Prevalence and Situation of Clients with Celiac Disease in the Zliten Area: A Comprehensive Study

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Abstract

The study aimed to know the prevalence of celiac disease (CD) among people who lived in the Zliten Area and study the conditions of CD patients, and relied on a descriptive and analytical approach. The data collected were from people who had a celiac disease using a questionnaire to collect personal parameters and link it with how strict the patients are with following a gluten-free diet (GFD), the price of gluten-free food (GFF), availability, and variety of GFF. There were 439 respondents, the data by SPSS (version 23.0, 2015). The data subjected were to a one-way analysis of variance (ANOVA) at $p \leq 0.05$. The result showed that the celiac patient ratio in the Zliten area was 1:683. The female-to-male ratio was 2:1. The majority of celiac cases were mostly children. 91.1% of the study subjects strictly followed GFD. 90.9% of the respondents claimed that the price of GFF was very high. 98.2% of cases could find GFF only in especial groceries; moreover, 92.3% of study subjects did not find a types variety of GFF, and 69.8% did not get GFF regularly. There was a significant difference between ages, genders, and education levels concerning the following GFD. Subsequently, the study recommends that more care should be taken for clients with celiac disease, as more variety and enough GFF should be available at a suitable price.

Keywords: Celiac Disease, Children, Gluten-free food, Availability.

الملخص:

تهدف هذه الدراسة إلى معرفة مدى انتشار ووضع مرضى حساسية الجلوتين بمنطقة زليتن، واعتمدت المنهج الوصفي التحليلي. جمعت البيانات من خلال استبانة وزعت الكترونياً ويدوياً، لمعرفة المعلومات الشخصية ومدى اتباع الحمية الخالية من

الجلوتين وأماكن توفر الأغذية الخاصة بالمرضى، وتنوعها وأسعارها واستمرار الحصول عليها بشكل منتظم، من وجهة نظر المرضى أو أباءهم. تم تعبئة الاستبانة من قبل المرضى أو أباءهم. جمعت 439 استبانة كاملة البيانات، تم تحليل البيانات بواسطة تحليل التباين الأحادي (ANOVA) عند مستوى دلالة احصائية $p \geq 0.05$باستخدام برنامج التحليل الاحصائيSPSS الإصدار 23 سنة 2015. أظهرت نتائج الدراسة بأن نسبة عدد مرضى حساسية الجلوتين إلى عدد سكان منطقة زليتن 1:683، حيث كانت نسبة الإصابة بالمرض في الإناث أعلى من الذكور بمعدل 1:2، وسجلت فئة الاطفال أعلى نسبة اصابة، كما استنتجت الدراسة بأن نسبة 91.1% ملتزمون باتباع الحمية الخالية من الجلوتين بشكل صارم, ونسبة 90.9%كانت أجابتهم بأن اسعار الأغذية الخاصة بهم مرتفعة، وشكلت إجابة أفراد الدراسة بتوفر الأغذية الخالية من الجلوتين في محلات خاصة نسبة 98.2%، سجلت قلة تنوع الأغذية الخاصة بالمرضى نسبة 92.3%، ومثلت اجابة الحصول على الأغذية الخالية من الجلوتين بشكل غير منتظم نسبة 69.8% من أجمالي أفراد الدراسة.

بينت نتائج التحليل الإحصائي وجود تأثير معنوي، للفئات العمرية وعامل الجنس وكذلك المستوى التعليمي على أتباع الحمية الغذائية الخالية من الجلوتين. بذلك توصي الدراسة بضرورة الاهتمام بالأشخاص المصابين بهذا المرض بتوفير وتنويع الأغذية الخاصة بهم بصورة منتظمة وبأسعار مناسبة.

كلمات مفتاحية: مرض حساسية الجلوتين. أطفال. حمية خالية من الجلوتين. الاتاحة.

