Psychotic Disorder Risk Among Hearing Loss Patients: Does Gender Matter?

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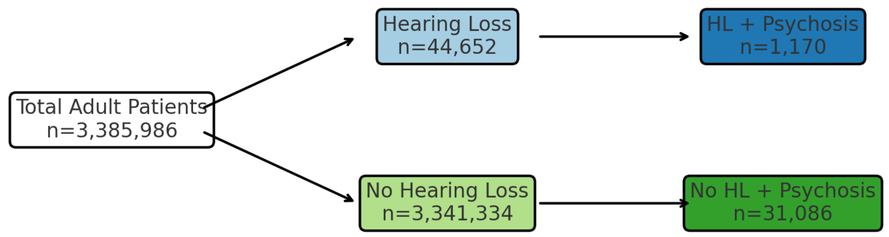
Introduction

- Hearing loss (HL) is one of the most prevalent sensory conditions worldwide, affecting one out of every sixteen people, and >75% of adults aged 70 or older in the United States.[1-3]
- HL is associated with adverse outcomes including depression, dementia, cognitive decline, but its relationship with non-mood psychotic disorders is less understood.[4,5]
- HL is linked with psychosis, with HL patients exhibiting higher rates of hallucinations, delusions, and disorganized thinking, through mechanisms of auditory deafferentation, social isolation, and impaired source monitoring.[6-8]
- Identifying modifiable risk factors is critical, as psychotic disorders cause major morbidity. HL is readily diagnosable and often treatable.
- Sex may play a role in modifying psychiatric risk, with known sex differences in psychiatric presentation, help-seeking behaviors, and symptom severity [9]
- However, large-scale studies have not examined whether the impact of HL on psychosis risk differs by sex.

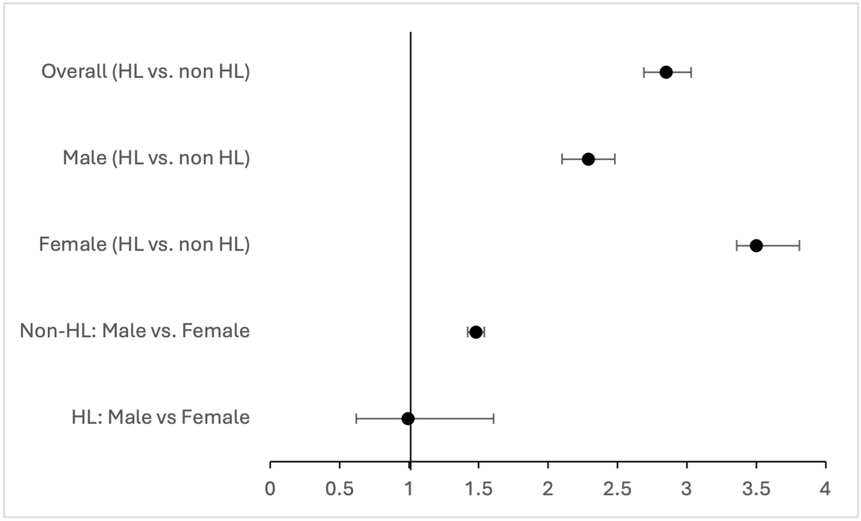
Methods and Materials

- Study Aim: Evaluate the association between HL and risk of non-mood psychotic disorders, and determine how this risk differs by sex
- Study Design: Cross-sectional analysis using the TriNetX database
- Patient population: 3,385,986 adult patients were included. Patients with documented HL of any etiology were identified based on ICD-10 codes (H90-91). Non-mood psychotic disorders were identified for non-HL and HL groups using ICD-10 codes (F20-29).
- Statistical analysis: Odds Ratios (OR) with 95% Confidence Intervals (CI) were calculated to compare the prevalence of non-mood psychotic disorders between HL and non-HL groups. Chi-square tests were used to evaluate differences, with statistical significance defined as $p < 0.05$. Subgroup analysis stratified by sex were performed.

