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**Public policies that can be implemented to struggle with
celiac disease in Turkey**

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Abstract. Celiac is a digestive disorder that damages the small intestine by the ingestion of a substance, called gluten that is found in cereals, such as wheat, barley, rye and oats. The ingested foods are broken down into their components and got into the blood thanks to the projections, called villus, in the small intestine. Foods containing gluten reduce the surface area of the intestine by damaging the villus projections and foods are rendered into a non-absorbable form. As a result, nutritional deficiency along with many problems will arise. The only treatment for patients with celiac disease is a gluten-free diet. There are many problems present from unavailability of gluten-free products to the high cost. The state may intervene in celiac disease for reasons such as imperfect information, external costs, public goods, principal-agent problem, imperfect competition conditions and demerit goods. The aim of the study is to raise awareness for celiac disease in Turkey and to develop public policy recommendations that can be implemented in struggling with the disease.

Keywords. Health, Public Policy, Taxation and Subsidies.

JEL. I10, I18, H20.

1. Introduction

Celiac disease is an allergic reaction of the small intestine against a protein, called gluten. The disease leads to the deterioration of the digestive system in the intestines, thus causing the absorption of food to stop. With a gluten allergy of the small intestine, the patient gets a condition that does not have any other treatment other than the lifetime diet. Since cereals such as wheat, rye, barley and oat contain gluten, the patient is not able to consume these products and all the derivatives produced from them. If the relevant products are consumed, the villus projections, which allow the nutrients to mix with the blood in the small intestine, are damaged, resulting in nutritional deficiency and chronic disease, since all the consumed foods cannot mix with the blood. When those who have caught the disease do not follow their diet, fatal risks that may lead to cancer in the end show up. The disease may arise with signs such as nausea, vomiting, persistent diarrhea, behavioral disorders, excessive fatigue, moodiness. Those who have caught the disease may experience conditions such as bone loss (osteoporosis), anemia, hair loss, nerve damage, muscle weakness and infertility.

The only treatment of the disease is to follow a gluten-free diet until death. The products produced from gluten-containing wheat, barley, rye and oat should certainly not be consumed. Today, the number of products that do not contain gluten is extremely small. Many gluten-free products are imported since they are not produced in Turkey, and therefore they are sold with an excessively high price. For those who have caught celiac disease, which is defined as a disease of affluence, the state monthly pays 78.75 TRY to those between the ages of 0-5, 120

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TRY to those between the ages of 5-15 and 108.75 TRY to those over the age of 15 for the year of 2017. But this payment is not enough for the very expensive products. No other support is provided to those with celiac disease. In our study, the reasons for the intervention of the state to the celiac disease will be listed and the public policy recommendations that may be implemented in struggling with the disease will be explained.

2. Celiac disease and its outcomes

Celiac disease is a small intestine allergy permanently developing in genetically susceptible individuals predominantly to gluten in wheat and other gluten-like cereal proteins in barley, rye, oat. The disease occurs by the reaction of the small intestine to gluten. When gluten-containing cereal types or food products are consumed, inflammation develops in the intestine. The small thin projections (villus) on the surfaces of the intestinal cells diminish or disappear depending on the inflammation, and the surface of the small intestine gets damaged. Thus, the body cannot take in or can partially take in the required nutrients such as protein, fat, carbohydrates, vitamins and minerals. After a certain period of time, malabsorption shows up, especially in young patients (Drschaer Institute, 2017). This causes a disorder as a result of damage to the villus. The disease may arise at any time in life with various clinical tables. Some patients may have milder effects, whereas the celiac crisis, a rare fatal complication of the disease, may arise in some patients (Ozgun, *et al.*, 2015).

2.1. Historical Development of Celiac Disease

Celiac disease is a disorder of the abdominal region. The term "celiac" was first introduced by Samuel Gee, MD at St. Bartholomew's Hospital in London in 1888 and the symptoms of the disease were described as pallor, diarrhea longer than 1 year, muscle weakness and abdominal distention. The most important characteristic of celiac disease is that patients cannot gain weight due to intestinal problems. Many doctors other than Dr. Gee have reported symptoms of their patients regarding celiac disease. In 1903, another English doctor, Dr. Cheadle summarized the main symptoms of the disease in the patients. According to him, intestinal disorder, which is seen as a colorless stool with foul smell, is one of the symptoms of the disease. According to Dr. Cheadle, the disease damages liver functions. In 1908, Dr. Herter has started to investigate this disease when he was a student. According to him, growth retardation, getting tired quickly, intestinal disorder and diarrhea were seen more or less in all patients. The studies of Dr. Herter, who used the laboratory environment for the first time in order to determine the causes of the disease, were on intestinal disorders. According to Dr. Herter, the main cause of the disease was the malabsorption in the intestinal mucosa. The disease is more common in females than in males (Barber, 1936).