Introduction:

The CD is a chronic, autoimmune disease that affects the small intestine in both genders and all ages. It occurs due to the ingestion of gluten-containing foods [1]. Gluten is "the rubbery protein mass that remains when washed wheat dough to remove starch" Gluten and gluten-related proteins are present in wheat, rye, and barley and are widely used in food processing to give dough desired baking properties, add flavors, and improve texture [2]. Gluten exposure in genetically predisposed individuals may lead to CD [3]. The World Health Organization (WHO) defines CD as an autoimmune disease in which the body attacks itself when gluten is eaten, specifically in the small intestine [4]. The disease's cause is unknown, but there are risk factors that may increase the risk of infection [5]. CD is related to growth, malnutrition, and intestinal damage, and complications of CD only affect people who continue to eat food that contains gluten. There is no treatment for CD, but compliance with a gluten-free diet (GFD) is essential [4, 6]. Food allergy can develop at any age, but most cases of CD typically appear in the first year of life, especially in children whose mothers introduce food containing gluten into their diet early [7]. The treatment of CD with a GFD leads to the resolution of the clinical disease and restoration of histological abnormalities [8]. The CD was once considered a rare condition. However, it is now widely recognized as the most common form of food hypersensitivity affecting children and adults [9]. Observe many symptoms in patients with classic signs of CD, such as malabsorption, diarrhea, iron deficiency anemia, weight loss, and growth failure [10]. Family studies have shown that almost 50% of newly diagnosed CD patients have an asymptomatic clinical course, and it seems that half of the undiagnosed population has this asymptomatic clinical form [11]. However, many patients with asymptomatic disease report a new normality after starting a GFD [12]. The only current treatment for CD is maintaining a strict GFD for life [13]. Avoiding gluten helps the intestines heal and resolves nutritional deficiencies and other symptoms, and children tend to recover more quickly than adults. A strict GFD also reduces the risk of many long-term complications related to untreated CD [14]. Medications are not usually required to treat CD except for occasional patients who do not respond to

GFD. There are many CD support groups available for patients and family members. Options available to prevent CD include eating a small amount of gluten (2 grams) between the fourth and seventh months of life (not before, not after) during breastfeeding, which appears to protect against the development of CD in susceptible children [15].

The study aimed to know the preva-lence of celiac disease CD among people who lived in the Zliten area and knowledge of the situation of clients with CD.

Methods and procedures:

The study relied on a descriptive and analytical approach to understand the prevalence and situation of clients with CD in the Zliten Area. Data were collected using a questionnaire designed to cover information about the study subjects' parameters, compliance with GFD, price, availability, and variety of obtained GFF from the perspective of patients or their parents related to the study hypotheses. The questionnaire was published manually and on the internet, adapted to the Arabic language, and filed by the study subjects themselves or their parents. All the study subjects were informed about the purpose of the research and the obtained data used for scientific purposes.

The number of participants who completed the questionnaire was 439 clients with CD. The obtained data were analyzed using SPSS (version 23, 2015). The statistical analysis finds frequencies (f) and percentages (%). to identify the categories of a variable and describe the study subjects. The chi-square test of independence is to find the relationship between two items to see if there is a relationship between variables. One-way analysis of variance (ANOVA) at $p \leq 0.05$ was adopted to compare the means and find significant differences between the means of variables subjected to treatment.

The results:

All subjects for this study were patients with CD and client Subscribers in the Zliten association of CD. There were 439 respondents. The age and gender of study subjects are clearly in Table 1. The age item is categorized as Children ≤12 yrs. Adolescents 13-18 yrs, and Adult ≥19yrs. Whereas the number of males was 130 subjects representing 29.6%, the number of females was 309 (0.4%), while ages ranged between two- 48years. The

female-to-male ratio is 2:1. The prevalence of clients with CD to the population in the Zliten Area ratio was 1:683. The residents of the Zliten Area were 300,000, less than the worldwide prevalence, and an increase in the number of clients with CD affected all age categories, mostly incidence children category, more frequent in females.

Table (1): The distribution of clients with CD by age and gender.

