# Prevalence and Sociodemographic Effect of Celiac Disease in Type 1 Diabetes Mellitus in Faiha Specializes Diabetes, Endocrine and Metabolism Center in Basra

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## Abstract

**Background:** Celiac disease is one of the most prevalent autoimmune illnesses in type 1 diabetes, Celiac disease and type 1 diabetes are immune-mediated diseases with shared risk factors, genetics like Human Leukocyte antigen, environmental variables that have a significant role in the pathophysiology of both diseases since their occurrences are growing globally.

**Objective: to** estimate the prevalence and the sociodemographic characteristics of celiac disease among patients with type 1 diabetes mellitus with age less than 30 years.

**Methodology:** A descriptive, registry-based Cross-sectional study, carried out on patients with type 1 diabetes, who were registered over 3 years period (from the first of January 2020 till the end of December 2022), in Faiha Specialized Diabetes, Endocrine, Metabolism Center in Basra. A total of 474 patients were included in the study, their ages ranged from (1-30) years.

**Result:** A total of 474 patients who registered over three years, their mean age was 10.33 ±5.91, majority of them were female (57%). The total prevalence of celiac disease in type one diabetes from January 2020 to the end of 2022 was 19.2%. And the incidence was highest in 2022 (26.3%) and lowest was in 2020 (13.2%). The Type 1 diabetes duration ranged from 1 to 24 years with a mean of 3.14±2.93. In most of the celiac patients, 88.2% were presented with less than five years duration of type 1 diabetes.

**Conclusion:** The prevalence of celiac disease among people with diabetes type 1 increased from 2020 to 2022 by about 6-7% annually. There was no significant difference between age and gender and the risk of getting celiac disease among diabetic type 1 patients in this study.

**Keywords:** prevalence, Celiac Disease, Type 1 Diabetes Mellitus, Basra

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## Introduction

Celiac disease is a chronic, multi-organ autoimmune illness that affects the small intestine and is triggered by the consumption of gluten in genetically susceptible individuals. [1] while Type 1 diabetes mellitus is an autoimmune illness characterized by autoantibody-mediated death of pancreatic beta cells in the islets of Langerhans. This cell death results in insulin insufficiency and a prolonged condition of hyperglycemia. [2]

Celiac disease (CD) and type 1 diabetes (T1DM) are immune-mediated diseases with shared risk factors, most notably human leukocyte antigen (HLA) genetics, but environmental variables also have a significant role in the pathophysiology of both diseases since their occurrences are growing globally. Emerging research reveals that gut

microbiota and infectious agents, among others, affect innate and adaptive immunity and raise the risk of both celiac disease and type 1 dm. [3]

Celiac disease is one of the most prevalent autoimmune illnesses in type 1 diabetes, with prevalence estimates ranging from 3 to 16% and a mean prevalence of 8%. [4].

Globally, the incidence of CD and T1DM is around 1% and 0.5%, respectively. [5] There is evidence that CD is much more prevalent in T1DM patients than in the overall population. [6] The estimates range from 3 to 10%. [6]

Patients with undiagnosed CD and T1DM had a greater frequency of retinopathy (58%) and nephropathy (42%) than those with pure T1DM (4%). [7,8]

Several studies have evaluated the effectiveness of celiac disease screening in type 1 diabetes. Clinical features, serology, or histology alone are not definitive for diagnosis Instead, the final diagnosis depends on the combination of these factors, serology is the first-line test for high-risk patients followed by duodenal biopsy. Patients on a gluten-containing diet Serum immunoglobulin A (IgA), anti-tissue transglutaminase antibody (anti-TTG-IgA) is generally considered the most sensitive test for diagnosing celiac disease, but specificity is lacking, while the EMA Ab (Anti-Endomysial Antibody) have 100% specific for CD but it is expensive, less sensitive, more operator-dependent than anti-TG and IgA, these properties therefore make the EMA-IgA an ideal secondary line test after anti-TTG, IgA. [9]

Consequently, it may be suggested that a single screening for celiac disease is ineffective. Nevertheless, antibody positivity does not raise the probability of abnormal biopsies. 75% of normal and diabetic individuals with antibody positivity were expected to have abnormal biopsies. Recommend screening all T1DM patients for antibody positive upon diagnosis and in the presence of symptoms. Moreover, antibody-positive patients should have an Endoscopic biopsy to confirm diagnosis. [10]

**Aims of the Study:**

This study aims to Estimate the prevalence of celiac disease (CD) among patients with type 1 diabetes (T1DM). And to study the sociodemographic characteristics of patients with celiac disease and diabetes.