The relationship between celiac disease and gluten was found by a Dutch pediatrician, Willem-Karel Dicke, during the Second World War. In the meantime, other physicians such as Heubner and Adolf Baginsky have described the similar disease table with terms such as "infantile atrophy". Although the disease was more common particularly in European Caucasian race in the 1950s, in the 1970s, it has been started to be recognized more with the tests that allowed the identification of IgA antibodies against gliadin and endomysium. Recent studies reveal that the disease has similar incidence all over the world (Demirceken, 2011).

2.2. The Symptoms of the Disease

Celiac disease does not reveal the same symptoms in all patients. In some patients, the symptoms arise during childhood, whereas in others during adulthood. The symptoms of celiac disease have seemed to arise later in those who have been breastfed for a long time. The age when gluten is included in nutrition and the

amount of gluten ingested are also important. The signs and symptoms of the disease and the time of onset considerably vary from person to person.

The patients who have caught celiac disease may develop conditions, such as vomiting along with chronic diarrhea, weight loss, abdominal distention, light-colored stool with foul smell, increase in defecation habit, persistent anemia despite treatment, continuous gas complaints, bone pains, muscle cramps, discomfort and change in behavior patterns, short stature and growth retardation, itchy skin and rash ([Association of Life with Celiac Disease, 2017](#)). Moreover, the signs of the disease include unexplained iron deficiency anemia in later ages, liver involvement, osteoporosis, delayed puberty, dental disorders, recurrent oral aphthae, chronic abdominal pain and neurological problems ([Yanar, et al., 2013](#)).

2.3. The Prevalence of The Disease

The prevalence of the disease has varied in the last 30-40 years. Although the disease was previously considered to be more prevalent in children younger than 2 years old, the disease is more prevalent at the ages of 6 and 7 in our day, and even it is seen in adults ([Tatar, et al., 2004](#)). The disease prevalence is 1.5-2 times higher in females than in males and is 10-15% higher in first degree relatives, 5% higher in Down syndrome, 3% higher in Turner syndrome and 9% higher in IgA deficiency ([Tümgör, 2012](#)).

Table 1. *The Prevalence of Celiac Disease in Some Countries*

Czechoslovakia	1:218
Estonia	1:88
Finland	1:99
Hungary	1:85
Ireland	1:122
Italy	1:106
Norway	1:262
Portugal	1:134
Spain	1:118
Sweden	1:190
Switzerland	1:132
Netherlands	1:198
United Kingdom	1:100
United States	1:133
Australia	1:251

Source: ([Cataldo & Montaldo, 2007](#)).

Table 1 shows the prevalence of celiac disease in some selected countries. The prevalence of celiac disease is 1 in 218 people in Czechoslovakia, whereas it is 1 in 88 people in Estonia, 1 in 198 people in the Netherlands, 1 in 100 people in the UK, 1 in 133 people in the United States and 1 in 251 people in Australia.

The scan studies show that the prevalence of celiac disease has an increasing tendency all over the world. While it is reported in 1/85-1/300 people (1/100 in average) in European societies, the regional studies conducted in our country revealed a disease rate of 1% in children and 0.8-1.3% in adults and healthy blood donors. In the most recent celiac disease scan project, the disease prevalence in healthy school children was found to be 0.47%. Moreover, the highest prevalence in the world was surprisingly found to be 5.6% in a study conducted in Western Sahara, Africa, contrary to previous information. Studies support that the prevalence of the disease increases with age. The rate of new diagnosis has increased in both adolescents and adults over 65 years of age ([Demirceken, 2011](#)). It is estimated that there are 700.000 celiac patients in Turkey. In other words, 1 in every 100 people has celiac disease. Unfortunately, the majority of them are waiting to be diagnosed ([Tekirdag Public Health Directorate, 2017](#)).

2.4. The Diagnosis of The Disease

The importance of celiac disease is that it has a wide variety of symptoms, arising at any age, on the other hand the most dramatic classical type is seen in the

first 2 years of age (6 months-2 years), when is especially very important in terms of growth and development, and that it leads to health problems and accordingly the economic, psychological and social losses. The non-classical types of the disease show a peak during adolescence and middle-age adulthood. Due to the atypical symptoms, usually unnecessary and inconclusive studies, treatments are performed, considering other diseases but not the diagnosis. Prevention of these processes and interventions that do not satisfy both the patient and the physician is the most important goal of providing a real well-being for patient (Demirceken, 2011).

