

Status and quality of life of people with celiac and people on a gluten-free diet

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Abstract: Celiac disease is defined as an autoimmune disorder that is the result of a reaction of adaptive immune response of sensitive individuals, to gluten-containing cereals. The aim of this study was to assess the nutritional habits of patients with the diagnosis and people without the diagnosis, to evaluate the importance of adhering to a strict gluten-free diet, recognizing properly declared gluten-free products and to assess the quality of life of people diagnosed with celiac disease. Anthropometric and dietary tests were conducted through a survey by a total of 96 people, 56 respondents were diagnosed with celiac disease, while the remaining 40 respondents were undiagnosed, and of whom 32 were on a gluten-free diet. The majority of respondents (58.92%) have an adequate level of nutrition; however, 30.37% of respondents are overweight, including the degree of obesity in four cases. The most consumed cereals are rice, corn and white ready-made gluten-free flour mixtures, while the respondents consume the least pseudo-cereals, whole grains and micro-cereals. Within the survey CD-QOL (Celiac Disease Quality of Life) we assessed the quality of life, general the attitude of patients according to the given claims related to celiac disease. The obtained results led us to the conclusion that the dietary habits of celiac patients are somewhat worse than those of the undiagnosed group, although these are very small differences. It has been found that there is some confusion among people diagnosed regarding properly declared and certified gluten-free products, while most respondents believe that a strict gluten-free diet is the only effective treatment for the disease.

Keywords: celiac disease, gluten-free diet, nutritional status, quality of life

1. Introduction

Celiac disease is a serious autoimmune disease that occurs in genetically predisposed individuals in which gluten ingestion leads to damage in the small intestine. Gluten is naturally found in common wheat (*Triticum aestivum* L.) and in all its species whose Latin name begins with *Triticum* L., and this includes e.g., spelt, emmer, durum wheat, einkorn, in rye (*Secale cereale* L.) and barley (*Hordeum vulgare* L.). It is estimated that 1% of adults and children have celiac disease [1]. There is a wide range of symptoms manifested by the disease, from

classic digestive problems and malnutrition to dental anomalies, underdevelopment, osteopenic diseases of the bone system, lactose intolerance, infertility, and non-specific abdominal pain [2].

Celiac disease can be classified as a classic or typical celiac disease with signs and symptoms: malabsorption, diarrhea, steatorrhea, weight loss or growth retardation, and as non-classic or atypical in which the patient does not suffer from malabsorption but has other symptoms or complaints, e.g. patient with constipation and abdominal pain, but without malabsorption [3]. This can include disorders such as gluten ataxia, DH (Dermatitis herpetiformis), NCGS (Non-celiacs gluten sensitiviti), and celiac disease itself [3, 4]. All blood tests for celiac disease require a gluten-containing diet to be accurate. Antibodies to tissue transglutaminase (tTG-IgA) – test will be positive in about 98% of celiac patients on a gluten-containing diet. This same test will be negative in about 95% of healthy people without celiac disease, indicating its high sensitivity [5]. Among the first more precise data, celiac disease as a disease is mentioned in records from 1888, by Samuel Gee in a detailed description of the disease as a chronic disease of the digestive system, which can appear at any age but especially affects children between one and five years old [6, 7].

2. Material and Methods

In the research were included 96 respondents, members of various associations for people with celiac disease. The respondents were divided into two groups. The first group of respondents was made up of people with a diagnosis of celiac disease (56 respondents), while the second group was made up of people who are not on a gluten-free diet for some other health reasons, that is, people who do not have a diagnosis of celiac disease (40 respondents).

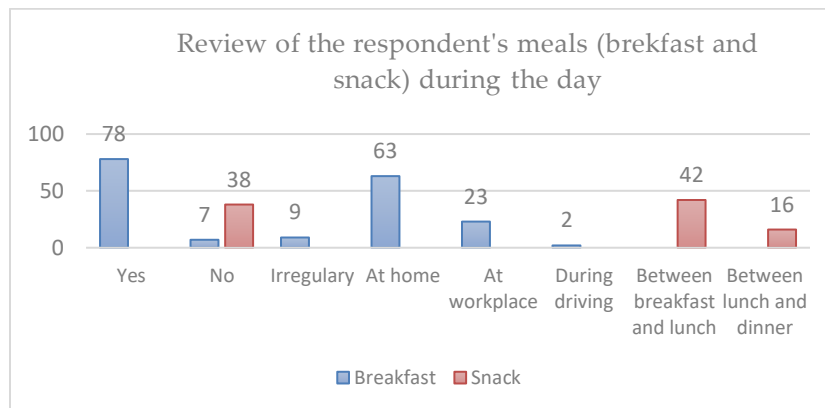
The survey was conducted using a free online survey questionnaire created on the Google Forms page. The research was conducted anonymously. The survey was divided into five categories. The first category included questions related to the respondents' general data, the second category to data on physical activity and lifestyle, the third category to data on dietary habits, the fourth to additional data related to the concept of celiac disease, and the last category is a survey on the quality of life in which it is emphasized that only people with a diagnosis of celiac disease should fill it out. The quality of life of the persons involved in the research was assessed by the CD-QOL (Celiac Disease Quality of Life) form.

