Eating Disorders Are Associated With Facial Nerve Disorders

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Abstract

Background: Eating disorders (EDs) are associated with metabolic and inflammatory dysregulation in addition to parotid gland enlargement which are independent risk factors for facial nerve dysfunction. This study evaluates associations between disordered eating and facial nerve dysfunction, including Bell's palsy.
Methods: A retrospective cohort study was performed using TriNetX Analytics Network) including records from 09/2021-2026. Adult patients (age≥18) with EDs were compared with matched controls with no ED. Propensity-score matching occurred on the basis of age and sex. Primary outcomes were Bell's palsy and all facial nerve disorders. Chi square and binary logistic regression were used for statistical analysis.
Results: Compared with matched controls, ED patients demonstrated higher odds of facial nerve disorders, with absolute event counts remaining low.
Conclusions: ED diagnosis was associated with facial nerve disorders. Results remain hypothesis-generating, requiring replication with prospective clinical study

Introduction

- Eating disorders (EDs) are associated with substantial nutritional, metabolic, and inflammatory disturbances and may have multisystem consequences. EDs have also been associated with salivary gland abnormalities, including parotid enlargement, particularly among patients with bulimia nervosa[1–3].
- Parotid masses and inflammatory parotid conditions are separately associated with facial nerve dysfunction and Bell's palsy[3–6].
- No prior study in the manuscript literature directly evaluated the association between EDs and Bell's palsy.
- ***Objective:*** To evaluate the association between ED diagnosis and the subsequent development of Bell's palsy and other facial nerve disorders.

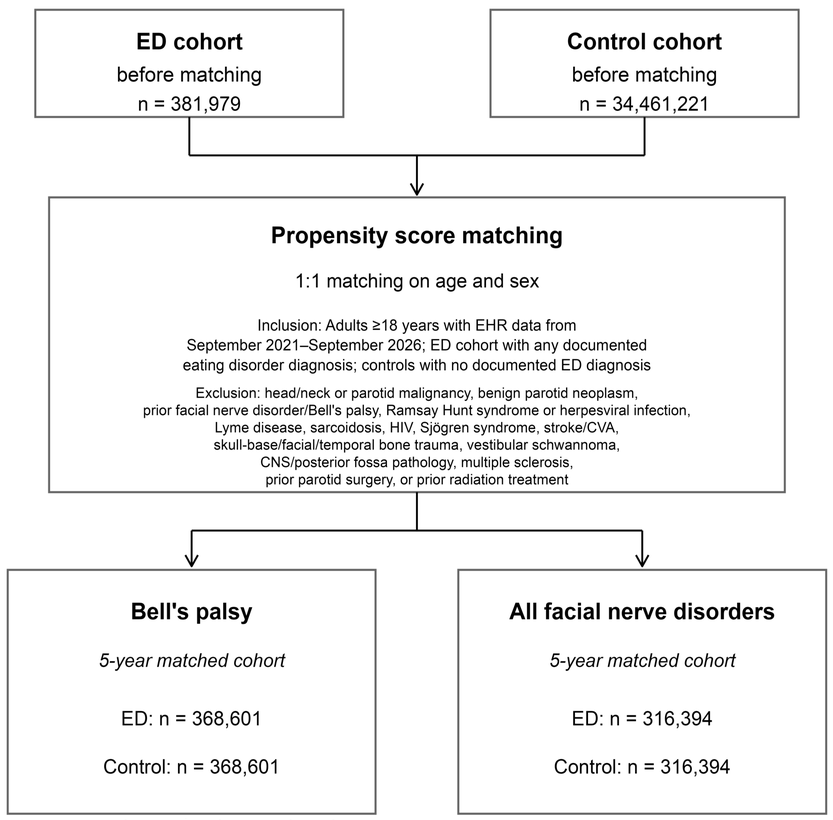


Figure 1. Inclusion/Exclusion Flowchart

Methods and Materials

- **Design:** Retrospective cohort study using the TriNetX Analytics Network (TriNetX, LLC, Cambridge, MA, USA).
- **Population:** Adults ≥18 years old with an ED diagnosis (ICD-10-CM: F50-F50.25, F50.8-F50.89, F50.81-F50.813, R63.0) diagnosed September 2021 and September 2026 compared to matched healthy controls with no ED diagnosis
- **Matching:** 1:1 propensity score matching for age and sex.
- **Exclusions:** Prior facial nerve dysfunction, parotid neoplasm, parotid surgery, immunosuppression, Sjogren's, Lyme disease, sarcoidosis, CVA/stroke, posterior fossa masses, Ramsey Hunt syndrome, multiple sclerosis, radiation therapy, herpes infection, and skull base/infratemporal bone trauma.
- **Outcomes:** Bell's palsy and all facial nerve disorders at 3- and 5-year follow-up.
- **Analysis:** Logistic regression with ORs, 95% CIs, and p-values; statistical significance defined as $p<0.05$ (Figure 1)