Gender			
Age groups /years	Total	Male	Female
	f (%)	f (%)	f (%)
Children	203 (46.2)	62 (14.1)	141 (32.1)
Adolescents	128 (29.2)	27 (6.2)	101 (23.0)
Adult	108 (24.6)	41 (9.3)	67 (15.3)
Total	439 (100)	130 (29.6)	309 (70.4)

f. frequency.
%. Percent.

The patient's compliance GFD is clearly in Table 2. They categorized compliance as Strict, Often, and Irregular according to the age and gender of study subjects. Most study subjects adhere Strictly to GFD. The number of males and females who adhered Strictly to GFD were 108 and 292, representing 24.6% and 66.5%, respectively. The numbers Often answered by males and females were 16 and 12 subjects, representing 3.6% and 2.7%, respectively. The frequencies of Irregular answers for both genders were 6 and 5 subjects, representing 1.4% and 1.1%, respectively. Most of the study subjects adhered to Strict GFD, with answers of Often compliance GFD being lower, and the lowest percentage Irregularly answered compliance GFD. The statistical analysis revealed a p value of 0.034, showed a significant difference between age groups, particularly in the adult category in both genders and between female and male categories regarding adherence to GFD. Children categories for both genders had a higher percentage of compliance with GFD than other age categories.

Table(2): The compliance of GFD by gender and age categories.

Age categories	Gender						P-value
	Male			Female			
	Strictly f(%)	Often f (%)	Irregular f (%)	Strictly f(%)	Often f (%)	Strictly f(%)	
Children	59(13.4)	2(0.5)	1(0.2)	139(31.7)	2(0.5)	0(0.0)	0.034
Adolescents	21(4.8)	5(1.1)	1(0.2)	97(22.1)	3(0.7)	1(0.2)	
Adult	28((6.3)	9(2.1)	4(0.9)	56(12.8)	7(1.6)	4(0.9)	
Total	108(24.6)	16(3.6)	6(1.3)	292(66.5)	12(2.7)	5(1.1)	

f. frequency.

%. Percent.

The following GFD of the study subjects depends on a scientific level, as demonstrated in Table 3. Categorized is Non-education, primary& medially, and university & above. The numbers of no education, primary& medially, and university& above categories were 27, 371, and 41 individuals, with percentiles of 6.2, 84.5, and 9.3% respectively. Children who did not exceed five years are considered non-education levels. The primary& medially categories had the highest Strictly followed by GFD, representing 81.5% overall. The university& above category had the highest answers, Often and compliance Irregular GFD, representing 4.8 and 1.1% respectively.

Statistical analysis showed a p value = 0.047, evidenced a significant difference between scientific level item on compliance GFD. University& above educational level category had less Strict compliance GFD and the primary& medial level had higher adhere with Strictly GFD, was observed adhere with GFD of no education level had more than university& above education level, with Compliance GFD.

Table(3): The compliance of GFD at scientific levels.

	Compliance with GFD			
Educational level	Strictly f (%)	Often f (%)	Irregular f (%)	P-value
No education	17(3.9)	2 (0.5)	2(0.5)	0.047
Primary& medial	358 (81.5)	5 (1.1)	4 (0.9)	
University& above	25 (5.7)	21 (4.8)	5 (1.1)	
Total	400 (91.1)	28 (6.4)	11(2.5)	

f. frequency.
%. Percent.

The questionnaire observed Availability, Variety, Obtained, and Cost of GFF, given in Table 4. The answer options of Availability GFF categorized as General and Especial grocery 431 and 8, representing 98.2, and 1.8%, respectively. Option answers the Variety of GFF items classified as Brands, *Somewhat,* and Little, were 0, 405, and 34 subjects representing 0, 92.3, and 7.7%, respectively. The *Somewhat* answers had higher frequency and percentage than overall. Also, the options of answers Obtained by GFF classified into Regular, Irregular, and Rare were 17, 307, and 115 subjects, representing 3.9, 69.8, and 26.3% respectively. Irregular answers had higher frequency and percentage than overall. The categories of answers to the GFF Cost, Suitable, *Somewhat*, and Expensive, 6, 34, and 399 subjects, representing 1.4, 7.7, and 90.9%, respectively. Expensive answers had higher frequency and percentage overall.

