

# The Effect of Family Structure on the Cochlear Implant Experience of Children

## Introduction

### Research has shown:

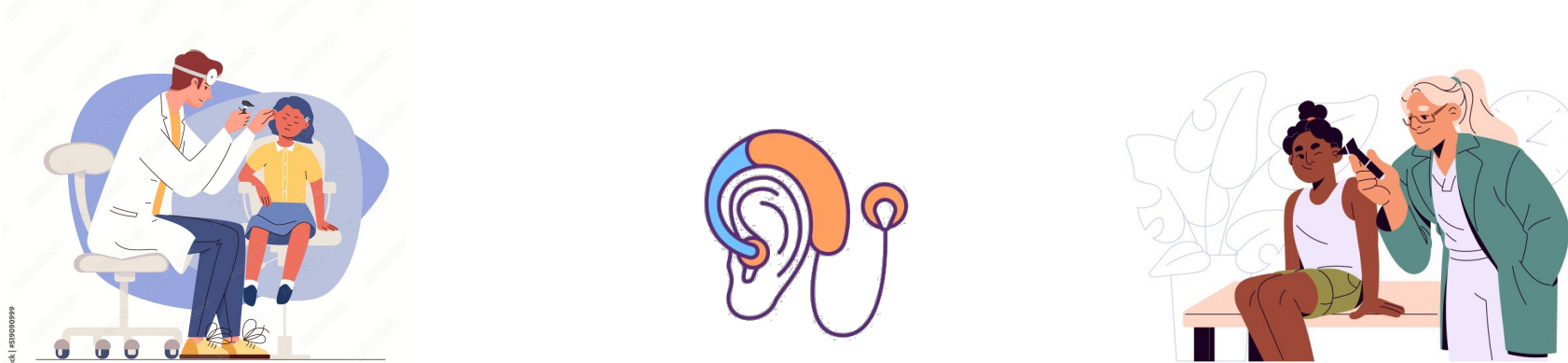
- Children who receive cochlear implantation at younger ages demonstrate significant improvements in auditory-based outcomes
- Black and Hispanic children are significantly less likely to receive CI before the age of two
- Children on public insurance have a mean Ling-6 proficiency six months later than children on private insurance
- Insufficient investigation into the impact of family structure on time to care in pediatric CI and other ENT-related conditions

### What we want to know:

- Does family structure impact time to ENT presentation?
- Does family structure impact time to first cochlear implantation?
- Does family structure impact time to Ling-6 sound mastery?
- Do various sociodemographic factors impact these same measures?

## Hypothesis

We hypothesize that family structure and demographics may impact access to care and clinical outcomes in pediatric cochlear implant recipients. This may be reflective of the level of support available to the child in order to achieve maximum benefit from their implants.

