

Background/Significance

Background:

- Approximately 1/4 of adults in the US (>12 y/o) experience **hearing loss (HL)**^{1,2}.
- Limitations in screening** and intervention may have drastic **socioeconomic consequences**²⁻⁹.

Hypothesis:

- Surgical otologic intervention** for adult hearing loss affects the odds of **incident adverse life events (ALEs)** and **medical comorbidities (MCBs)**.
- Distribution** of these services is associated with **race**.

Objectives:

- Measure the **odds for incident adverse life events** and **medical comorbidities** among those with HL with versus without surgical otologic intervention.

Innovation:

- This is the **largest cohort study** to date to measure how surgical otologic intervention modulates the odds for these outcomes among the adult HL population.

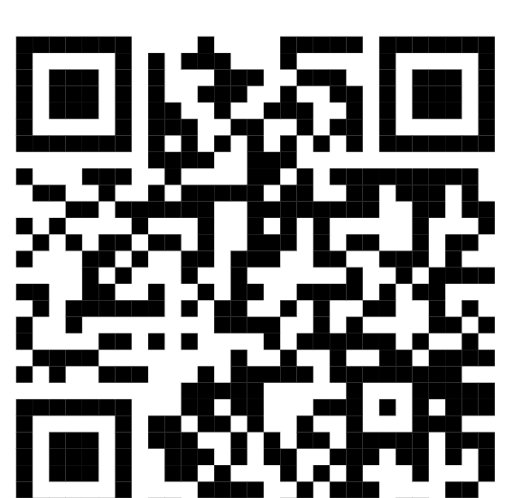
Methods

- Retrospective cohort **TriNetX database** study.
- Queries on the database were made using **medical billing codes** (ICD-10, CPT, etc.) and temporal constraints to define patient cohorts (**QR code 1**).
- Otologic intervention, ALEs, and MCBs are described in **QR code 2**.
- Cohorts: HL in adults ≥ 18 y/o
 - HL+ (with intervention)
 - HL- (without intervention)

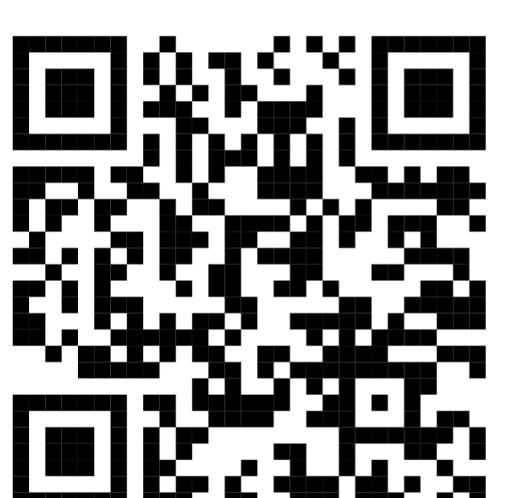
Statistics:

Propensity score matching (PSM) was performed to control for demographic covariates. *p*-values were calculated before and after PSM using unpaired *t*-tests (**Table 1**).

Odds ratios (OR) with 95% confidence intervals were calculated for ALE and MCB outcomes 1-4,500 days after index. Patients with **outcomes prior to index were excluded** from analysis.



QR code 1 links to full set of cohort and otologic intervention definitions.



QR code 2 links to full set of ALE and MCB outcome definitions.