**Patients and method:**

A descriptive, retrospective, registry-based study, was designed to measure the prevalence and sociodemographic effect of celiac disease in patients with type 1 diabetes (T1DM), over 3 years period (from the first of January 2020 till the end of December 2022) who visited al Faiha Specialized Diabetes, Endocrine, Metabolism Center (FDEMC) in Basra, southern of Iraq. The prevalence was calculated by the proportion of persons in a population who have a particular disease or attribute at a specified point in time or over a specified period, the prevalence includes all cases, both new and preexisting, in the population at the specified time. [11].

The population were patients who attended Faiha Specialized Diabetes, Endocrine, Metabolism Center and were diagnosed with T1DM and were less than 30 years old. A positive screen for celiac disease (CD) is done with anti-tissue transglutaminase (anti-TTG) antibodies or (IgA).

The clinical records of the entire population of patients with T1DM were analyzed from the duration from first of January 2020 till the end of December 2022.

The records were reviewed for the patient's sociodemographic characteristics: age, gender, residency, marital status, educational level, occupation, socioeconomic status, and smoking status.

Some clinical variables: any other chronic disease, family history of DM or CD, history of diabetes ketoacidosis (DKA), the register data mention the history of DKA without the frequency of DKA attacks for each patient), and Diabetic control by measuring HbA1c every 3 months. Target HbA1c

% was used according to the age group (years)for children and adolescents [12]:

- **< 5 years** >> 7.5-9.0 %
- **5-11years** >> 6.5-8.0%
- **12-15 years** >> 6.0-7.5 %
- **16-18 years** >> 5.5-7.0%

And for the adult HbA1c % for age **19-30 years** >> 5.7-6.5%

All patients who were registered at FDEMC and diagnosed with T1DM and CD and their age is ≤ 30 years old were included in the study. While those with incomplete data, if their age was less than one year and older than 30 years old were excluded.

The necessary agreements of the Iraq Ministry of Health and the Basra health directorate on carrying out this study were obtained before data collection.

Data was analyzed using the Statistical Package for Social Sciences (SPSS) version 26. Contentious data were presented as (mean ± standard deviation) while categorical data were presented as frequencies and percentages.

In all statistical analyses, the level of significance (p-value) is set at ≤ 0.05 and the result is presented as tables.

**Result:**

Table 1 shows that the mean age of patients was 10.33 ±5.91. Most of them were between 10-19 years old (49.6%), and 57% were females. Most of them were placed in al Basra city (96.2%), and around 53.6% of them lived in rural areas.

**Table 1. Distribution of Patients according to sociodemographic characteristics:**

| Variables | | | No. | % |
|---|---|---|---|---|
| **Age (years)** | **Range** | | 1-30 | |
| | **Mean ±SD** | | 10.33±5.91 | |
| | **< 10** | | 219 | 46.2 |
| | **10-19** | | 235 | 49.6 |
| | **≥ 20** | | 20 | 4.2 |
| **Gender** | **Male** | | 204 | 43.0 |
| | **Female** | | 270 | 57.0 |
| **Address** | **Basra** | | 456 | 96.2 |
| | **Other** | | 18 | 3.8 |
| | | **Baghdad** | 6 | 1.3 |
| | | **Maysan** | 7 | 1.5 |
| | | **Nasiriyah** | 1 | 0.2 |
| | | **Samawah** | 4 | 0.8 |
| **Residency** | **Rural** | | 254 | 53.6 |
| | **Urban** | | 220 | 46.4 |
| **Total** | | | 474 | 100.0 |

Table 2 shows that T1DM duration ranged from 1 to 24 years with a mean of 3.14±2.93. Most of the patients 88.2% present with less than five years of disease duration. About 78.9% of the patients mentioned a negative family history of DM. The HbA1C level ranged from 5 to 22.5 majority of patients 95.6% had poorly controlled DM.

