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### Abstract

**Introduction:** The glycemic index (GI) is a helpful indicator in composing a healthy diet, especially for people at risk of carbohydrate metabolism disorders. High GI products are quickly digested and absorbed in the human body. There is a sharp increase in postprandial glucose and insulin secretion, followed by a rapid decrease in blood glucose level, which

results in increased glucagon secretion and increased appetite. A high GI diet may be one of the causes of insulin resistance and obesity.

**Aim:** The aim of the study is to examine the state of knowledge of medical students studying in Poland about the glycemic index of popular food products.

**Material and Methods:** An anonymous online survey was conducted. The answers of 140 medical students of Polish medical universities were analyzed.

**Results:** Despite the fact that 52.1% of respondents declared that they are interested in the subject of healthy eating, milk chocolate and honey were most often recognized as high GI by the respondents (respectively 90.6% and 84.1% of answers). However, these products are classified as low/medium GI products. A baguette with a very high GI obtained 70.3% of responses. Another product with a medium GI, boiled potatoes, got 56.5% response.

**Conclusion:** The knowledge of medical students about the glycemic index is not large, despite expressed interest in the subject of healthy eating.

**Key words:** glycemic index, diet, insulin resistance

## 1. Introduction

The glycemic index (GI) is the physiological assessment of the carbohydrate content of a food by its effect on postprandial blood glucose levels. Grading foods by glycemic index has been used as a tool to evaluate potential prevention and treatment strategies for diseases where glycemic control is important, such as diabetes. Diets based on products with a low glycemic index have a positive effect on the serum lipid profile, reduce the concentration of C-reactive protein (CRP) and help to control body weight. Cohort studies also suggest an association of low GI diets with a reduced risk of developing diabetes and cardiovascular disease. [1]

The aim of the study is to assess the state of knowledge of medical students studying in Poland on the glycemic index of popular food products.

## 2. Material and method

An anonymous online survey was conducted. Students were asked about the degree of interest in healthy eating, whether they think that healthy eating is important for maintaining physical and mental health, or whether, in their opinion, the correct nutritional strategy

supports the treatment / rehabilitation process of patients. Respondents were asked about the source (carbohydrates, protein, fat) from which most calories in the diet should come, according to the Polish Institute of Food and Nutrition[2] and finally they were asked to select products with a high glycemic index from the list.

According to scientific sources [3], the following division of products in terms of GI was accepted:

- IG <55 = low GI products
- IG 55-70 = products with a medium GI
- IG > 70 = high GI product

The GI values of individual products were obtained from the tables available on the website of Medycyna Praktyczna [4].

The responses of 140 students of medicine from Polish medical universities were analyzed. 81.4% of the respondents were students of the Medical University of Lublin. 17.1% studied at the Pomeranian Medical University in Szczecin. Several people studied at other universities. Most of the students (53.2%) were in the 5th year of studies at the time of the study. Students of the 3rd year constituted 24.5% of the group, 1st year - 7.9%, 2nd year - 5%, 4th year - 5%, and 6th year - 4.3%.

### **3. Results**

140 students took part in the study. 52.1% of them expressed interest in the topic of healthy eating. 40% stated that they are interested in nutrition to a small extent. 7.9% said that they are not interested in the topic of healthy eating.

The vast majority of respondents (97.1%) considered that healthy eating is important for maintaining physical and mental health. The same number of people stated that the correct nutritional strategy supports the treatment / rehabilitation process of patients

84.8% correctly stated that, according to the Institute of Food and Nutrition, most calories in the diet should come from carbohydrates