Methods

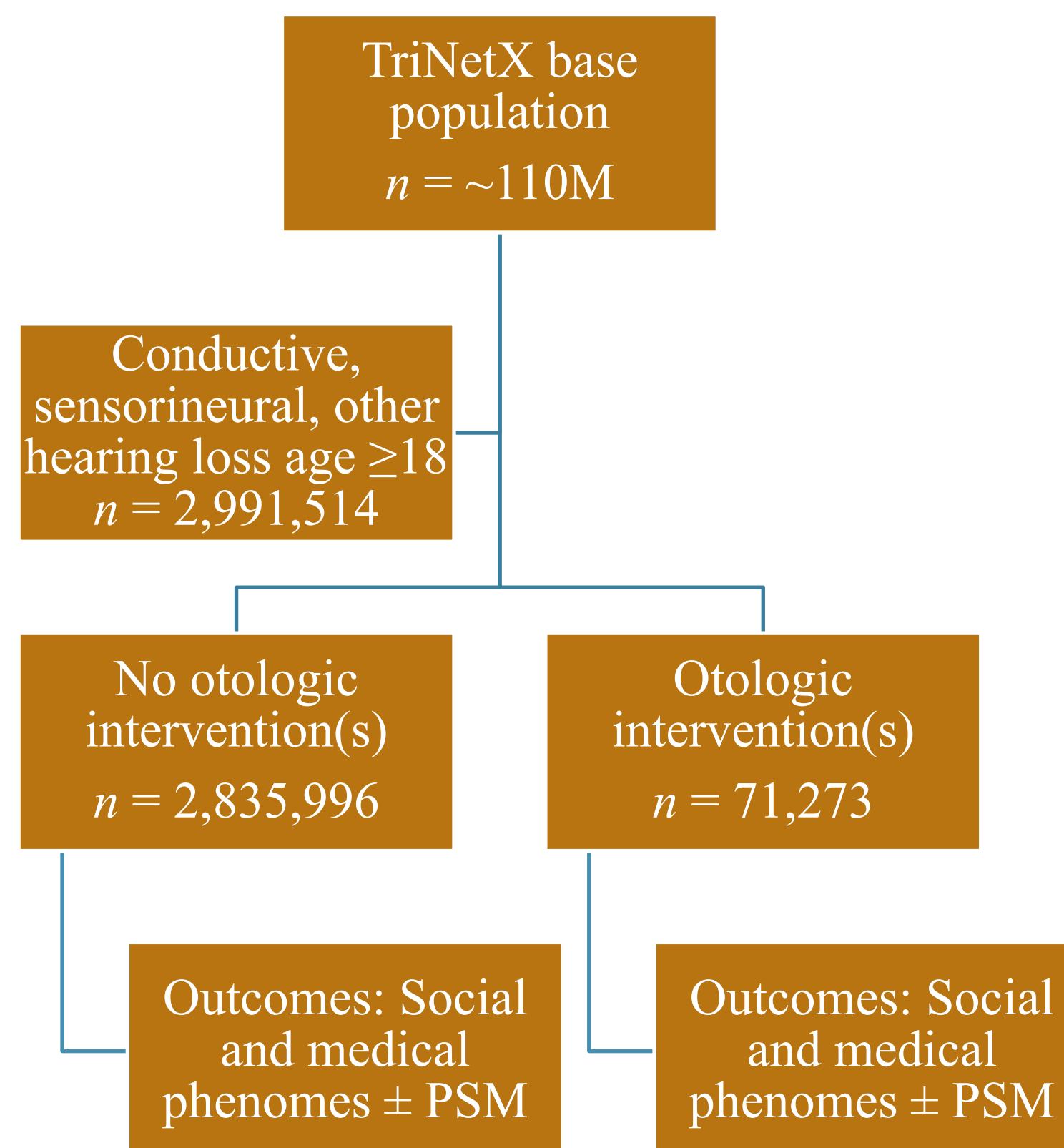


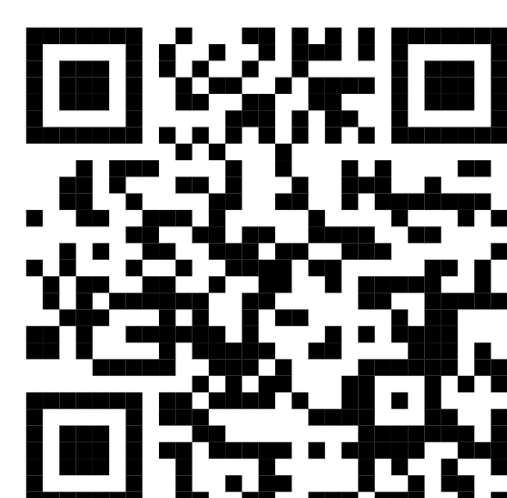
Figure 1: Study design.

Results

Table 1. Baseline Covariate Analysis Before & After 1:1 PSM

Characteristic	PSM		<i>p</i>
	HL+ Intervention (n = 71,273)	HL- Intervention (n = 2,835,996)	
Demographics – Before PSM			
Age Years (at index)±SD	40±24.5	49.1±28.3	<0.0001
Female n(%)	34,147(51)	1,347,840(50)	0.09
Hispanic/Latino n(%)	8,125(12)	260,018(10)	<0.0001
White n(%)	47,612(70)	1,843,166(69)	<0.0001
Black/African American n(%)	4,197(6)	267,736(10)	<0.0001
Demographics – After PSM			
Age Years (at index)±SD	40±24.5	40±24.5	1.00
Female n(%)	34,147(51)	34,147(51)	1.00
Hispanic/Latino n(%)	8,125(12)	8,124(12)	0.99
White n(%)	47,612(70)	47,612(70)	1.00
Black/African American n(%)	4,197(6)	4,197(6)	1.00

- All covariates analyzed were **significantly different at baseline**.
- After PSM**, all covariates included in the model were **non-significant**.
- Scan **QR codes 3 and 4** for outcomes data.