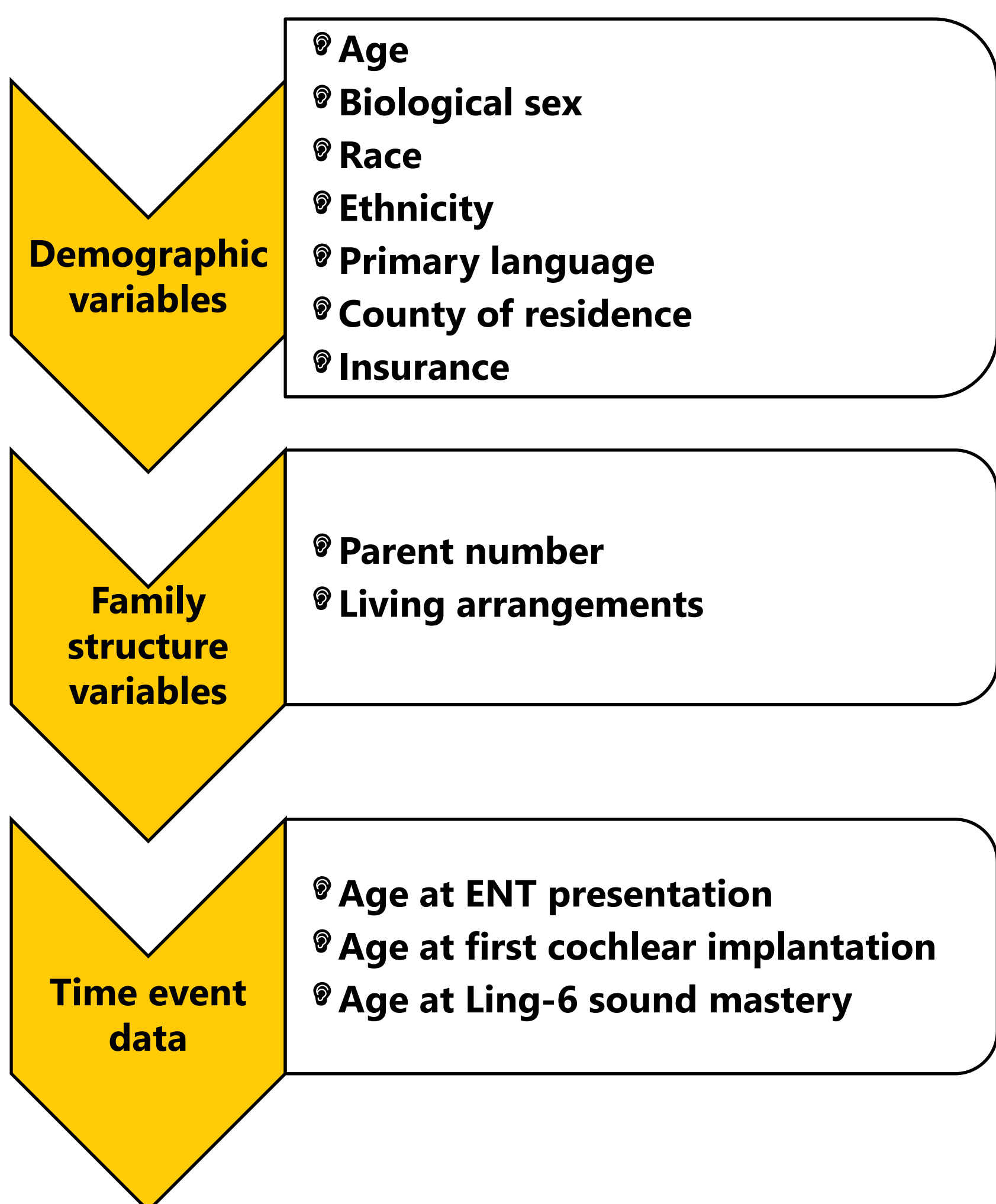


## Methodology

- Retrospective case series of 103 children who received cochlear implants at a tertiary care, free-standing medical center in Central Florida
- Data analyzed from January 1<sup>st</sup>, 2014, to September 1<sup>st</sup>, 2023
- Statistical analysis utilizing SPSS (v28, IBM)
- Continuous variables analyzed using non-parametric methods (Mann-Whitney U, Kruskal-Wallis, or Spearman's rank correlation, as appropriate) and represented as medians with interquartile ranges
- Categorical variables analyzed using Fisher's Exact test or Gamma testing, as appropriate with alpha=0.05

### Limitations:

- Retrospective studies are prone to inconsistent data collection
- The small sample size of 103 children limits the statistical significance of the study



## Results

- The median age of presentation was 22 months and the median age at first implantation was 46 months (IQR 25-99)
- The median time from presentation to first implantation was 18 months (IQR 10-32)