Celiac disease is diagnosed by serological tests and small intestine biopsy. The first step in the diagnosis is the tests. The most sensitive and specific tests are tissue transglutaminase (tTG) IgA and anti-endomysium IgA (EMA). An endoscopic biopsy is needed to confirm the diagnosis of those presenting with clinical features and/or positive tests for celiac disease. The presentation of characteristic findings in the biopsy material is the gold standard in the diagnosis (Yonal & Ozdil, 2014). A definitive diagnosis is required regarding the disease. Misdiagnosis and wrong treatment will lead to irreparable harm to patients in a process where the treatment is a lifelong diet.

2.5. The Treatment of The Disease

The treatment of celiac disease is a gluten-free diet that will last a lifetime. The strict adherence to gluten-free diet is important for the treatment of the disease. Celiac patients should not consume products containing wheat, barley, rye or oat. The main cereal group in the gluten-free diet consists of gluten-free and other gluten-free rice and corn. In addition to gluten-free diet, vitamins and other nutritional elements that are identified to be deficient are added as a supplementary treatment in patients received the diagnosis. Milk, dairy products, fruit and fruit juices should be avoided during the first weeks until the intestinal mucosa improves in the case of disease developing due to intestinal damage. Although the clinical findings begin to improve within 1-2 weeks after the gluten-free diet is started, the improvement of mucosal histology takes 6 months. Specific antibodies that are detected to be positive during the diagnosis turn out to be negative between 6 months-1 year after the gluten is discontinued. The rate of compliance to gluten-free diet has been reported to be 42-91% in various studies depending on the evaluation technique and definition (Kuloglu, 2014). The cause of inadequate response to the treatment is usually incomplete adherence to the diet. However, even though rare, susceptibility to other food proteins and diseases like lymphoma should be considered in such cases (Kalayci, 2000).

Nowadays, gluten-free bakery products are produced for celiac patients under a special food category called "gluten-free foods". These include products such as gluten-free rice, corn and biscuits made with soybean flour which naturally do not contain gluten. Since gluten-free foods consumed by celiac patients are not generally enriched and are produced with refined flour and/or starch, they are much poorer than other foods containing gluten in terms of some B-group vitamins, iron and dietary fiber content (Turksoy & Ozkaya, 2006).

3. The reasons for state intervention to celiac disease

The reasons for state intervention to celiac disease will be analyzed under the titles of imperfect information, external costs, public goods, principal-agent problem, imperfect competition conditions and demerit goods.

3.1. Imperfect information

One of the required characteristics for the market economy to function properly is that the information should be complete and symmetrical. In an environment where one party has more information and the other party has less, the party with less information is at a loss. Individuals' not knowing the quality and calorie of the

products they consume will adversely affect their social well-being. Incomplete information of individuals will affect their eating behaviors (Harris, 2017). When the presentation of information is left only to the private sector, the information is produced below the optimum level. Information is a public good, there is no competition in its consumption, and no one can be deprived of information. In an environment where only the market is present, the market will produce such goods in an incomplete manner. (Saruc, 2015). Therefore, state intervention is essential.

A considerable part of the society has imperfect information on the harms of gluten that leads to many diseases. Although they know its harms, they continue to consume it. Even though those with celiac disease should certainly not consume gluten, they do not care of their diet, on the other hand, others continue to consume products such as wheat, barley, rye and oat, considering that they have completely healed after following their diet and recovered. In such a case, they do not know that they will get much more serious diseases in the future. There are concerns as to whether the products are certainly gluten-free or not. While there is no expression of gluten-free on some products, others do not clearly state whether there is a risk of cross-contamination or not. All these conditions necessitate a state intervention.

Some families pay a lot of money to various hospitals, doctors, and herbalists on the market who say that they will cure the disease and hope for help. Despite the fact that the only treatment of the disease is diet, imperfect information and irrational behaviors on this subject are day by day leading to the emergence of new counterfeiters on the market who express that they will cure the disease. There is no strong enforcement against these people who exploit people's feelings.