**Table 2: the clinical profile of T1DM among the patients:**

| Variables | | No. | % |
|---|---|---|---|
| **Disease duration** | **Range**<br>**Mean ±SD** | 1-24<br>3.14 ±2.93 | |
| | **≤ 5 years** | 418 | ٨٨,٢ |
| | **>5 years** | 56 | 11.8 |
| **Family history of DM** | **Yes** | 100 | 21.1 |
| | **No** | 374 | 78.9 |
| **HbA1c** | **Range**<br>**Mean ±SD** | 5.0 - 22.5<br>10.96 ± 2.88 | |
| **Glycemic control** | **Good control** | 21 | 4.4 |
| | **Poor control** | 453 | 95.6 |
| **Total** | | 474 | 100.0 |

Table 3 shows the prevalence of CD among patients with T1DM. The total prevalence at the end of 2022 was 19.2%.

While the incidence in 2020 was 13.2% raised to 20.3% in 2021 then raised to 26.3 % in 2022.

**Table 3: The prevalence of celiac disease among patients with T1DM:**

| Variables | Patients with celiac disease | Patients with T1DM | Prevalence per 100 pops. |
|---|---|---|---|
| **Total prevalence at the end of 2022** | 91 | 474 | 19.2 |
| **Yearly Incidence** | | | |
| **2020** | 29 | 220 | 13.2 |
| **2021** | 16 | 79 | 20.3 |
| **2022** | 46 | 175 | 26.3 |

Table 4 shows that The highest percentage of celiac disease was among those from 10 to 19 years old (19.6%). There was no significant association between the age and development of celiac disease, since the P value = 0.463.

**Table 4: the association between the development of celiac disease and age**:

| Variables | Patients with celiac disease | Patients without celiac | p-value |
|---|---|---|---|
| **Age** | Mean ±SD<br>10.11± 4.22 | Mean ±SD<br>10.41± 6.24 | 0.463 |
| **<10** | 42(19.2) | 177 (80.8) | |
| **10-19** | 46 (19.6) | 189 (80.4) | |
| **≥20** | 3(15.0) | 17 (85.0) | |
| **Total** | 91 (19.2) | 383 (80.8) | |

Table 5 above shows There was no significant association between gender and celiac disease development. P value = 0.844.

**Table 5: the association between the development of celiac disease and gender:**

| Variables | Patients with celiac disease | Patients without celiac | p-value |
|---|---|---|---|
| **Gender** | | | |
| **Male** | 40(19.6) | 164 (80.4) | 0.844 |
| **Female** | 51(18.9) | 219(81.1) | |
| **Total** | 91 (19.2) | 383 (80.8) | |

Table 6 shows there was no significant association between the disease duration and the subsequent development of celiac disease P value= 0.411.

Still, 26.2% of patients with celiac disease had a disease duration of more than five years.

**Table 6 the association between the development of celiac disease and the disease duration of T1DM** :

| Variables | Patients with celiac disease | Patients without celiac | p-value |
|---|---|---|---|
| **Disease duration** | Mean ±SD<br>3.22 ± 2.98 | Mean ±SD<br>3.16±2.92 | 0.411 |
| **≤ 5 years** | 78 (18.7) | 340 (81.3) | |
| **> 5 years** | 13 (26.2) | 43 (73.8) | |
| **Total** | 91(19.3) | 383(80.7) | |

Table 7 shows there was no significant association between diabetes control and the development of celiac disease. P value= 0.08. 19.6% of those who had a poor control DM developed celiac disease, in comparison to 9.5% of those with good control DM.

**Table 7 the association between the development of celiac disease and the HbA1C level:**

| Variables | Patients with celiac disease | Patients without celiac | p-value |
|---|---|---|---|
| **HbA1c** | 11.1± 2.86 | 10.1±2.88 | 0.08 |
| **Good control** | 2 (9.5) | 19 (90.5) | |
| **Poor control** | 89 (19.6) | 364 (80.4) | |
| **Total** | 91 (19.2) | 383 (80.8) | |

Table 8 shows 40% of patients with CD had a history of DKA compared with the other hand 18.5% of those with no history of DKA. However, this difference is still not statistically significant since the P value is 0.067.

**Table 8 the association between the development of celiac disease and their previous history of DKA:**

| Variables | Patients with celiac disease | Patients without celiac | p-value |
|---|---|---|---|
| **History of DKA** | | | |
| **Yes** | 6 (40.0) | 9 (60.0) | 0.067 |
| **No** | 85 (18.5) | 374 (81.5) | |
| **Total** | 91 (19.2) | 383 (80.8) | |

Table 9 shows the association between the CD and thyroid disease, there was no significant association since the P value = 0.502.

