

Oral Feeding Patterns of Prematurely Born Infants and their Relationship to Expressive Language Outcome

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Background

- **Premature birth** (< 37 weeks' gestation) is linked to oral feeding difficulties and expressive language delays.
 - **Up to 80%** of preterm infants experience feeding issues during NICU stay.¹
 - **42%** continue to have feeding problems into early childhood.^{1,2}
 - **5-12%** of children ages 2-5 are diagnosed w/ speech or language delay, with prematurity as a risk factor.³
- **Oral motor skills** develop through exposure to varied food textures.⁴
 - Limited intake of solids reduces muscle strength for chewing and speech.^{4,5}
- **Expressive language development** is closely tied to oral motor skills and feeding experiences.¹
- Long-term impacts of **early feeding patterns** on **language outcomes** in preterm infants remain unclear.⁶

Specific Aims

1. To assess the oral feeding patterns of premature infants at 12 months corrected age (CA), focusing on whether their diets are primarily liquid-based (breast milk/synthetic formula), pureed, or solid consistencies.
2. To examine whether the diet consistency at 12 months CA influences early oral motor and expressive language development in the second year of life.

Methods

- **Design:** Retrospective chart review
- **Setting:** Neurodevelopment Clinic at Corewell Health Children's Hospital (Feb 2020-Feb 2024)
- **Inclusion:** Attended both 2nd and 3rd follow-up visits
- **Exclusion:** Genetic syndromes or missing follow-up visits above
- **Assessments:**
 - **2nd visit (between 7-12 months corrected age):** Feeding pattern (liquid, pureed, solid diet) via occupational therapist assessment
 - **3rd visit (between 13-20 months corrected age):** Expressive language outcome via pediatric neurologist assessment
- **Analysis:** Chi-square and logistic regression ($p < 0.05$)
 - Adjusted analyses controlled for: gestational age, birth weight, mother age at delivery, NICU length of stay, bronchopulmonary dysplasia, and periventricular leukomalacia

Results

Cohort (N), < 37 weeks' gestation		136
Mean Gestational Age		27.6 weeks
Mean Corrected Age	2nd visit	11.6 months
	3rd visit	17.7 months

Oral Feeding Patterns at 2nd Visit (between 7-12 months corrected age)

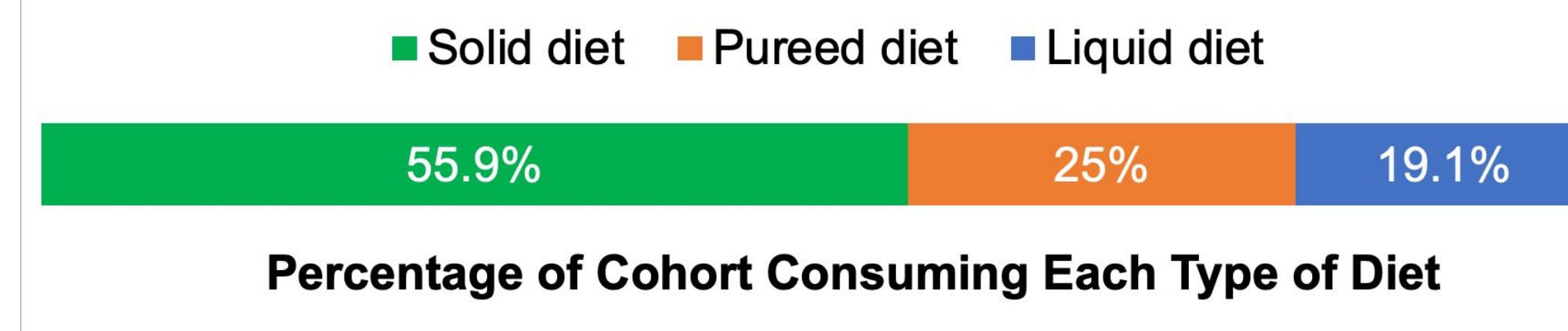


Figure 1. Percentage of cohort consuming each type of diet at their 2nd follow-up visit, occurring between 7-12 months corrected age.

