

Migraine Disorder Occurs More Often in Celiac Disease Patients: A Nationwide Population-Based Cohort Study

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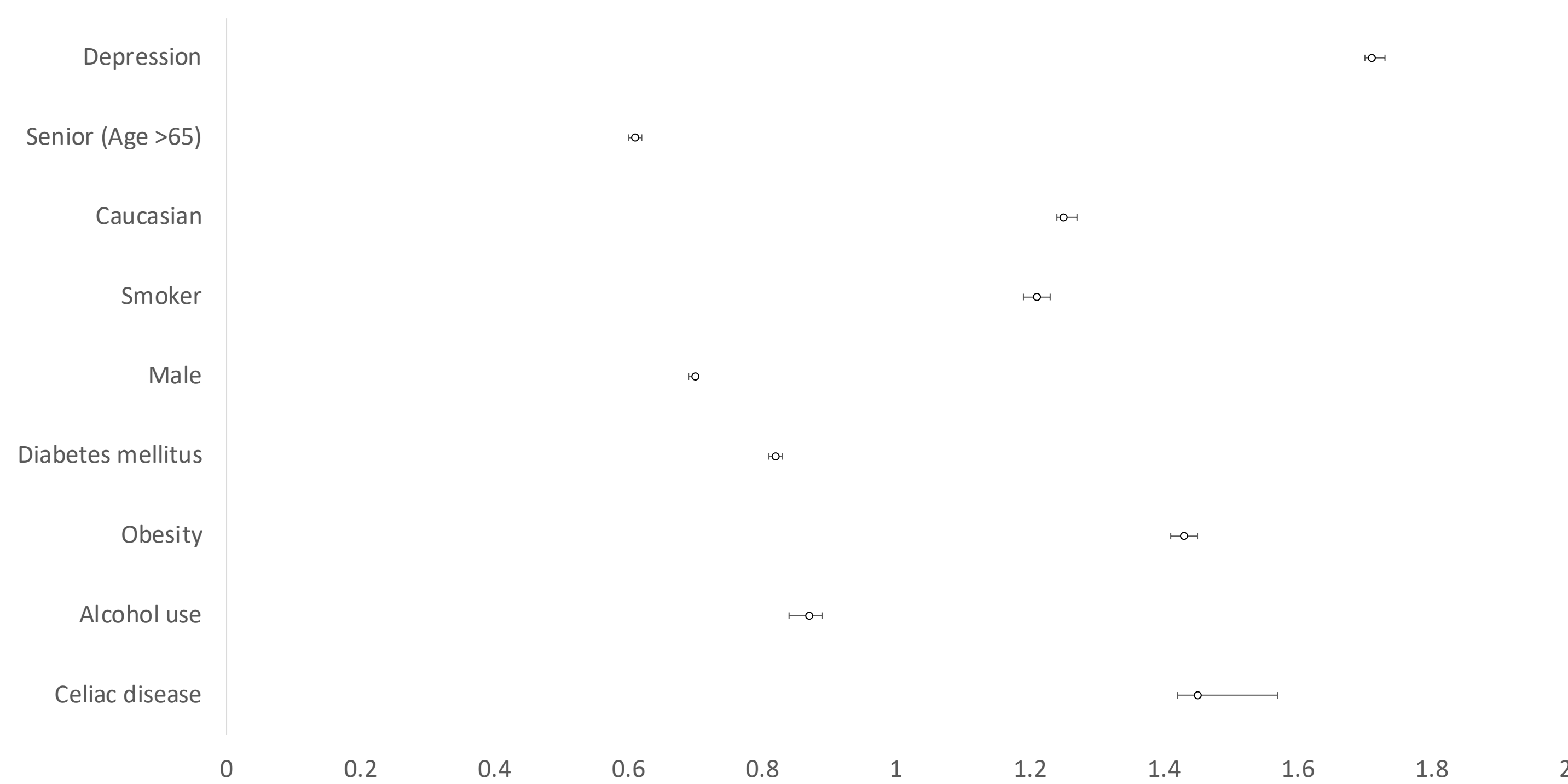
Introduction

Migraine disorder is a relatively common condition affecting nearly 15 percent of the general population. This disorder has been linked to multiple gastrointestinal diseases including celiac disease (CD), an autoimmune enteropathy characterized by immune-mediated damage resulting from gluten exposure. We aimed to further characterize the risk and epidemiologic association between CD and migraine disorder with this study.

Methods

- Surveyed a multi-institutional database (Explorys Inc., Cleveland, OH)
 - An aggregate of electronic health record data from 26 major US health systems.
- Cohorts of patients with migraine disorder and CD were generated using Systemized Nomenclature of Medicine – Clinical Terms (SNOMED-CT).
 - Migraine disorder was defined as SNOMED terms for “Migraine disorder” with prescribed migraine treatment (drug class: “migraine treatment”).
 - CD was defined as SNOMED terms for “celiac disease” or “celiac sprue”
- Patients with diagnoses of cluster or tension headaches were excluded.
- Univariate and multivariate analyses were performed on the data, and associations were reported as adjusted odds ratios (aORs) with 95% confidence intervals (CIs) using IBM SPSS Statistics version 25.

Forest Plot for Associated Risk Factors



Demographic and Risk Factor Data

Celiac Disease	With Migraine Disorder (n [%])	Without Migraine Disorder (n [%])	Multivariate Analysis (aOR [95% CI])
Total	6360	85030	1.45 (1.42-1.57)
Risk factor			
Alcohol use	240 (3.77)	1590 (1.87)	0.87 (0.84-0.89)
Obesity	2230 (35.1)	18230 (21.4)	1.43 (1.41-1.45)
Diabetes mellitus	390 (22.3)	17680 (20.8)	0.82 (0.81-0.83)
Male	560 (8.81)	18780 (22.1)	0.70 (0.69-0.70)
Smoker	720 (11.3)	5040 (5.93)	1.21 (1.19-1.23)
Caucasian	5720 (89.9)	56830 (66.8)	1.25 (1.24-1.27)
Senior (Age >65)	920 (14.5)	19550 (23.0)	0.61 (0.60-0.62)
Depression	3850 (60.5)	24840 (29.2)	1.71 (1.70-1.73)

Results

- Of 30142740 patients in the database (2017-2022)
 - 91,930 were diagnosed with celiac disease (0.30%)
- Among CD patients:
 - 6,360 (6.9%) carried a migraine disorder diagnosis compared to 474,360 (1.6%) of the non-CD patients (p <0.0001).
- After multivariate analysis:
 - After multivariate analysis, celiac disease was associated with an increased odds of migraine disorder (aOR = 1.49; 95% CI 1.42-1.57; p = <0.0001)
 - Obesity, tobacco use, Caucasian race, and depression were also significantly associated with increased migraine disorder risk (p<0.0001).

Discussion

- This large population-based cohort study demonstrated a significantly higher odds of migraine disorder among celiac disease patients compared to those without celiac disease.
- Ability to define migraine disorder by combined diagnosis codes and prescription coding strengthens these data
- Conclusions limited by inability to discern patients' adherence to gluten free diet
- Larger prospective work would be beneficial to identify possible mechanisms. Further work may examine possible interventions to minimize the odds of developing migraine disorder in this population.

Contact

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