Results

- Compared with healthy controls, anorexia nervosa was associated with a four- to five-fold greater odds while binge-eating disorder demonstrated an eight-fold greater odds of Bell's palsy and a seven- to eight-fold greater odds of all facial nerve disorders.
- Despite these statistically significant findings, absolute event rates remained low in both cohorts (Table 1; Figure 2).

Discussion

- Parotid enlargement associated with eating disorders may contribute to facial nerve dysfunction given the nerve's course through the parotid gland[1–4].
- Nutritional deficiencies, particularly in anorexia nervosa, may increase susceptibility to nerve dysfunction[10–11].
- The stronger association with binge-eating disorder may reflect obesity, glucose dysregulation, and other cardiometabolic factors associated with Bell's palsy[7–9].
- **Limitations:** The retrospective design and limited propensity-score matching prevent causal inference. Potential confounders, including nutritional status, relevant medical conditions, ED severity, purging behaviors, medication use, and socioeconomic factors, could not be fully accounted for[12].

Conclusions

- ED diagnosis was associated with significantly greater odds of Bell's palsy and other facial nerve disorders. Although the relative associations were substantial, absolute event rates remained low.
- Further prospective research is needed to investigate potential nutritional, metabolic, inflammatory, anatomic, and healthcare-related mechanisms underlying these associations.

