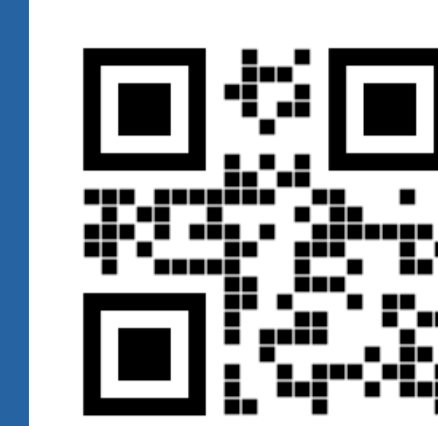


Prevalence and association of autism spectrum disorder with otological conditions in children and adolescents

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Introduction

- Autism spectrum disorder (ASD) is a complex neurodevelopmental condition. Symptoms include challenges in social communication, sensory abnormalities, and repetitive behaviors. ASD diagnosis has been found to be stable starting at 14 months of age.¹
- Otological conditions, e.g. otitis media (OM), hearing loss (HL), tinnitus, and other abnormal auditory perceptions (consisting of hyperacusis, auditory recruitment, diplacusis, temporary auditory threshold shifts, and other non-classified hearing abnormalities) are associated with ASD.² These conditions may mask ASD symptoms, leading to later diagnosis and intervention during key developmental stages.³
- Previous estimates of ASD prevalence in those with otological conditions

Objectives

- based on small sizes vary widely.
- Examine the prevalence of ASD in Medicaid beneficiaries aged 1-20 years according to otological conditions.
- Assess the associations between otological conditions and ASD, adjusting for demographic

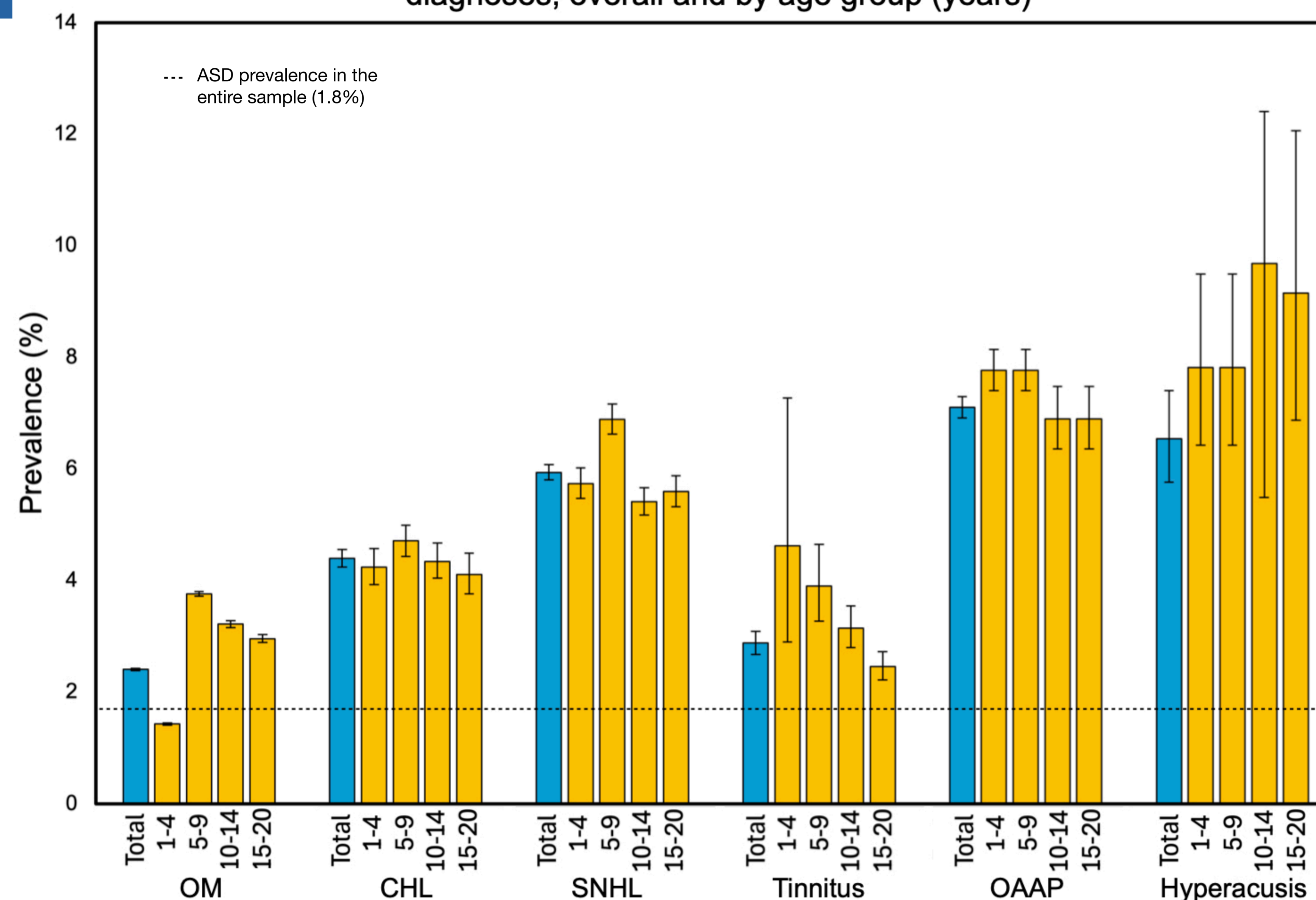
Methods

characteristics.