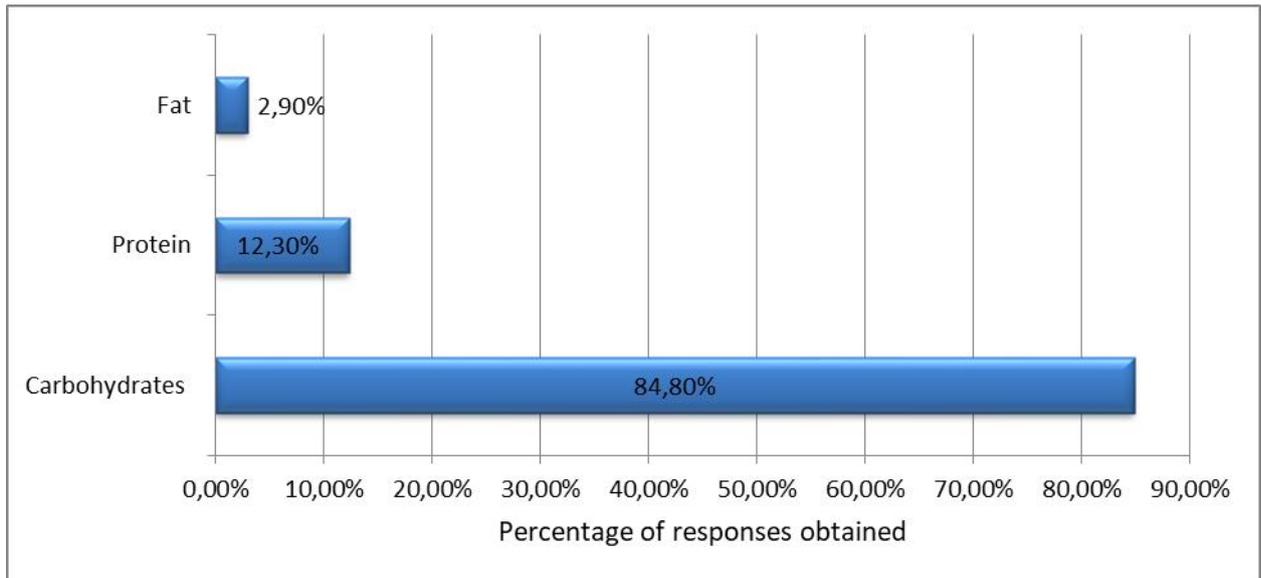


Figure 1. Percentage share of the obtained responses on the subject of main source of calories in a healthy diet.

The students were then asked to select products with a high glycemic index from a list. The results are shown in the figure below.