3.2. External costs

If individuals are affected by a production and consumption activity other than the price mechanism, then there is an external cost. The majority of people have no information about whether or not they have celiac disease. Conditions such as gas, frequent burping, abdominal pain, fatigue, getting tired quickly, skin rash, non-healing wounds on the body, menstrual disorders, anemia, infertility, and bone loss, especially seen in adults, are caused by celiac disease. 20% of the patients are diagnosed after 60 years of age (Lermi, 2017). Hospital and treatment costs increase as a result of inability of diagnosing the disease or not attaching importance to it. Individuals receive treatment costs from the state much more than they pay to the health insurance. A study conducted on 3646 celiac patients in the United Kingdom between 1987 and 2005 revealed that the cost of health care per patient increased by 91% and an increase of 310 pounds per year was observed in their costs compared to before diagnosis. The reason for the increase in costs after celiac diagnosis is that the patient experiences problems such as anemia, vitamin and mineral deficiencies and bone loss (Violato, 2012).

Celiac disease significantly affects work performance in adults. Because the disease causes anemia and accordingly weakness, and psychologically makes the patient more nervous. The patient cannot continue to work at least for a certain period of time. All of these conditions will reduce the work performance and productivity of employees.

3.3. Public good

National defense is an exact public good. According to the Health Regulation of Turkish Armed Forces (TSK), celiac patients who have reached the age of military service were exempted from military service. Many people suffering from the disease are unable to fulfill the military service, which is a civic duty, and cannot support the national defense.

3.4. Principal-agent problem

The principal-agent problem is directly related to children. The decisions that parents will make as an agent will directly affect the utility level children as a principal. Children try to influence their parents by acting strategically (Saruc,

2015). Children with celiac disease have to follow their diet until the end of their lives. Some families may allow their children to consume the foods not included in their diet, thinking that their children are craving, or acting in a way that nothing would happen by going off the diet once. Particularly in rural areas, parents, as well as relatives, neighbors and others think that gradually consuming products containing gluten will adapt the body and healing will occur in this way. When children with celiac disease affect their families by playing on heartstrings, the family may gravitate towards cheap foods containing gluten, resulting in serious problems, thus diets are given up and the lives of children are jeopardized.

3.5. Imperfect competition conditions

The gluten-free product market is constantly evolving. Increasing number of celiac patients and healthy people preferring gluten-free products for the sake of healthy nutrition have increased the sales of gluten-free products.



Figure 1. Global Gluten-Free Product Sales
Source: (Financial Times, 2017).

As shown in Figure, global gluten-free product sales have reached 3.5 billion dollars in 2016, while it was 1.7 billion dollars in 2011. In 2020, the sales are expected to rise to 4.7 billion dollars. Despite the rapid increase in sales, there is no decline in product prices. The number of companies producing and selling gluten-free products is very small compared to those producing normal products. Production and sales in the world are made by a few major companies. Especially the small number of producers in the developing countries causes the companies to monopolize and to make sales with high prices. When domestic production is low, local capitals turns towards import and thus, domestic prices increase more. When the situation is analyzed from the point of Turkey, the number of companies producing gluten-free products in our country is less than 5. This leads the prices of gluten-free products to be 4-5 times higher than normal products in the country. It has been argued in various studies that maintaining a gluten-free diet increases the patient's economic burden due to high prices. A study conducted in Chile found that gluten-free products were 89% more expensive than products containing gluten and 242% more expensive in Atlantic Canada. A study conducted by Lambert and Ficken on grocery stores in Australia based on a basket of food products found that gluten-free products were much more expensive than products containing gluten (Jnawali, *et al.*, 2016). High prices put celiac patients with low purchasing power in a tight spot.

3.6. Demerit Goods

Gluten and all foods produced with gluten may cause significant harmful effects for both children and adults. Gluten, which can be qualified as a demerit good, is nowadays used in almost all of the products and may cause serious harms to the human body. Gluten, which is used for various purposes in 70% of packaged products, is a cheap, stabiliser and addictive substance. This is why it is not industrially abandoned. It provides guarantee of continuation in product sales. Apart from the food sector, it is used as a stabiliser in toothpaste, shampoo, mascaras with eyelash volumizing feature, creams, lipsticks and medicines. The

gluten that is included in the family of wheat and cereals has reached until today with increasing amounts as a result of agriculture and seed domestication studies over the years. In 1943, the concept of wheat that we know has suddenly changed with studies for increasing productivity conducted on wheat; its name remained as wheat but its content has been changed from 14 chromosomes to 42 chromosomes and gained 4 new genomes. All of these have led to changes in the structure of wheat and emergence of significant health problems in individuals ([Indigo Magazine, 2016](#)). According to Prof. Canan Karatay, MD, an internal medicine specialist, even if it is a whole wheat bread, eating 2 slices of bread means eating 2 tablespoons of sugar because of the altered genetic form of wheat. Dr. Karatay states that the proportion of gluten in natural wheat is 12%, however this proportion is 60% in hybrid wheat ([Star Newspaper, 2013](#)). Since the body does not recognize such a high proportion of gluten, all of it is transformed into sugar and diseases such as constipation, distention, lazy bowel, gas problem, general fatigue in the body, fat-weight gain and especially celiac may occur.