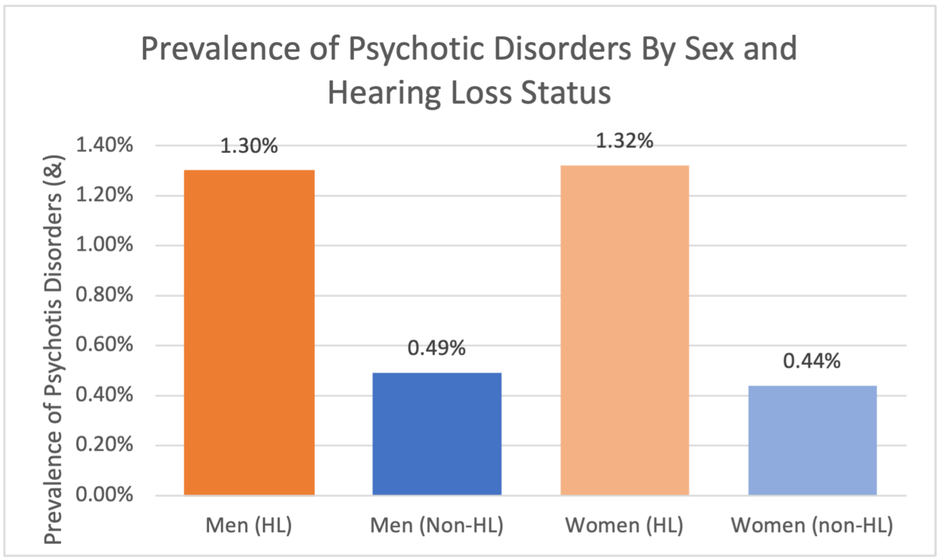
Results



Overall, HL was associated with significantly higher odds of non-mood psychotic disorder compared to the non-HL population (OR 2.85, [2.69-3.03]). When stratified by sex, men with HL had increased odds (OR 2.29, [2.10-2.58]) while women with HL had greater odds (OR 3.50, [3.36-3.81]) compared to their same sex non-HL counterparts, respectively.



Among the non–HL population, men had increased odds of a psychotic disorder compared to women (OR 1.48, [1.45-1.51]). Among HL patients, there was no significant difference in risk between men and women (p=0.55) for co-morbid psychotic disorders



Discussion & Conclusion

- Adults with HL had nearly 3x the odds of a non-mood psychotic disorder compared with those without HL
- Women with HL demonstrated the strongest association (3.5x increased odds), suggesting sex-specific vulnerability
- HL may attenuate or override baseline sex differences in psychosis risk observed in the general population
- Our findings align with prior studies linking HL to psychotic disorders, including schizophrenia and paranoid disorder, where HL increases long-term risk, especially when present in childhood or adolescence[1,6,7]
- HL is a potentially modifiable risk factor: hearing aids, cochlear implants, and even simple interventions (e.g., cerumen removal) have been linked to improved psychiatric outcomes[10-12]
- Clinical implications: routine hearing screening and rehabilitation in psychiatric and primary care may reduce psychosis risk and improve outcomes
- Limitations include cross-sectional design, reliance on diagnostic coding, lack of HL severity data, and absence of info on hearing aid/cochlear implant use
- Future studies should use longitudinal designs, incorporate HL severity and treatment data, and replicate sex-specific findings

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Abstract:

Educational Objective: To evaluate the association between hearing loss and risk of non-mood psychotic disorders, and to determine whether this risk differs by sex.
Study Design: Cross sectional study
Setting: TriNetX Clinical Trials Network of Tennessee: an electronic health record database (2014-2024)
Methods: Adult patients with documented hearing loss were compared to those without hearing loss. Non-mood psychotic disorders, including schizophrenia, delusional disorder, and other psychosis were identified. Odds ratio with 95% confidence intervals were calculated, with subgroup analyses by sex
Results: Of 3,372,960 patients, 36,480 had hearing loss. Psychotic disorders occurred in 970 hearing loss and 31,280 non-hearing loss patients. Hearing loss was associated with higher odds of psychosis (OR 2.85, [2.69-3.03]). Men with hearing loss had increased odds compared to men without hearing loss (OR 2.29, [2.10-2.48]), while women had even greater odds compared to women without hearing loss (OR 3.50, [3.36-3.81]). Among non-hearing loss patients, men had higher odds than women (OR 1.48, [1.45-1.51]) but no sex difference was observed in the hearing loss cohort (p=0.55
Conclusions: Hearing loss was associated with nearly threefold increased odds of non-mood psychotic disorders, with women showing the strongest relative effect. These findings support hearing loss as a clinically relevant, modifiable risk factor for psychosis. Routine hearing assessment and rehabilitation may represent an underutilized strategy to reduce psychiatric burden, and future longitudinal studies should assess whether early hearing loss intervention lowers psychosis risk.