QR code 3 links to full set of ALE outcome data.



QR code 4 links to full set of MCB outcome data.

Results Continued

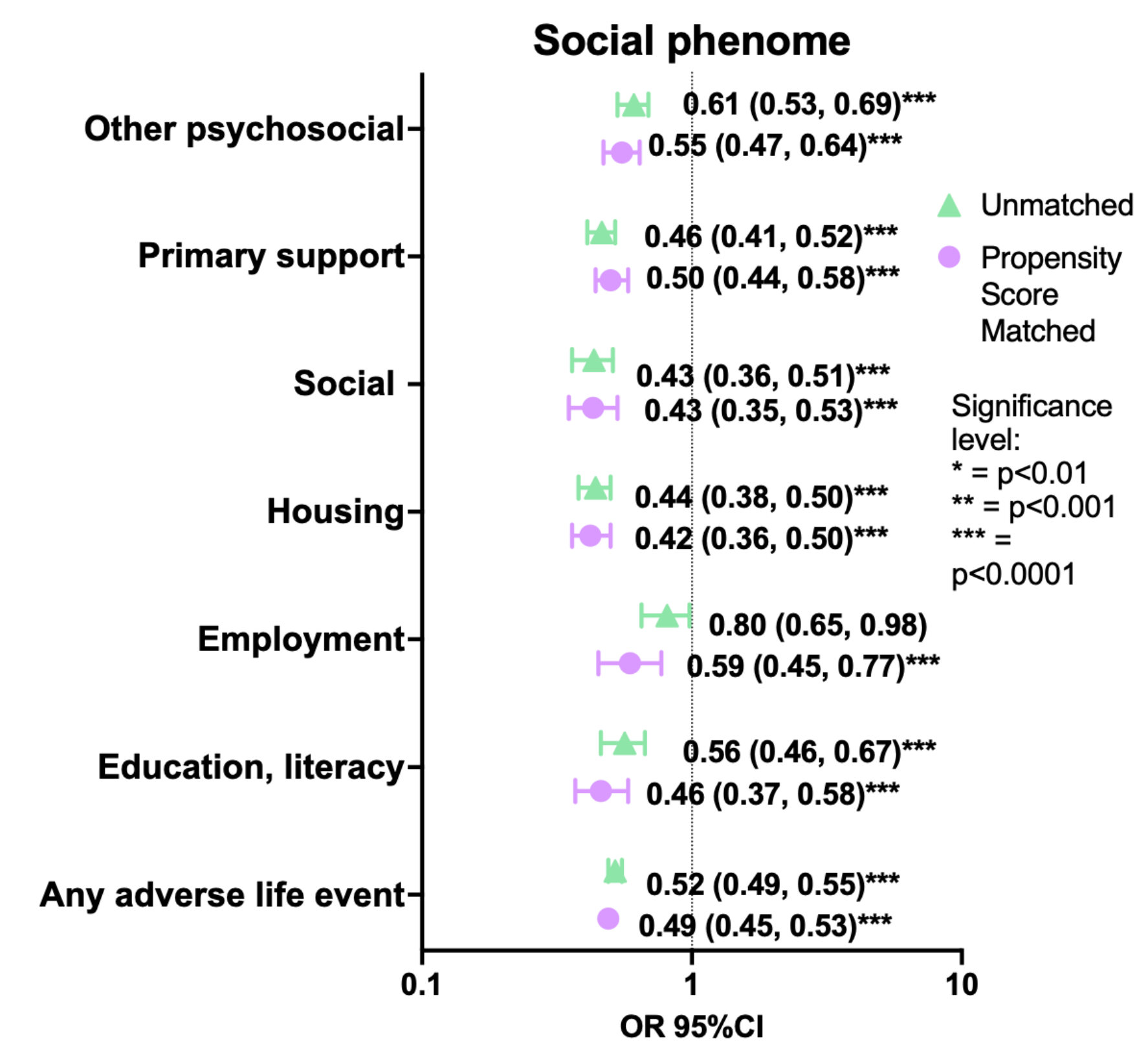


Figure 2: Odds for adverse life events for HL (no-exclusions) with vs without intervention.