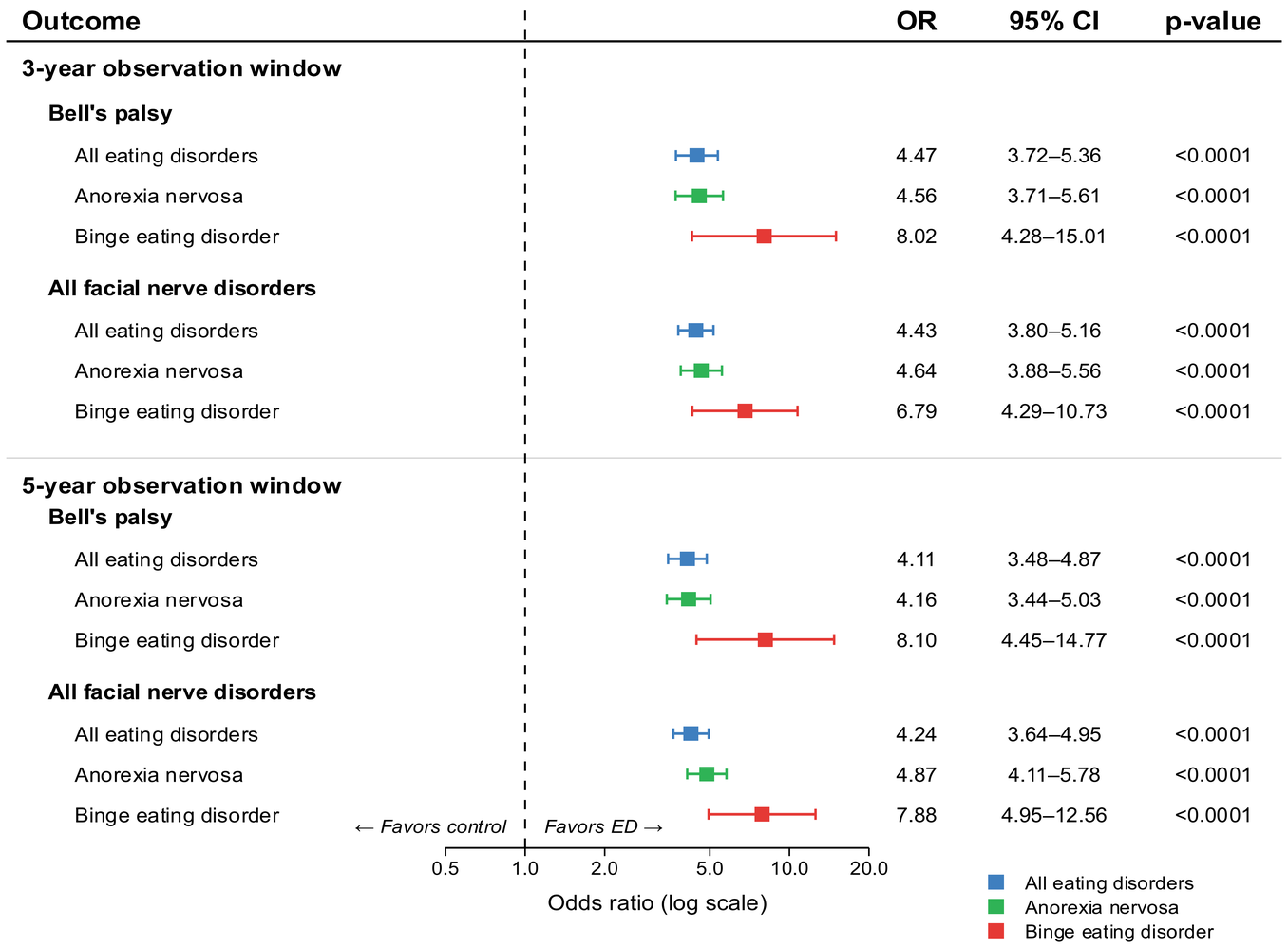


Figure 2: Comparisons of Eating Disorder (ED) versus Control Number of Patients With Bell's Palsy and All Facial Nerve Disorders

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Table 1a: Comparisons of Eating Disorder (ED) versus Control: All Facial Nerve Disorders.

Comparison: All Facial Nerve Disorders	ED patients, % (n)	Control patients, % (n)	Risk Ratio (95% CI)	Risk Difference (95% CI)	p-value
All EDs (Within 3 years)	0.241% (n=888)	0.055% (n=201)	4.418 (3.791, 5.148)	0.19% (0.169%, 0.204%)	< 0.0001
All EDs (Within 5 years)	0.268% (n=847)	0.063% (n=200)	4.235 (3.631, 4.94)	0.20% (0.184%, 0.225%)	< 0.0001
Anorexia All-Inclusive (Within 3 years)	0.261% (n=672)	0.056% (n=145)	4.634 (3.873, 5.545)	0.21% (0.183%, 0.227%)	< 0.0001
Anorexia All-Inclusive (Within 5 years)	0.282% (n=768)	0.058% (n=158)	4.861 (4.096, 5.768)	0.22% (0.202%, 0.245%)	< 0.0001
Binge (Within 3 years)	0.433% (n=142)	0.064% (n=21)	6.762 (4.277, 10.69)	0.37% (0.293%, 0.445%)	< 0.0001
Binge (Within 5 years)	0.468% (n=157)	0.060% (n=20)	7.85 (4.93, 12.499)	0.41% (0.331%, 0.486%)	< 0.0001

Table 1b: Comparisons of Eating Disorder (ED) versus Control: Bell's Palsy.

Comparison: Bell's Palsy	ED Patients, % (n)	Control Patients, % (n)	Risk Ratio (95% CI)	Risk Difference (95% CI) p-value
All EDs (Within 3 years)	0.171% (n=629)	0.038% (n=141)	4.461 (3.717, 5.355)	0.13% (0.118%, 0.147%) < 0.0001
All EDs (Within 5 years)	0.187% (n=690)	0.046% (n=168)	4.107 (3.47, 4.861)	0.14% (0.126%, 0.157%) < 0.0001
Anorexia All-Inclusive (Within 3 years)	0.184% (n=501)	0.040% (n=110)	4.555 (3.705, 5.598)	0.14% (0.126%, 0.161%) < 0.0001
Anorexia All-Inclusive (Within 5 years)	0.199% (n=544)	0.048% (n=131)	4.153 (3.432, 5.025)	0.15% (0.133%, 0.17%) < 0.0001
Binge (Within 3 years)	0.262% (n=88)	0.033% (n=11)	8.000 (4.275, 14.97)	0.23% (0.171%, 0.288%) < 0.0001
Binge (Within 5 years)	0.289% (n=97)	0.036% (n=12)	8.083 (4.438, 14.723)	0.25% (0.192%, 0.314%) < 0.0001

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