Figure 1

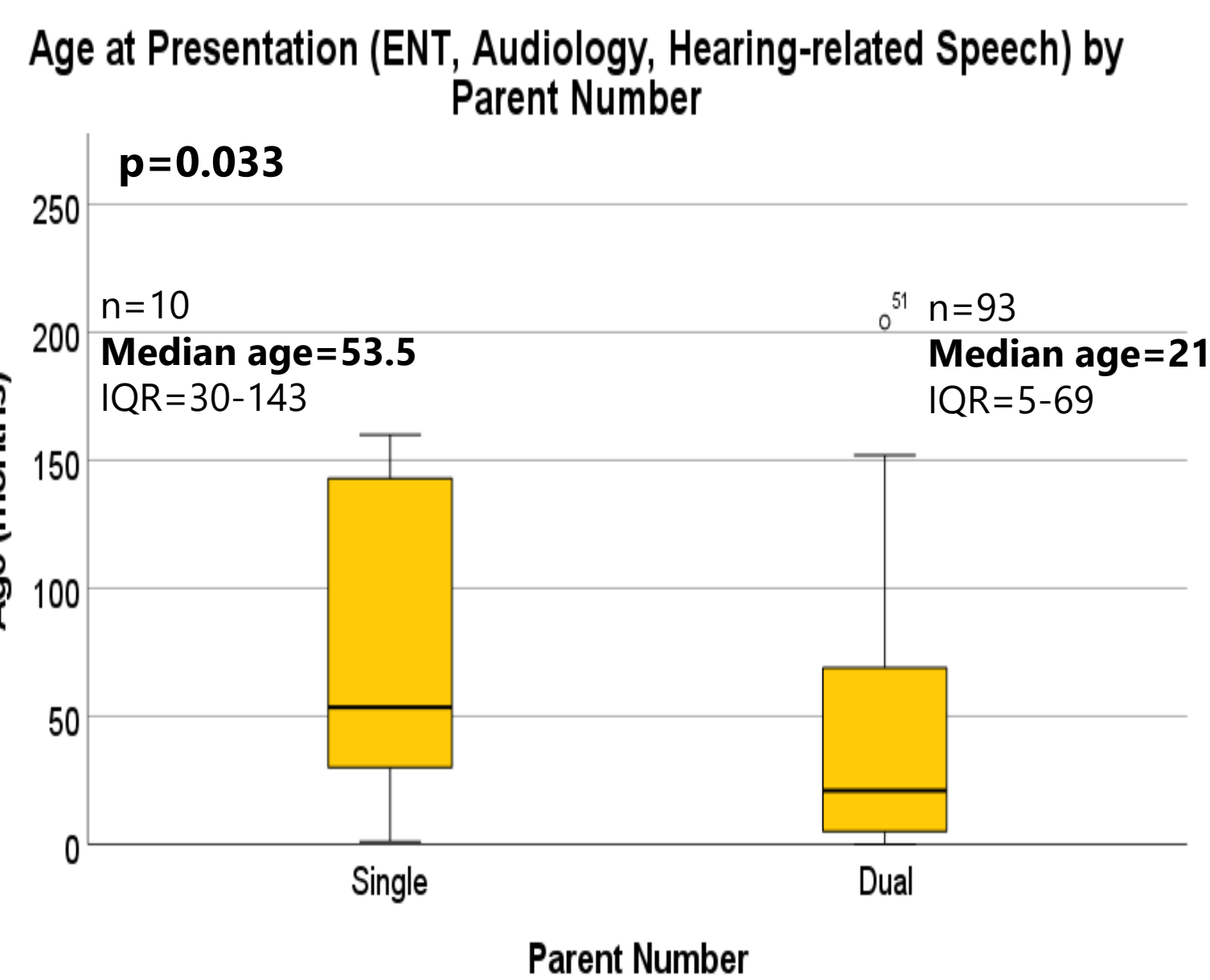


Figure 2