**Table 9: the association between the development of celiac disease and thyroid disease:**

| Variables | Patients with celiac disease | Patients without celiac | p-value |
|---|---|---|---|
| **Hypothyroidism** | 1(9.1) | 10(90.9) | 0.502 |
| **Hyperthyroidism** | 2(40.0) | 3(60.0) | |
| **Euthyroid** | 88 (19.2) | 370 (80.8) | |
| **Total** | 91 | 383 | |

## Discussion

Type 1 diabetes mellitus (T1DM) and celiac disease (CD) are recognized as two of the most related autoimmune disorders due to their shared genetic background, which has been identified in the human leukocyte antigen (HLA) genotype by Flores et al. [3] Therefore, celiac disease screening has been suggested for T1DM patients as high-risk individuals, and because it is essential to evaluate the prevalence and characteristics of CD among T1DM patients, we conducted this study. The current study involved 474 patients who registered over three years. Their mean age is equal to 10.33 years, which is slightly lower than the age of T1DM patients reported by Doubova et al. in Mexico which is equal to 13.8 years,[13] and by comparison to a

Jordanian study by Odeh et al. the mean age of patients was $12.02 \pm 3.94$ years.[14]

More than half (57%) of our patients were female, which is in line with the findings of a recent Syrian study that recorded a higher percentage of females (54.3%) and the mean age of the patient was 11.6 years by Alali et al.,[15]

This study demonstrated poor glycemic control among T1DM patients, whose mean HbA1c level was 10.9 and 95.6% of whom had poor glycemic control. This resembles the data published in a Syrian study conducted by Alali et al. with a mean HBA1c was 9.25%. [15] Also, another study from Mexico by Doubova et al. found comparative findings, as they reported that only 13.6% of patients had HbA1C $< 7\%$, and the mean HbA1c was 9.2%. [13] The differences in HbA1c levels between studies may be attributable to ethnicity, clinical characteristics, parental education, and income, but the most significant factor may be the quality of care overall. [16]

The current study reported a prevalence of celiac disease among T1DM equivalent to 19.2%. A previous study from Iraq, done in Baghdad in 2012 by Abduljabbar et al. found that the prevalence of celiac disease among children with T1DM was 8.6%, which is less than the half prevalence that we reported, this study was done on 152 patients with T1DM by screen them with anti-TTG and then confirm the positive screen for CD with duodenal biopsy.[17] The prevalence of CD in Iranian patients with T1DM was equal to 5%,[18] A study carried out by Abid et al. in the United Kingdom in 2011 found an increase of approximately 15.4% in serologically confirmed CD in T1DM patients, which is comparable to our findings. [19] The increased prevalence of CD in T1DM combined with the absence of symptoms has led to the recommendation that T1DM patients be screened for celiac disease at diagnosis, annually for the first four years, and every two years for the next six years. [20]

The current study reported an increasing occurrence of celiac disease among T1DM patients; it was 13.2 per 100 DM patients in 2020, but it doubled to 26.3% at the end of 2022, this study depends on serological screening done with TTG and IGA and the positive screen not confirm by duodenal biopsy, this may explain why we record a high rate of prevalence and this also probably happened because of increased awareness and improved screening and investigation services at the endocrinology center of Basra city. We also note the lowest record cases of T1DM, and CD were in 2020 and this was due to the spread of the Coronavirus at that time, quarantine and curfew. The incidence of T1DM and CD varies globally, even though the incidence of each disease is increasing, Due to a shared genetic background and interaction with environmental and immunological factors. [21]

Regarding risk factors or the predictors of getting celiac in patients with T1DM. We found that neither age nor gender is significantly different among those who developed celiac and those who did not. However, our results are consistent with Bhadada et al. in India who found that the age at diagnosis of celiac with diabetes is around 11.5 years. [22] Similarly, a recent Saudi Arabia study done by Aljulfi et al. found more seropositive CD females.[23]

Although there is no significant difference between the development of celiac disease and the disease duration, the majority of CD (78 of 91 patients) was diagnosed within less than five years of diabetes onset, and these findings are in line with a study in Turkey [24]