Celiac disease has become an important public health problem, especially in developing countries, since flour and gluten-containing products have rapidly spread throughout the world. Awareness of gluten intolerance should be created in the New World ([Cataldo & Montaldo, 2007](#)). State intervention is needed against gluten, which can be qualified as a demerit good and triggers many diseases.

4. Public policies that can be implemented to struggle with celiac disease in Turkey

In Turkey, a Commission of Investigation on Celiac Disease was established in The Grand National Assembly of Turkey with the decision issued on Official Gazette, dated 4th May 2017. The Commission was established to raise awareness about celiac disease, to take precautions related to the diagnosis stage, to explain the causes and effects of the diagnosis in detail and to provide solutions for these problems and also to provide permanent help for these patients. The Commission of Investigation on Celiac Disease meets with celiac associations and determines a roadmap for what can be done about celiac. The policies that can be implemented to struggle with celiac disease in Turkey are summarized below.

4.1. Tax and subsidy policies

The state may directly influence the consumption of celiac patients and the production of gluten-free products, which are essential for them, with policies such as tax reduction, tax holiday, subsidization of producers and consumers. Tax reductions are a supportive way which states implement to facilitate the purchase of gluten-free products. For example, Canadian citizens can deduct the expenses incurred due to purchasing gluten-free products from the taxes that will pay. In the US, the Internal Revenue Service has not offered any special deduction for celiac patients. Citizens may subject the health expenses up to 7.5% of their total income to deduction ([Glutino, 2010](#)).

4.1.1. Increasing the amount of financial support for celiac patients

Examples from the US and UK show that gluten-free products are much more expensive than products containing gluten. This reduces the quality of life of the patient. State support is essential for patients. For example, in Canada, tax reductions are applied to gluten-free products, in the UK, gluten-free products are sold by prescription, in Sweden, supports up to \$ 5000 are provided by some private insurance companies to children diagnosed with celiac disease. Therefore, supports provided to the patient and his/her family are important ([Ludvigsson *et al.* 2015](#)). Again in Sweden, children with celiac disease under the age of 16 are subsidized by state healthcare services and gluten-free products can be bought by prescription ([Kautto, *et.al.*, 2014](#)). In Italy, individuals diagnosed with celiac disease receive support up to 140 € per month against receipt for gluten-free products they have purchased. In the UK, gluten-free products can be supplied free

of charge by the prescription of a doctor, if celiac disease is diagnosed. Bread, breakfast cereal, flour and flour mixture, pasta and pizza can be purchased by prescription (Celiac Disease Foundation, 2017).

When the situation is analyzed from the point of Turkey, until 2011, patients with celiac disease could provide the vital flour with special formula and products containing special formula (pasta, noodle, biscuit, chocolate, wafer etc.) that they used due to their limited diets only from pharmacies against report and prescription and then they could receive the expenses of the products. According to the regulation issued on the Official Gazette, dated March 1, 2011, it has been reported that the treatment supports of patients would be put into their account every month and that they could purchase the gluten-free flour and products they want from anywhere and the obligation for prescription has been repealed. In order to benefit from this implementation, patients are required to notify their renewed reports every year to the institution. It is on the agenda to increase the report period of the celiac patients, whose diseases will continue for life, to 2 years.

For those who have caught celiac disease, which is defined as a disease of affluence, the state monthly pays 78.75 TRY to those between the ages of 0-5, 120 TRY to those between the ages of 5-15 and 108.75 TRY to those over the age of 15 for the year of 2017 to purchase gluten-free products. But this payment is not enough for the very expensive products. No other support is provided to those with celiac disease.