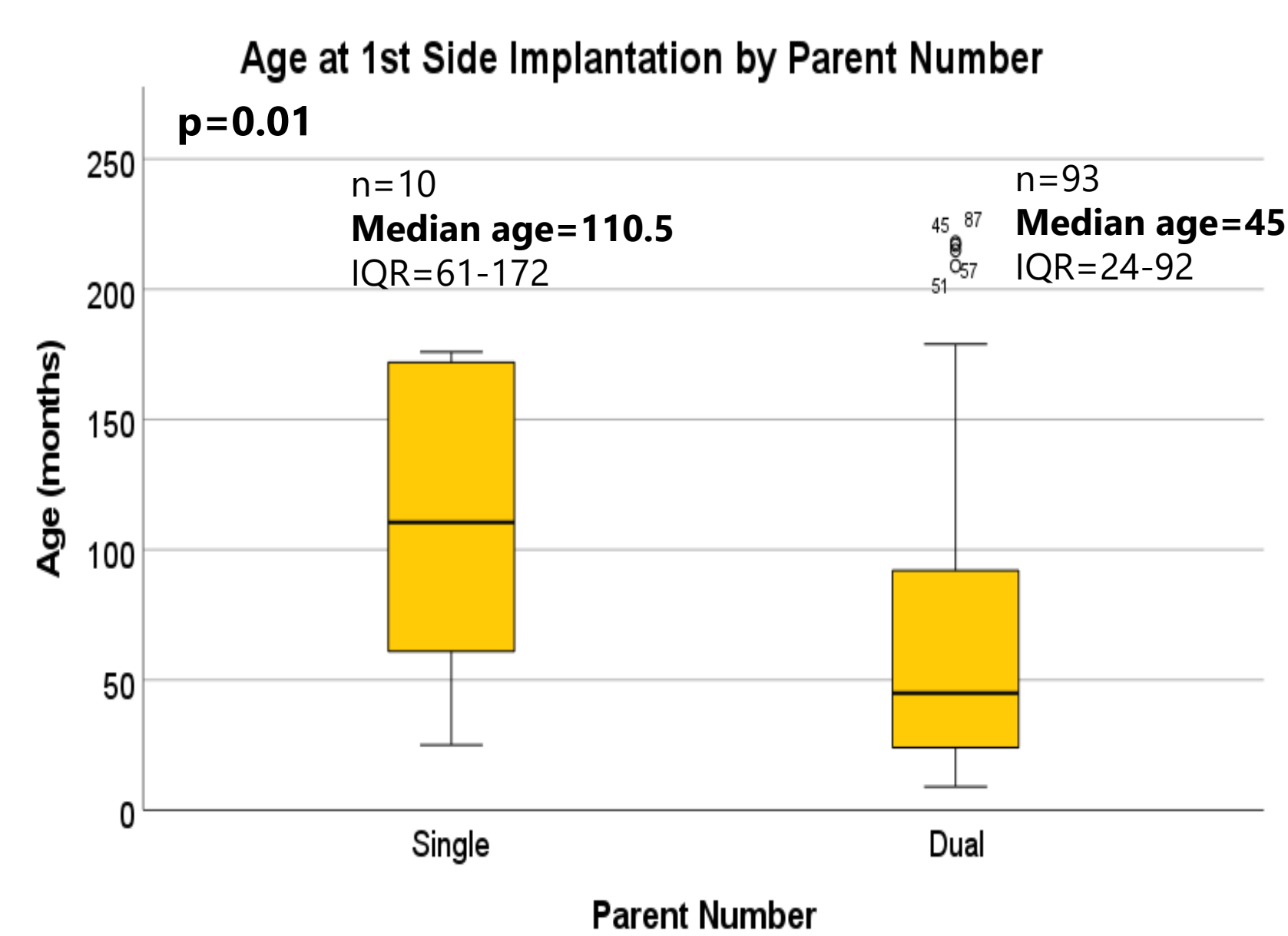


Figure 3

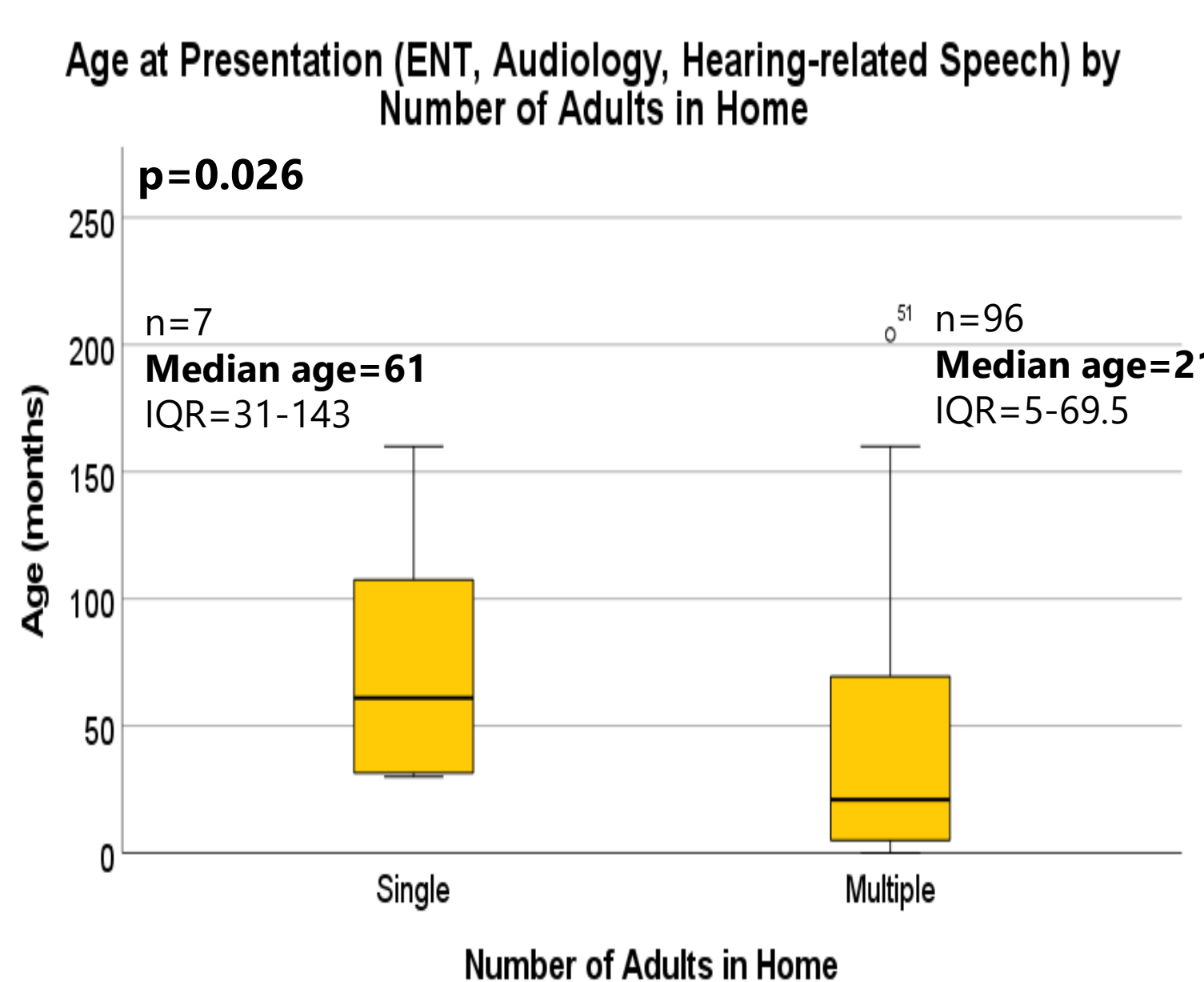