Although there is no significant difference between the HbA1c among diabetic patients with celiac disease and those with no celiac disease, it is slightly higher among those with celiac disease (11.1 vs. 10.1). This finding is in line with the findings of Aljulfi et al. There was no significant difference in the level of HBA1C level between the celiac and non-celiac patients with T1D. [23]

The current study reports no significant difference between the history of DKA among those with celiac and those who have no diagnosis of CD, and this is in line with each of Alali et al., Aljulfi et al. and stated there is no evidence of higher risk of DKA episodes in patients with both T1DM and

celiac disease.[15,23] However, the opposite has been observed, as celiac disease has been associated with mucosal changes that can cause problems with carbohydrate absorption even without causing true malabsorption. This resulted in a greater likelihood of symptomatic hypoglycemia, which was observed in the 6 months before and after the diagnosis of celiac disease, this study was collected in 297 centers in Germany and Austria. [25]

Patients with celiac disease are at higher risk for other autoimmune diseases, including autoimmune thyroid disorders. Thyroid disorders have been documented as an important risk factor for the development of celiac disease in T1DM patients,[25] but the current study found no significant association between thyroid disorders and CD in line with Aljulfi et al.,[23] but this goes in reverse to Nowier et al. that found there is a significant proportion of patient with autoimmune thyroid disease and CD in T1DM and it explained by the fact that the CD and autoimmune disease of the thyroid share a common genetic background and this provides an explanation for the higher incidence of thyroid autoimmune disease and CD.[26]

**Limitations:**

The design of the study is cross-sectional rather than case-control; therefore, we are not able to assess if CD behaves differently among patients with no history of T1DM. The major limitation of the current study is that it depends only on the registration system, and some information is probably missed or not fully registered, such as hypoglycemic attacks, the number of episodes of DKA attacks and the study of whether the person who recorded the occurrence of frequent episodes of DKA susceptible to developed CD more than patients who scored less DKA.

**Conclusions:**

The prevalence of the celiac disease (CD) among people with diabetes type 1(T1DM) equals 19.2%, and its burden increased from 2020 to 2022 by about 6-7% annually. There was no significant difference between age, gender, the duration and control of diabetes and the risk of getting CD among T1DM patients. Those with CD and T1DM did not show a significantly increased risk of DKA, thyroid disorders.

**Recommendations**

Active screening for CD is required among patients with T1DM , Further study that estimates the prevalence depending on the biopsy is highly recommended. Another study that compares the behavior of CD among patients with and without diabetes is also recommended. A subsequent study with HLA and genotype assessment is also recommended to determine who is at risk of getting CD among people with diabetes.

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**References:**

1. Ludvigsson JF, Leffler DA, Bai JC, et al. The Oslo definitions for coeliac disease and related terms. Gut. 2013;62(1):43-52. https://pubmed.ncbi.nlm.nih.gov/22345659/
2. Derrou S, El Guendouz F, Benabdelfedil Y, Chakri I, Ouleghzal H, Safi S. The profile of autoimmunity in Type 1 diabetes patients. Ann Afr Med. 2021;20(1):19-23.https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8102891/
3. Flores Monar GV, Islam H, Puttagunta SM, Islam R, Kundu S, Jha SB, Rivera AP, Sange I. Association Between Type 1 Diabetes Mellitus and Celiac Disease: Autoimmune Disorders with a Shared Genetic Background. Cureus. 2022;14(3): e22912. https://pubmed.ncbi.nlm.nih.gov/35399440/
4. Dube C, Rostom A, Sy R, Cranney A, Saloojee N, et al. The prevalence of celiac disease in averagerisk and at-risk Western European populations: a systematic review. Gastroenterology. 2005; 128: S57–67. https://pubmed.ncbi.nlm.nih.gov/15825128/
5. Gutierrez-Achury J, Romanos J, Bakker SF, Kumar V, de Haas EC, Trynka G, et al. Contrasting the Genetic Background of Type 1

Diabetes and Celiac Disease Autoimmunity. Diabetes Care. 2015;38 Suppl 2(Suppl 2): S37-44. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4582914/