Table 2. Sale Prices of Some Gluten-free Products in Turkey in 2017

Products	Sale Prices (vat included) TRY	
	Gluten-free	Normal
125 grams Biscuit	15.00	1.00
125 grams Cream Biscuit	20.00	1.25
Caramel Filled Chocolate	26.00	3.00
125 grams of Chocolate Wafer	14.9	2.80
60 grams of Salty Ring Pretzels	11.00	0.5
240 grams of Homemade Bread	24.00	1.00
500 grams of Pasta	18.90	2.00
250 grams of Noodle	15.50	1.80
80 grams of Instant Soup	11.00	2.50
1 kg of Multi-purpose Flour	22.40	2.00
250 grams of Cornflakes	36.22	4.85
125 grams of Vermicelli	9.00	2.50

Source: Prepared by us.

Table 2 shows the sale prices of gluten-free and normal products for November 2017 in Turkey. As shown in the table, gluten-free product prices are much higher than normal prices. Only 5 kg of flour, or 4 packs of bread or 5 pack of pasta can be purchased with the money given to patients over 15 years old. It is not clear according to what the amount of support provided by the Social Security Institution is determined. In our day, as the product prices increase day by day and the minimum wage is 1400 TL, the support provided is not enough to improve the living conditions of patients with celiac disease, furthermore, additional measures are necessary to be taken by the state. Therefore, the amount of support should be increased.

4.1.2. VAT regulation for gluten-free products

The prices of gluten-free products are very high. In order to reduce the prices and encourage production, VAT should be reduced to 1% for gluten-free products. Moreover, VAT exemption for the products consumed more by children, such as gluten-free biscuits, chocolates, and cakes, may be introduced.

4.1.3. Customs duty exemption for gluten-free products

Since very few gluten-free products are produced in our country, many of them are imported and the customs duty on imported products causes the prices to rise much more. Therefore, customs duty exemption can be implemented for all gluten-free products. This will ensure that prices will considerably decline.

4.1.4. Supporting domestic producers of gluten-free products

Income tax and corporation income tax allowance for 5 years may be introduced for producers producing gluten-free domestic products. Such an implementation would result in a rapid increase in the number of domestic producers. At present, the number of producers producing gluten-free products in Turkey is very small.

4.1.5. Disablement reduction

Currently, those who are working as salaried employee and self-employed with respect to the Income Tax Act and who have lost 80% of their labour power, are considered as first-degree disabled person, those who have lost 60% of their labour power, are considered as second-degree disabled person and those who have lost 40% of their labour power, are considered as third-degree disabled person. According to the official figures of 2017, disablement reduction of 900 TRY is implemented for first-degree disabled person, 470 TRY for second-degree disabled person and 210 TRY for third-degree disabled person.

Table 3. Classification Criteria for Permanent Disorders Due to Colonic Rectal Diseases

Class 1	Class 2	Class 3	Class 4
Rate of Disability 10%	Rate of Disability 25%	Rate of Disability 50%	Rate of Disability 75%
Rare and short-term signs and symptoms of colonic or rectal disease	Objective findings or anatomical loss or changes of colonic or rectal disease	Objective findings or anatomical loss or changes of colonic or rectal disease	Objective findings or anatomical loss or changes of colonic or rectal disease
And	And	And	And
Non-requirement for limitations in activities, special diet or treatment	Mild GI symptoms along with rare conditions of intestinal functions with concomitant mild pain	Condition of intestinal habits with moderate and severe exacerbations and concomitant periodic or persistent pain	Continuous disorders of intestinal functions with persistent pain during rest
And	And	And	And
The absence of a systemic disorder, keeping the weight and nutritional status at desired levels	Requirement for minimal limitations or mild symptomatic treatment in diet	Requirement for activity limitation, special diets and medications during episodes	Complete limitation of activity, limitation of diet, and non-ability of controlling the symptoms despite treatment
And	And	And	And
The absence of sequel after surgical procedures	The absence of impairment in nutritional outcomes	The presence of basic symptoms (fever, anemia or weight loss)	The presence of basic symptoms (fever, weight loss or anemia) Or Non-prolonged remissions

Source: (Official Gazette, 2010).

The rates of disablement due to colonic rectal diseases are shown in Table 3. When an individual with celiac disease is admitted to hospital to obtain report, a disablement rate of 25% is given. Since a disablement rate of 25% is below 40% that is the first degree for disablement reduction, celiac patients who receive wage and self-employment income cannot benefit from the disablement reduction. Moreover, individuals, who receive salary and self-employment income who are obliged to look after celiac patients in their family cannot benefit from the disablement reduction with a disability rate of 25%. A disablement reduction of 40% or 60% can be provided to patients with celiac disease, since the expenses of the care and diets are expensive. In this way, at least patients with celiac disease will be considered as second- or third-degree disablement person and will benefit from tax reductions.