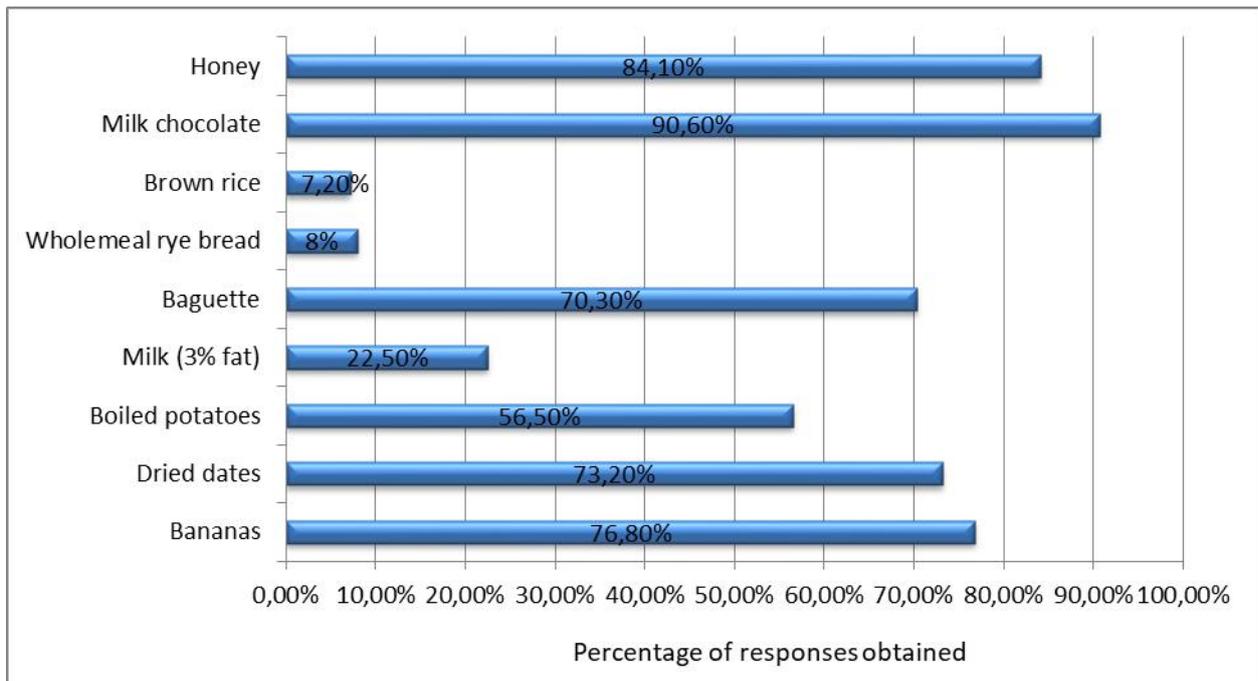


Figure 2. The percentage share of responses obtained about products with a high GI.

Milk chocolate, which is classified as a low / medium glycemic index product, received the most responses. The second most frequently mentioned product is honey, which is classified as a medium GI product. The third most frequently chosen option was bananas, which are also included in the group of products with a medium GI. Only the 4th most frequently mentioned answer, dried dates, is actually a product with a high glycemic index. Baguette, also having a high glycemic index, obtained 70.3% of responses. More than half of the respondents mistakenly considered boiled potatoes to be a high GI product.

#### 4. Discussion

The vast majority of respondents correctly stated that carbohydrates should cover the largest part of the energy requirements of the diet according to the Food and Nutrition Institute. This proves that the respondents have basic dietary knowledge.

The glycemic index is a useful index in composing a healthy diet, especially in the case of patients with certain diseases, such as diabetes, lipid disorders, and cardiovascular disease. Several factors affect the amount of GI of a food, hence frequent mistakes in assessing the potential GI of a given product, as evidenced by the above survey.

#### Factors influencing the glycemic index of products:

- Carbohydrate contents of foods
- Starch composition/properties
- Sugars
- Insulin response
- Protein content
- Processing techniques
- Variety

- Particle size
- Fat
- Acidity

An indicator related to the glycemic index is the glycemic load (GL). It takes into account the GI of a given product and the carbohydrate content in a given portion of food. Therefore, it is a more accurate indicator of the real impact of eating a given amount of food on postprandial glucose. The example of watermelon shows how big a difference may occur between these indicators. This fruit has a GI = 74, but a 100g serving has GL = 4. This is because the watermelon has very little carbohydrate content. [5]

3 The most frequently chosen products by the respondents: milk chocolate, honey and bananas were incorrectly classified as products with a high GI.

- 1) Milk chocolate, despite the high sugar content, also contains a lot of fat, which slows down digestion and absorption of sugar into the blood, thus reducing the insulin secretion after consuming chocolate. It is an example of a food that shows us that GI is not an ideal indicator of whether a given product is "healthy". It only signals the effect of the food consumed on postprandial glycemia.
- 2) Honey has a lower glycemic index than the respondents assumed because it contains large amounts of fructose. This sugar has a much lower GI than glucose.
- 3) Bananas contain large amounts of fiber, therefore they are not high GI products [6]

Most of the studies showing the health benefits of low GI diets are based on minimally processed carbohydrate sources, vegetables and fruits. The recommendation of low-IG products should be associated with other factors influencing the health of a given product, such as content of other macronutrients and micronutrients. [7]

## 5. Conclusions

Despite the high interest of medical students in the subject of healthy eating and knowledge of the basics of this ground, their responses to the question of high glycemic index products were often wrong. Perhaps it is worth enabling students to develop their dietary interests as part of optional classes, as the knowledge gained in this way may be useful in further professional practice.

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