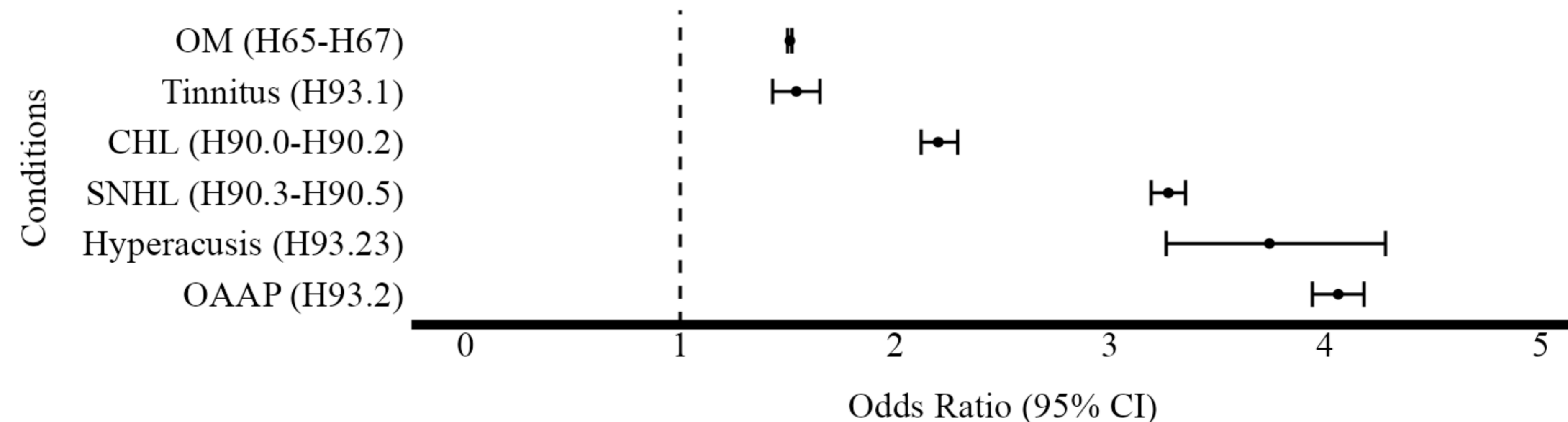
Data and Participant Selection:

Cross-sectional data were obtained from the 2020 Medicaid database. Beneficiaries aged 1-20 years with ASD, OM, conductive HL (CHL), sensorineural HL (SNHL), tinnitus, OAAP, and hyperacusis, were identified with ICD-10 codes.

Prevalence of Autism Spectrum Disorder among otological diagnoses, overall and by age group (years)



Adjusted odds ratios with 95% CIs of ASD for otological conditions



Analysis:

The point prevalence of ASD amongst those with otological conditions and in the cohort were calculated. 95% confidence intervals (CIs) were calculated using the Wilson Score Method. Chi-square or Fisher's exact tests were used to find the statistical significance of differences in prevalence between groups. Adjusted odds ratios (aORs) were estimated using logistic regression to quantify the relative odds of having ASD in those with vs. without otological conditions, accounting for age group, sex, race, and intellectual disability status.

Results

- Of 40,990,295 Medicaid beneficiaries aged 1-20, 4,266,981 (10.4%) had otological conditions and 749,436 (1.83%) had ASD diagnoses.
- The prevalence of ASD was 2.79% in those with otological conditions and 1.73% in those without (adjusted odds ratio [aOR], 1.78 [95% CI, 1.77-1.79]).
- The adjusted odds of ASD increased by 51% with OM (1.51 [1.50-1.52]), 54% with tinnitus (1.54 [1.43-1.65]), 180% with HL (2.80 [2.75-2.85]), and 306% in OAAP (4.06 [3.94-4.18]).

Conclusions

- Over one-tenth of children and adolescents enrolled in Medicaid have otological conditions.
- ASD prevalence in those with otological conditions is significantly higher than in those without.
- ASD association with sensorineural hearing loss and abnormal auditory perceptions other than tinnitus (e.g., hyperacusis) is especially strong.
- Otological conditions might be used as a clinical marker for ASD; enhanced screening for ASD in pediatric audiology clinics merits consideration.

Acknowledgements

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