Figure 4

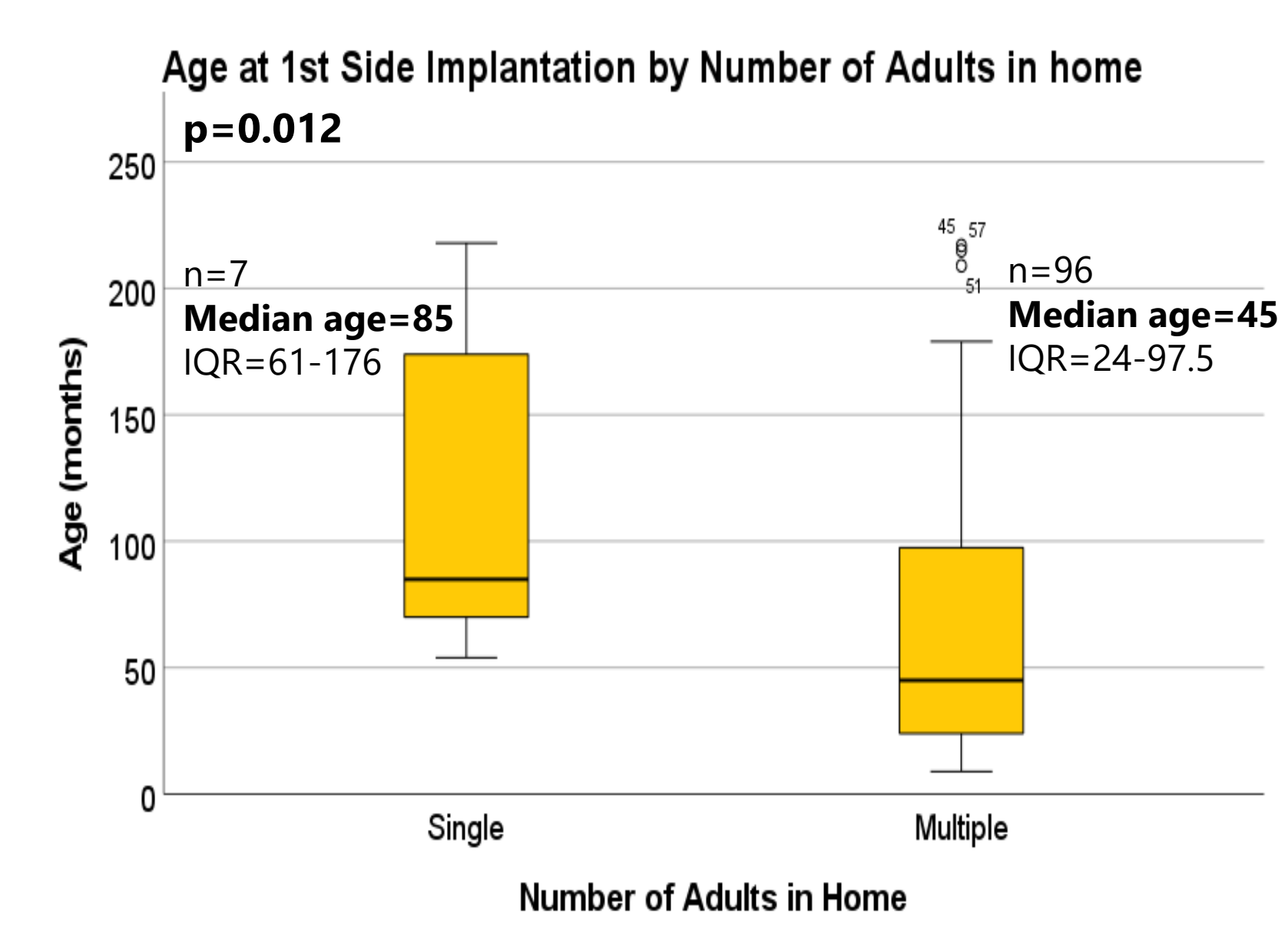


Figure 5