4.1.6. Food discount in wages

With respect to Subparagraph 8 of Article 23 of the Income Tax Act, the benefits provided for employees by giving meal in the workplace or in extensions of the workplace are free of tax. In cases where no meal is provided by employers in the workplace or in extensions of the workplace, the cost of daily meal for working days must not exceed 15,15 TRY including the VAT and the payment regarding that must be paid to obligants who provide food service. In case that the payment exceeds this amount, the payments with the exceeding amount made to employees in cash as a cost of food and the benefits provided for this purpose are taxed as a fee (The 193 Numbered Income Tax Act, 2017).

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Celiac patients working in the public and private sectors are not able to eat the meals provided in the workplace because of containing gluten. They either bring their meals from home or eat out in places that are suitable for them. Gluten-free meals eaten out are also very expensive. Therefore, a regulation may be made in the act for celiac patients. By this regulation, it should be ensured that workplaces provide special meals for celiac patient or a daily fee of 25 TRY including VAT should be paid to patients and reflected to their salaries, and should not be taxed more than the relevant portion. It has been stated in the act that the cost will be given to the obligants providing food service. When no special menu is provided for celiac patients in the workplace, 25 TRY including VAT should be directly reflected to their salaries, regardless of whether normal meal is provided or not.

4.2. Elimination of imperfect information

The main problem with celiac disease is the imperfect information. People have no idea what the disease is. The majority of patients believe that the disease will recover in later ages. Even on the condition of not having the disease, the consumption of gluten has considerable harms for human health. Actions to be taken for these purposes are summarized below:

- The creation of cartoons and cartoon characters regarding the harms of gluten should be obliged in TV channels for children.
- By public service announcements, correct information should be provided about the disease and it should be explained that the diet should be followed for a lifetime.
- One of the techniques to eliminate imperfect information is to mandatorily provide gluten-free labels on gluten-free products. This implementation is cheap, fast, and one of the most important implementations for celiac patients to maintain their diet. With the labeling implementation, patients are prevented from consuming gluten without knowing it. According to EU regulations, the patients should not consume more than 20 mg of gluten per day (Malvano *et. al.*, 2017). Providing a gluten-free labeling is mandatory in most countries. In some countries, gluten-free product certification is given to the producers and sellers of gluten-free products (Glutino, 2010). It should be ensured that GLUTEN-FREE symbols and logos are placed on products with a type size not less than 12 points.

It should be written on the product packaging that there is a risk of cross-contamination in many of the products.

4.3. Regulations for schools and hospitals

With respect to the 21.07.2011 dated and 2011/41 numbered Circular for Inspection of School Canteens and Hygiene Rules to be Implemented issued by The Ministry of National Education "except for natural mineral waters, beverages with high energy intensity, low nutritional value (energy drinks, carbonated beverages, flavored drinks and cola drinks), fried food and chips will not be sold in canteens, tea shops, buffets etc. of our educational institutions, including refectories of pensions and they will not be available in vending machines, since they may cause malnutrition of children. Instead of them, milk, ayran, yoghurt, fruit juice, fresh-squeezed fruit juice and fruits that can be sold alone will be kept available." The sale of harmful products has been prohibited by the circular. However, there has been no regulation for the sale of gluten-free products, which are essential for celiac patients. Celiac patients cannot find any product in refectories and canteens of hospitals and schools. Legislative arrangements should be made to require the sale of gluten-free products in canteens, and to provide special meals for celiac patients in both public and private schools and hospital refectories. Otherwise, celiac patients cannot eat regular food and experience difficulties. Adequate food intake is a human right and it is necessary for the state to provide that. As a matter of fact, the availability of gluten-free products in

schools and in hospitals in Italy has become mandatory by law ([Celiac Disease Foundation, 2017](#)).

At present, in order to take advantage of healthcare benefits, no condition is required for those specified below: These are ([Social Insurance and Universal Health Insurance Act, 2006](#));

- Individuals who have not turned 18 years old,
- Individuals who are medically in need of somebody else's care,
- In cases of traffic accidents,
- In cases of emergency,
- In cases of work accidents and occupational diseases,
- Notifiable infectious diseases,
- Regardless of being ill, preventive healthcare services for individuals, and preventive healthcare services to prevent harmful substance addiction.
- Due to maternity, outpatient and inpatient examinations, clinical examinations required for diagnosis if deemed necessary by the physician, delivery, laboratory tests and other diagnostic techniques, medical interventions and treatments to be performed based on the diagnosis made.