Table(4): The extent of availability, variety, obtained, and cost of GFF.

Items	Answer	f (%)
Availability	A general grocery	8 (1.8)
	Especial grocery	431 (98.2)
A Variety	Brands	0 (0.0)
	Somewhat	405 (92.3)
	A Little	34 (7.7)
Obtained	Regular	17 (3.9)
	Irregular	307 (69.8)
	Rare	115 (26.3)
Cost	Suitable	6 (1.4)
	Somewhat	34 (7.7)
	Expensive	399 (90.9)

f. frequency.

%. Percent.

Discussion:

In the current study, the prevalence of clients with CD to population Zliten Area ratio was 1:683. People living in the Zliten Area have 300,000 souls, less than the worldwide prevalence, disagreed with the study [11]. Females had a higher percentage than males, meaning females were more affected than males. The female-to-male ratio was 2:1. Agree phenomenon is observed [3, 11]. Children with CD were most affected in comparison to Adolescents and adults, which contradicts the results of studies that have revealed that CD affects all ages, especially the elderly category, where more than 70% of diagnosed patients are over the age of 20 years because different individuals of study [5, 7]. The average recognized duration of CD was seven years, with a low value of two years and a highest of 40 years. The compliance GFD of the study subjects depends on age groups. Also, other studies included the children category. The current study did not use the same questionnaires and revealed that most study subjects Strictly adhered to GFD in all ages and both genders and the majority of children Strictly complied with GFD in the current study, adolescents and adult categories had the lowest compliance GFD respectively because the children Strictly complied GFD and did not feel forgotten or neglected, probably because parents provided all their food consumption need [1, 5].

Females to males had a higher percentage with Strict compliance to GFD and less marked in the elderly category. A significant difference in the age groups for both genders followed GFD, especially the children category was most observed, and the lowest followed GFD were adolescents and adult categories. As demonstrated in Table 3, the compliance GFD of the study subjects depends on the scientific level. Classified as no education, primary& medial, and university& above categories, there was a significant effect of the scientific level item on compliance GFD, and primary& media category had a higher percentage Strictly compliance GFD, the no education and university& above categories were less Strictly compliance GFD respectively, these results contradict an earlier study conducted by[5, 10], and the primary& media categories mostly children category. Also, parents pay attention and carefully monitor their sons, and respondents to the study were more than other groups. The current study presented the Availability of Especial grocery GFF had a higher percentage in comparison to a General grocery, which led to finding limited Available GFF [12], which contradicts a previous study conducted by [13]. The answers options question of Variety item GFF classified as Brands, *Somewhat*, Little, the higher percentage was *Somewhat* answered, the little answers were lower percentage, the Brand was zero answers, similar results of a previous study conducted by [5, 6, 10]. The options question answers Obtained GFF classified as Regular, Irregular, and Rare. The Irregular answers had a higher percentage. Rare and Regular answers had the lowest percentiles, agreeing with a study conducted by [4]. The classified Cost GFF answers are Suitable, *Somewhat*, and Expensive. The Expensive answers had a higher percentage, and the answers *Somewhat* and Suitable had the fewest percentiles. So, this affects getting GFF and compliance with GFD, potential nutritional and clinical consequences, along with an increased risk of complication [2, 5, 8, 15].

Conclusion

The prevalence incidence of CD in the Zliten Area was less than worldwide and occurs in both genders and all ages. Children have more incidence of CD, in contrast with other age groups. The current study revealed females are the majority affected by CD compared to males. Age items affected compliance with GFD, especially in the children who were

more Strictly compliant with GFD. Also, gender affected compliance with GFD, especially since the female category was more Strictly compliant with GFD than males. The scientific level had a significant effect on compliance with GFD. Primary & medical levels of study subjects who most Strictly compliance with GFD, study subjects claimed that the price of GFF was very high, GFF was Especially grocery Availability, Limited Variety, and Irregularly Obtained GFF, from the perspective of patients and their parents of study subjects, may the effect of getting GFF and adhering GFD.

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