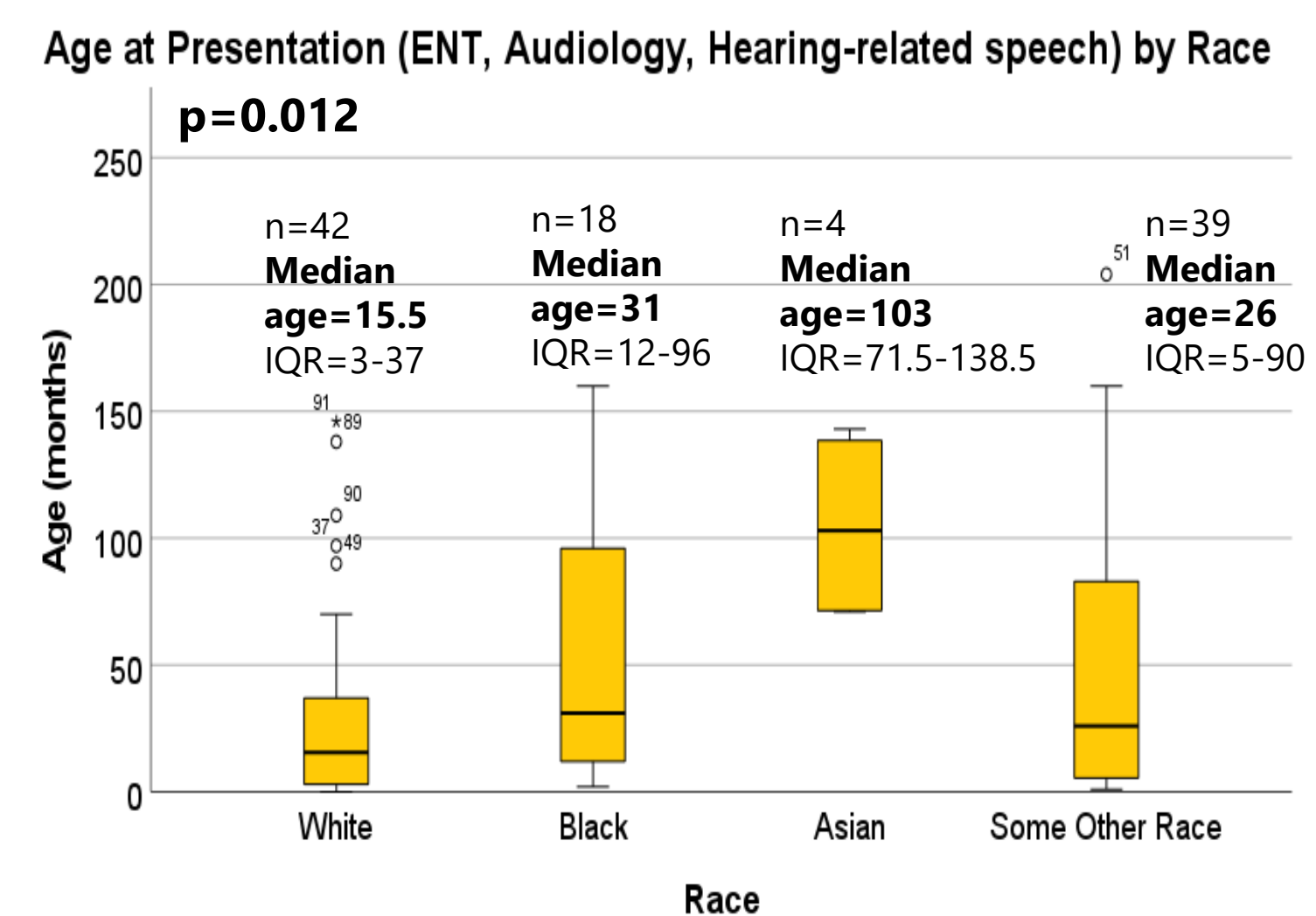


Figure 6

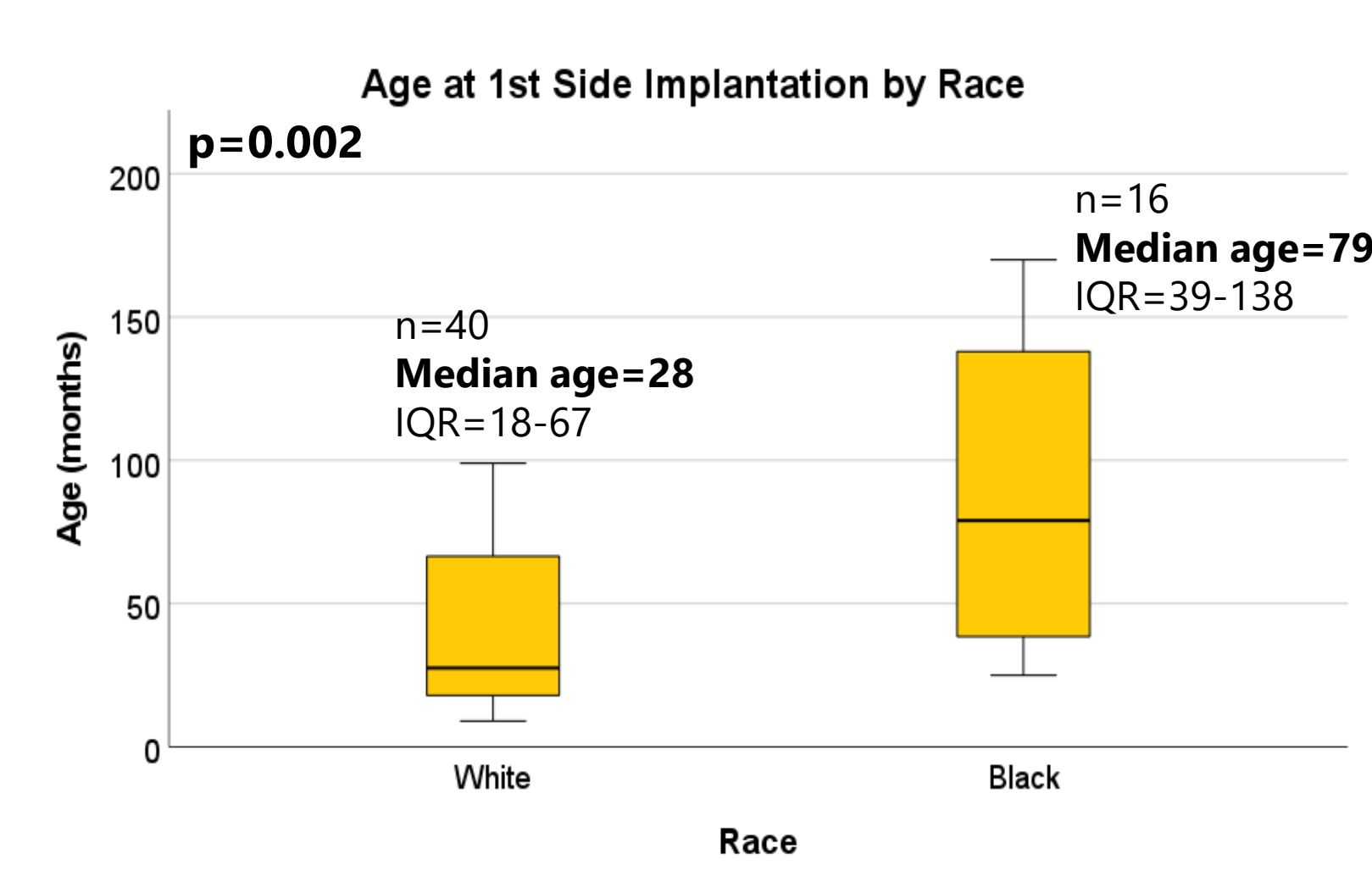