It is also necessary to examine and treat patients with celiac disease, which is known as a disease of affluence in the society, free of charge in public or private hospitals without asking for any health insurance. Celiac patients, who need to visit doctor and receive report every year, face with considerable difficulties, especially when they do not have social security.

In the society, there are many patients who are not diagnosed with celiac disease. The majority of people are not even aware of their disease. It should be ensured that hospitals provide free health screenings and carry out campaigns to raise public awareness. This implementation should be extended to the villages.

The majority of doctors are asking patients about whether or not containing gluten when they prescribe a medicine to celiac patients, and many doctors are ignorant about this subject. People with celiac disease should not be prescribed medicines that will affect their diets. The patient unintentionally goes off the diet because of the medicine prescribed by a doctor. Legislative arrangements should be made to make doctors exercise due care and to ensure that Gluten-Free statement is mandatorily specified on medicines with bold points.

4.4. Regulations for military service

With respect to subparagraph b of sub-article 5 of Article 45 of the of additional diseases and conditions list of Health Ability Regulation of the Turkish Armed Forces, patients with celiac disease who have reached the age of military service were exempted from military service ([Turkish Armed Forces Health Ability Regulation, 2015](#)). The Ministry of National Defense does not accept the celiac report given by the Ministry of Health and the university hospitals and prefer to receive the report again. The main problem is that young people who have reached the age of military service have to go off their diet in order to obtain negative test results. Young people who have been on their diet for years have been forced to go off their diets in order to be able to get the right diagnosis, which put them at significant health risks. In order to be able to resolve the existing problem, the Turkish Armed Forces should accept the health report previously received from the full-fledged state hospital.

4.5. Regulations within the scope of social municipalism

Social municipalism is that municipalities locally contribute to social policy implementations offered by the state to individuals in community and help the center with policy presentation. Municipalities provide many services to improve the social conditions of individuals ([Ugur & Bostan, 2016](#)). Another objective of municipalities is to implement social policies for the welfare and happiness of local community. For this purpose, it should be ensured that municipalities establish

obligatory gluten-free bakeries. Establishing a gluten-free bakery is not a very costly project. While Istanbul and Ankara municipalities have been successfully implementing these projects, celiac patients are having extreme difficulties even in finding bread in the Eastern and Southeastern Regions in Turkey. It should be ensured by the law that all municipalities establish obligatory bakery and production facilities in this respect.

4.6. Other regulations

It should be ensured that large grocery stores mandatorily have gluten-free product shelf. Mandatory regulations can be made in this regard. The important thing is that rather than the number of large grocery stores, they are able to offer the cheapest and healthiest products to the community. By this means, gluten-free products will be able to be sold to many people.

May 9 is celebrated as the International Celiac Day in order to raise awareness and consciousness on celiac. It should be ensured that the disease and its effects are announced more effectively with the trainings, seminars and organizations that will be held during the relevant week.

5. Conclusion

Celiac disease, which is a reaction developed by the small intestine against a substance, called gluten, may arise with conditions such as chronic diarrhea along with vomiting, weight loss, abdominal distention, persistent anemia despite the treatment, continuous gas complaints, bone pains, discomfort and change in behavior patterns, short stature and growth retardation, itchy skin and rash. When the disease is not treated, it provides a basis for very serious diseases such as liver and colon cancer. Gluten-free diet is a lifestyle of those who have caught celiac disease, and no medicine has yet been developed to treat the disease.

Today, a significant portion of the community has no knowledge about celiac disease. Even those with the disease do not follow their diet, even if they follow, they go off their diet after a while, considering that they recovered. If the disease cannot be diagnosed, drug and treatment costs increase and the work performance of the employees is adversely affected. The young people at the age of military service who have caught the disease are exempted from military service. The most important problem is the existence of imperfect competition conditions despite the continuous increase in gluten-free product sales. Gluten-free product prices are 4-5 times higher than normal product prices. This is a very serious issue, especially for families with low income. Nowadays, the serious harms of gluten are mentioned, since the genetic form of cereals has been altered.

Important supports are provided and significant tax reductions are introduced to celiac patients in the world countries. In our country, the Assembly has established a Commission of Investigation on Celiac Disease and the policy recommendations to be implemented have been started to be discussed. In our study, policy recommendations have been discussed under the titles of tax and subsidy policies for celiac producers and consumers, educational and informational studies to eliminate imperfect information, regulations for schools and hospitals, regulations for military service, regulations within the scope of social municipalism and other regulations. Every policy the state will implement is promising for celiac patients who are expecting urgent solutions in this regard.

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