- Odds of diagnosis for incident ALEs were **decreased for all outcomes** in the HL+ cohort versus the HL- cohort.

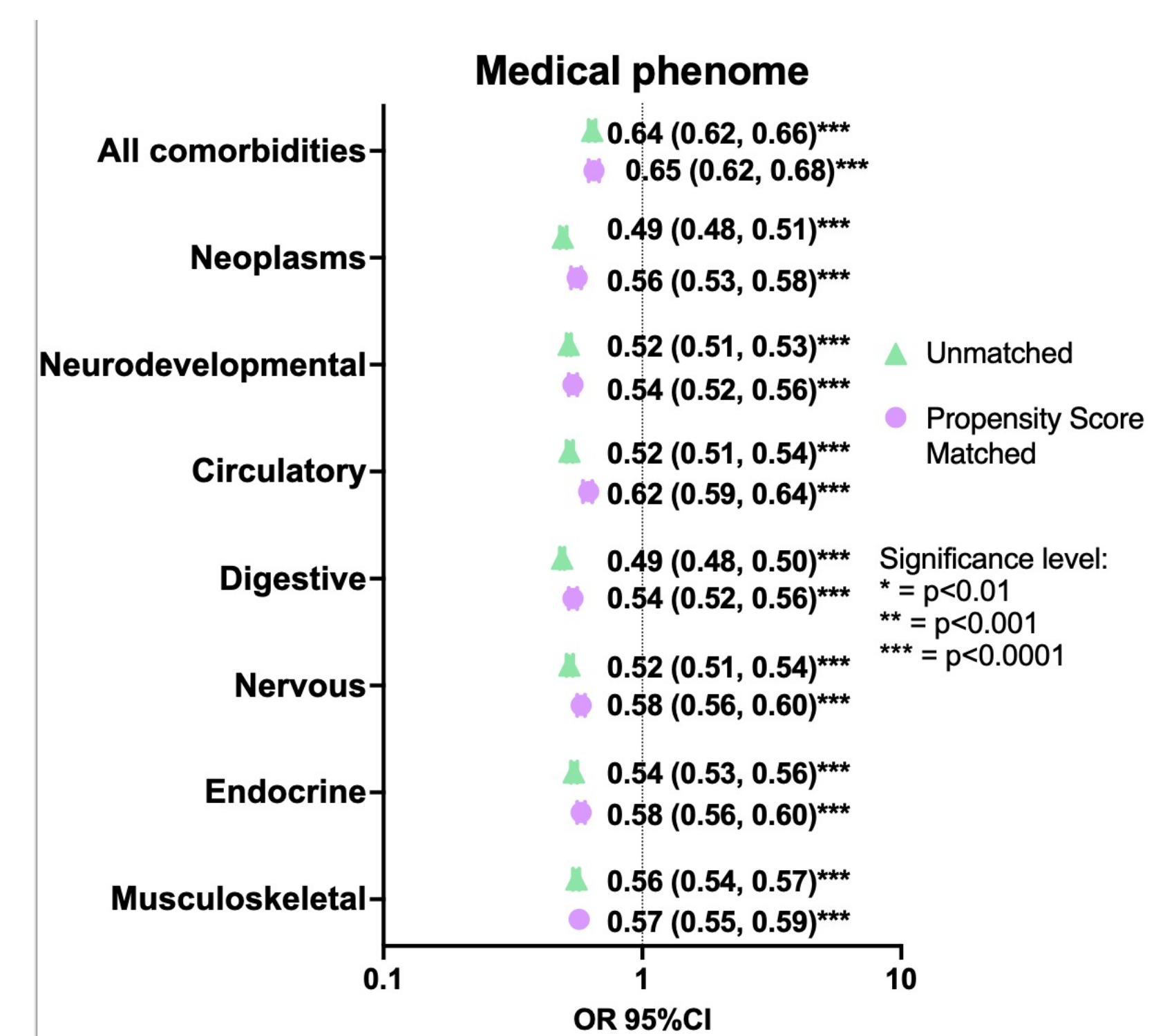


Figure 3: Odds for medical comorbidities for HL (no-exclusions) with versus without intervention.

- Odds of diagnosis for incident medical comorbidities were **decreased for all outcomes** in the HL+ cohort versus the HL- cohort.

Discussion/Conclusions

- Connection between **psychosocial stress** that may be experienced with hearing loss and **medical and social** outcomes¹⁰⁻¹⁷.
- These results suggest that **surgical intervention** in adult hearing loss may impact **social determinants of health and** emphasize the need for **earlier screening and access to this care**.

References