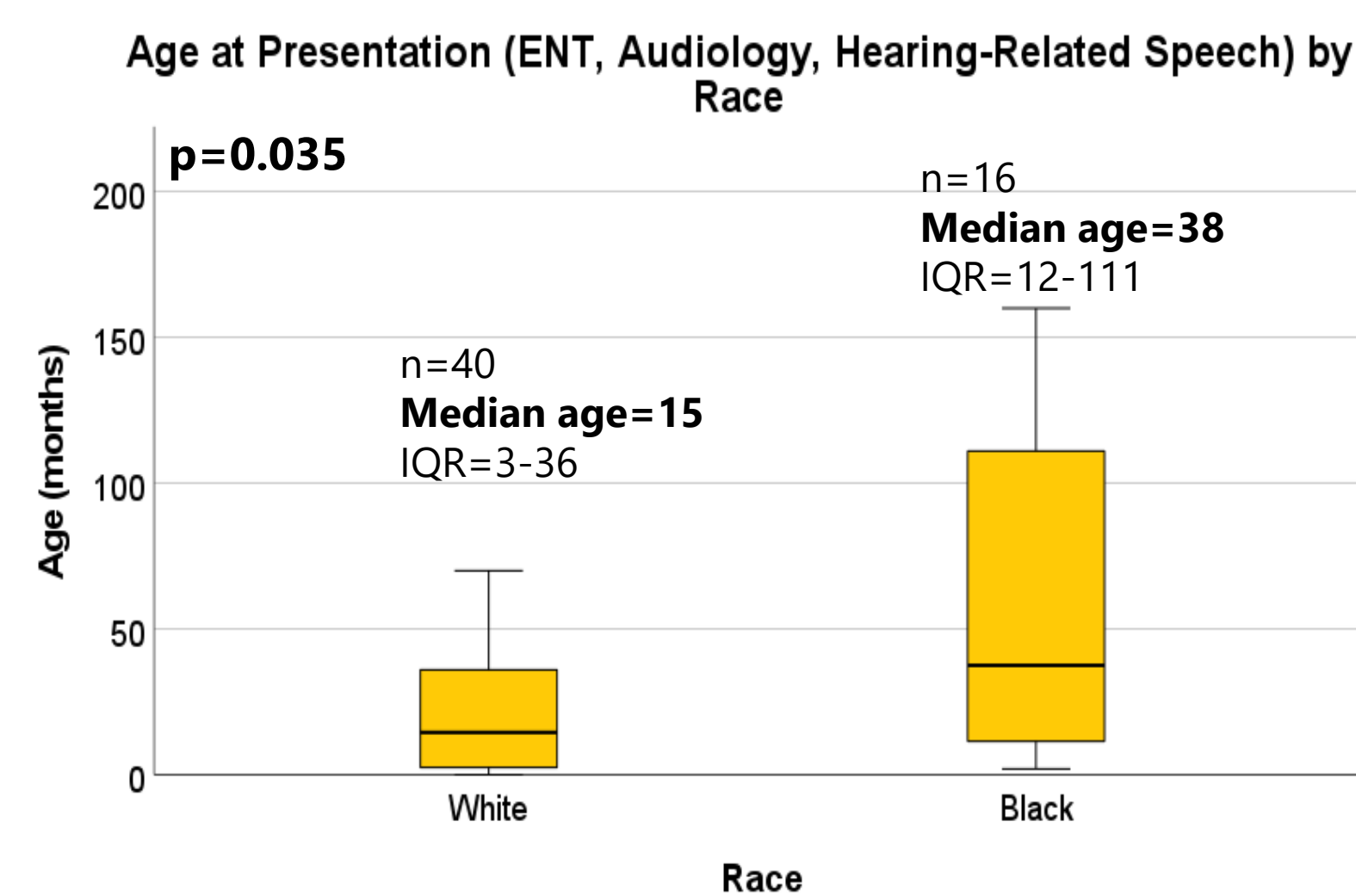
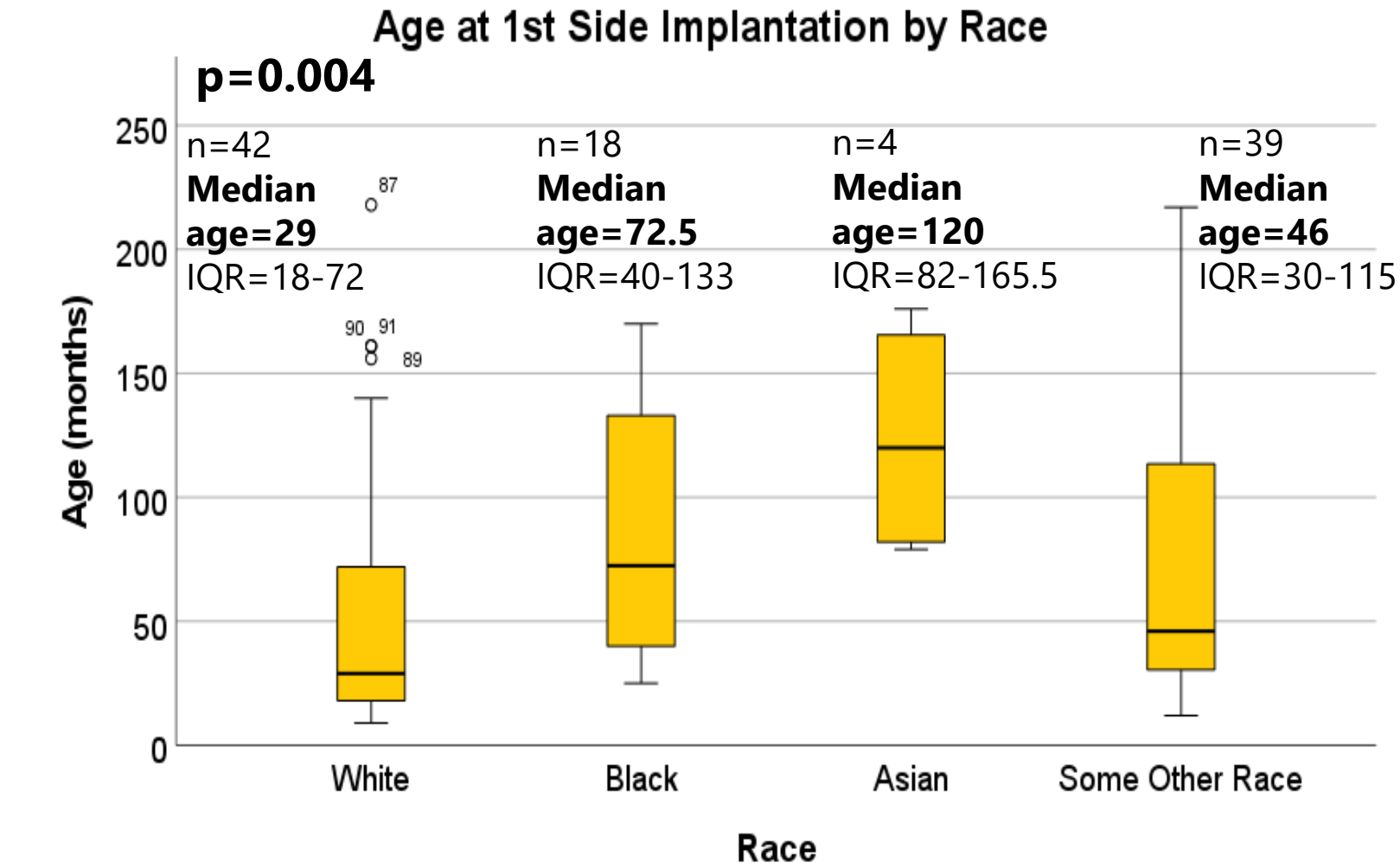