6. Rewers M, Eisenbarth GS. Autoimmunity: Celiac disease in T1DM-the need to look long term. Nat Rev Endocrinol. 2011;8(1):7-8. https://pubmed.ncbi.nlm.nih.gov/22064502/
7. Mollazadegan K, Kugelberg M, Montgomery SM, et al. A population-based study of the risk of diabetic retinopathy in patients with type 1 diabetes and celiac disease. Diabetes Care. 2013;36(2):316-321. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3554314/
8. Leeds JS, Hopper AD, Hadjivassiliou M, et al. High prevalence of microvascular complications in adults with type 1 diabetes and newly diagnosed celiac disease. Diabetes Care. 2011;34(10):2158-2163. https://pubmed.ncbi.nlm.nih.gov/21911773/
9. Raiteri A, Granito A, Giamperoli A, Catenaro T, Negrini G, Tovoli F. Current guidelines for the management of celiac disease: A systematic review with comparative analysis. World J Gastroenterol. 2022;28(1):154-175. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8793016/
10. Robson K, Alizart M, Martin J, Nagel R. Coeliac patients are undiagnosed at routine upper endoscopy. PLoS One. 2014;9(3):e90552. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3942449/
11. Dicker R, Fátima C; Koo D,Parrish, RG .Principles of epidemiology in public health practice; an introduction to applied epidemiology and biostatistics. 3rd Edition. Epidemiology Program Office.; Centers for Disease Control and Prevention (U.S.), Office of Workforce and Career Development.; Self-study course; SS1000 2006. https://stacks.cdc.gov/view/cdc/6914
12. Weber DR, Jospe N. Type 1 Diabetes Mellitus (Immune Mediated). Nelson Textbook of Pediatrics. 21st ed. Philadelphia: Elsevier. 2020:3022-41.
13. Doubova, S.V., Ferreira-Hermosillo, A., Pérez-Cuevas, R. et al. Socio-demographic and clinical characteristics of type 1 diabetes patients associated with emergency room visits and hospitalizations in Mexico. BMC Health Servres. 2018;18, 602. https://doi.org/10.1186/s12913-018-3412-3
14. Odeh R, Alassaf A, Gharaibeh L, Ibrahim S, Ahmad FK, Ajlouni K. Prevalence of celiac disease and celiac-related antibody status in pediatric patients with type 1 diabetes in Jordan. Endocrine connections. 2019;8(6):7807. https://ec.bioscientifica.com/view/journals/ec/8/6/EC-19-0146.xml
15. Alali I, Afandi B. Celiac disease in Syrian children and adolescents with type 1 diabetes mellitus: A cross-sectional study. Journal of Diabetes and Endocrine Practice. 2023;06(02):059–63. https://www.thieme-connect.de/products/ejournals/abstract/10.1055/s-0043-1768462
16. Yang L, Yang G, Li X. Clinical and demographic features among patients with type 1 diabetes mellitus in Henan, China. BMC Endocr Disord. 2021;21(1):131. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8237411/
17. Abduljabbar HA, Matloub HY, Yassin BA. Prevalence of Celiac Disease in type 1 Diabetes Mellitus in children and adolescents attending Children Welfare Teaching Hospital. J Fac Med Baghdad. 2012; 45 (1): 28-32 https://www.iasj.net/iasj/download/6f61f67a1a54c0c7
18. Gheshlagh, R.G., Rezaei, H., Goli, M. et al. Prevalence of celiac disease in Iranian patients with type 1 diabetes: A systematic review and meta-analysis. Indian J Gastroenterol. 2020;39: 419–425. https://doi.org/10.1007/s12664-020-01046-7
19. Abid N, McGlone O, Cardwell C, McCallion W, Carson D. Clinical and metabolic effects of gluten free diet in children with type 1 diabetes and coeliac disease. Pediatr Diabetes. 2011;12(4 Pt 1):322-5. https://pubmed.ncbi.nlm.nih.gov/21615651/