Statistical analysis was performed using an electronic program that is part of the Google questionnaire, which includes graphs and tables, and using Microsoft Office Excel 2017.

3. Results and discussion

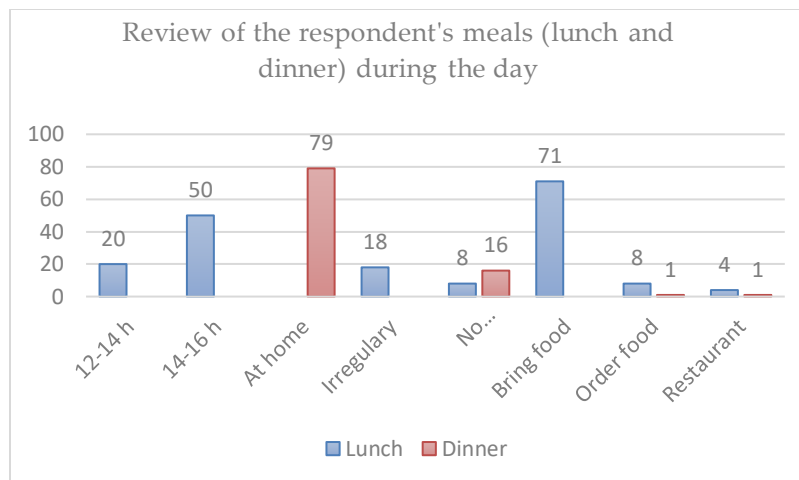
The group consisted of 76 (85.4%) women and 11 (14.6%) men. Of these, there were 4 children, 3 boys and one girl, whose information was entered by their custodians. 48 respondents have completed a high level of education, 36.5% of them (35 respondents) have a secondary vocational education, and 13.5% (13 respondents) have completed a vocational education. Out of 96 respondents, 67.7% (65 respondents) have the status of employed, 11.5% (11 respondents) are unemployed, 11.5% (11) are studying, 8.3% (8 respondents) are unable to work and 1% (1 respondent) is retired. Within the group of 31 respondents who did not have a diagnosis of celiac disease, 6 (19.35%) respondents were malnourished, 18 (58.06%) had an adequate BMI, 5 (16.13%) were overweight, and four were obese (6.46%). Out of 96 respondents, 21 (21.8%) respondents walk once a week, 47 (49%) respondents walk twice a week or more, 11 respondents walk every day, 10 respondents never walk (10.41%), and 10 respondents walk per month (10.41%).

Out of 96 respondents, 81.3% (78 respondents) eat breakfast regularly, 7.3% (7 respondents) do not have breakfast and 11.5% of respondents eat breakfast but irregularly. Breakfast at home had 71.6% (63 respondents), 26.1% (23 respondents) have breakfast at work/college and 2% (2 respondents) while going to work/college as shown in Graph 1.



Graph 1. Review of the respondent's meals (breakfast and snack) during the day.

As it is shown on Graph 2., 50 respondents have a lunch between 2-4 p.m., 20 respondents between 12-2 p.m., 18.8% (18 respondents) have lunch irregularly, while 8 respondents do not have lunch at all, 71 of them bring lunch, 8 respondents order lunch, and 4 eat in a restaurant. 79 respondents have dinner at home, 16 respondents do not have dinner, 1 of them orders dinner, and 1 goes to a restaurant for dinner.



Graph 2. Review of the respondent's meals (lunch and dinner) during the day.

According to the answers given in the survey to assess the impact of celiac disease on the quality of life, the average answer score was 3.7, 10% of respondents completely agree with the given statements, 13% agree with the statements, 14% of respondents are undecided, 23% disagree with the statements, and 43% showed complete disagreement with the given statements.

According to the available data, celiac disease is very common in Europe. The frequency varies widely in individual European countries; by age 30 to 64, it is eight times higher in Finland (2.4%) than in Germany (0.3%), which is probably additionally influenced by genetic and environmental factors [8, 9, 10].

3. Conclusions

The results of this research showed an unsatisfactory frequency in the consumption of fish, dairy products with probiotic cultures, pseudocereals, micro- and whole grains as well as their products. The frequency is satisfied in the consumption of fruits, vegetables and proteins. Based on the given results, people diagnosed with celiac disease consume more baked goods and products based on white flour and fast food, which contain a lot of undesirable fats. The respondents are aware of the importance of following a strict gluten-free diet. Respondents agree that a strict gluten-free diet does not lead to the development of anxiety, depression, dissatisfaction and a generally worse quality of life.

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