Figure 7: Age at presentation by Race for the subset of patients with multiple adults in the home

Figure 8: Age at 1<sup>st</sup> side implantation by Race for the subset of patients with multiple adults in the home

## Conclusions

- Children with one parent experience delays in presentation and first implantation compared to children with two parents
- Children living in a home with one adult experience delays in presentation and first implantation compared to children living with multiple adults
- White children present to ENT and receive their first implants at a younger age compared to all other races
- White children living with multiple adults present to ENT and receive their first implants at a younger age compared to Black children
- Ethnicity showed potential significance in age at presentation, with non-Hispanic patients at 19 months (IQR 5-60, n=50) and Hispanic patients at 28 months (IQR 10-97, n=53); p=0.069.
- Time to Ling-6 mastery did not prove significant due to the limited sample size based on strict inclusion criteria
- Insurance type and biological sex had no significant effect on the age at first implantation or presentation

### Future Directions:

- Additional investigation into the impact of family structure on time to Otolaryngology care is needed
- Development of standardized tools or validated instruments to collect data and analyze the effects of family structure on hearing habilitation
- Social work should assess the level of caregiver support for the child
- Develop a questionnaire to measure caregivers' involvement in the child's language and auditory development and provide supportive services as needed
- ENT team can provide education and support at presentation to encourage earlier implantation based on family structure
- ENT team can provide more resources to children with one parent or living in single-adult households to decrease the time to first implantation



Scan for references