20. Husby S, Koletzko S, Korponay-Szabo IR, Mearin ML, Phillips A, et al. European Society for Pediatric Gastroenterology, Hepatology, and Nutrition guidelines for the diagnosis of coeliac disease. J Pediatr Gastroenterol Nutr. 2012; 54:136–160. https://pubmed.ncbi.nlm.nih.gov/22197856/
21. Kang JY, Kang AH, Green A, Gwee KA, Ho KY. Systematic review: worldwide variation in the frequency of coeliac disease and changes over time. Aliment Pharmacol Ther. 2013;38(3):226-45. https://pubmed.ncbi.nlm.nih.gov/23782240/
22. Bhadada SK, Rastogi A, Agarwal A, Kochhar R, Kochhar R, Bhansali A. Comparative study of clinical features of patients with celiac disease & those with concurrent celiac disease & type 1 diabetes mellitus. Indian J Med Res. 2017;145(3):334-338. https://pubmed.ncbi.nlm.nih.gov/28749395/
23. Aljulifi MZ, Mahzari M, Alkhalifa L, Hassan E, Alshahrani AM, Alotay AA. The prevalence of celiac disease in Saudi patients with type 1 diabetes mellitus. Annals of Saudi Medicine. 2021;41(2):71-7. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8020650/
24. Unal E, Demiral M, Baysal B, Ağın M, Devecioğlu EG, Demirbilek H, Özbek MN. Frequency of Celiac Disease and Spontaneous Normalization Rate of Celiac Serology in Children and Adolescent Patients with Type 1 Diabetes. J Clin Res Pediatr Endocrinol. 2021;13(1):72-79. https://pubmed.ncbi.nlm.nih.gov/32820875/
25. Akirov A, Pinhas-Hamiel O. Co-occurrence of type 1 diabetes mellitus and celiac disease. World J Diabetes. 2015;6(5):707-14. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4458499/
26. Nowier SR, Eldeen NS, Farid MM, Rasol HA, Mekhemer SM. Prevalence of celiac disease among type 1 diabetic Egyptian patients and the association with autoimmune thyroid disease. Bratisl Lek Listy. 2009;110(4):258-62. https://pubmed.ncbi.nlm.nih.gov/19507657/

# انتشار وتأثير الخصائص الاجتماعية والديموغرافية لمرض السيلياك بين مرضى السكري من النوع الأول في مركز الفيحاء التخصصي للسكري والغدد الصماء والأيض في البصرة

الخلفية:يُعد مرض السيلياك من أكثر الأمراض المناعية الذاتية انتشارًا بين مرضى السكري من النوع الأول. يشترك مرض السيلياك والسكري من النوع الأول في عوامل خطورة ومحددات جينية مثل مستضد الكريات البيضاء البشرية (HLA)، بالإضافة إلى العوامل البيئية التي تلعب دورًا مهمًا في الفيزيولوجيا المرضية لكلا المرضين، حيث تزداد معدلات الإصابة بهما عالميًا.

الهدف:تقدير مدى انتشار مرض السيلياك والخصائص الاجتماعية والديموغرافية بين مرضى السكري من النوع الأول الذين تقل أعمارهم عن ٣٠ عامًا.

المنهجية:تم إجراء دراسة وصفية مقطعية تعتمد على السجلات، شملت مرضى السكري من النوع الأول المسجلين خلال فترة ثلاث سنوات (من ١ يناير ٢٠٢٠ إلى ٣١ ديسمبر ٢٠٢٢) في مركز الفيحاء التخصصي للسكري والغدد الصماء والأيض في البصرة. بلغ عدد المشاركين في الدراسة ٤٧٤ مريضًا، تراوحت أعمارهم بين ١ و٣٠ عامًا.

النتائج:بلغ إجمالي عدد المرضى المسجلين خلال السنوات الثلاث ٤٧٤ مريضًا، بمتوسط عمر ١٠,٣٣ ±٥,٩١ سنة، وكان معظمهم من الإناث (٥٧٪). بلغ معدل انتشار مرض السيلياك بين مرضى السكري من النوع الأول ١٩,٢٪، وارتفع معدل الإصابة ليصل إلى أعلى مستوياته في عام ٢٠٢٢ (٢٦,٣٪) مقارنة بأدنى مستوياته في عام ٢٠٢٠ (١٣,٢٪). تراوحت مدة الإصابة بالسكري من النوع الأول بين ١ و٢٤ عامًا، بمتوسط ٣,١٤ ±٢,٩٣ سنة. ظهر مرض السيلياك لدى معظم المرضى (٨٨,٢٪) خلال السنوات الخمس الأولى من تشخيص مرض السكري.

الاستنتاج:ارتفع معدل انتشار مرض السيلياك بين مرضى السكري من النوع الأول من عام ٢٠٢٠ إلى ٢٠٢٢ بمعدل ٦-٧٪ سنويًا. لم تظهر الدراسة وجود فرق كبير بين العمر والجنس ومخاطر الإصابة بمرض السيلياك بين مرضى السكري من النوع الأول.

الكلمات المفتاحية:الانتشار، مرض السيلياك، السكري من النوع الأول، البصرة.