Expressive Language Delay Status at 3rd Visit (between 13-20 months corrected age) vs. Oral Feeding Patterns at 2nd Visit

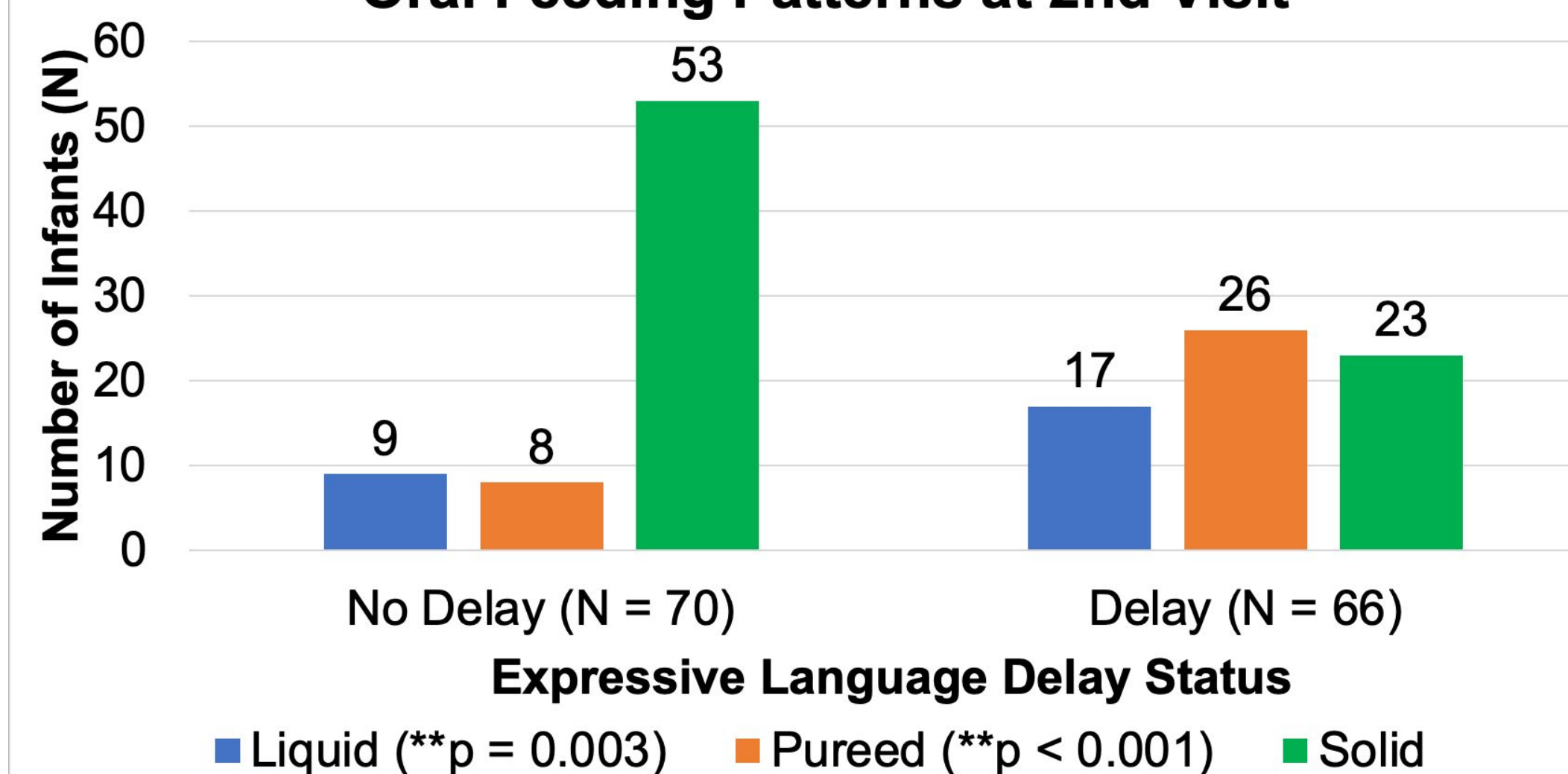


Figure 2. The distribution of the dominant oral feeding pattern among preterm infants at their 2nd follow-up visit between 7-12 months corrected age (CA) with and without expressive language delays assessed at their 3rd follow-up visit between 13-20 months CA. **Values of $p < 0.05$ were considered to be statistically significant.

Unadjusted and Adjusted Odds Ratios for Language Delay Risk in Relation to Oral Feeding Patterns

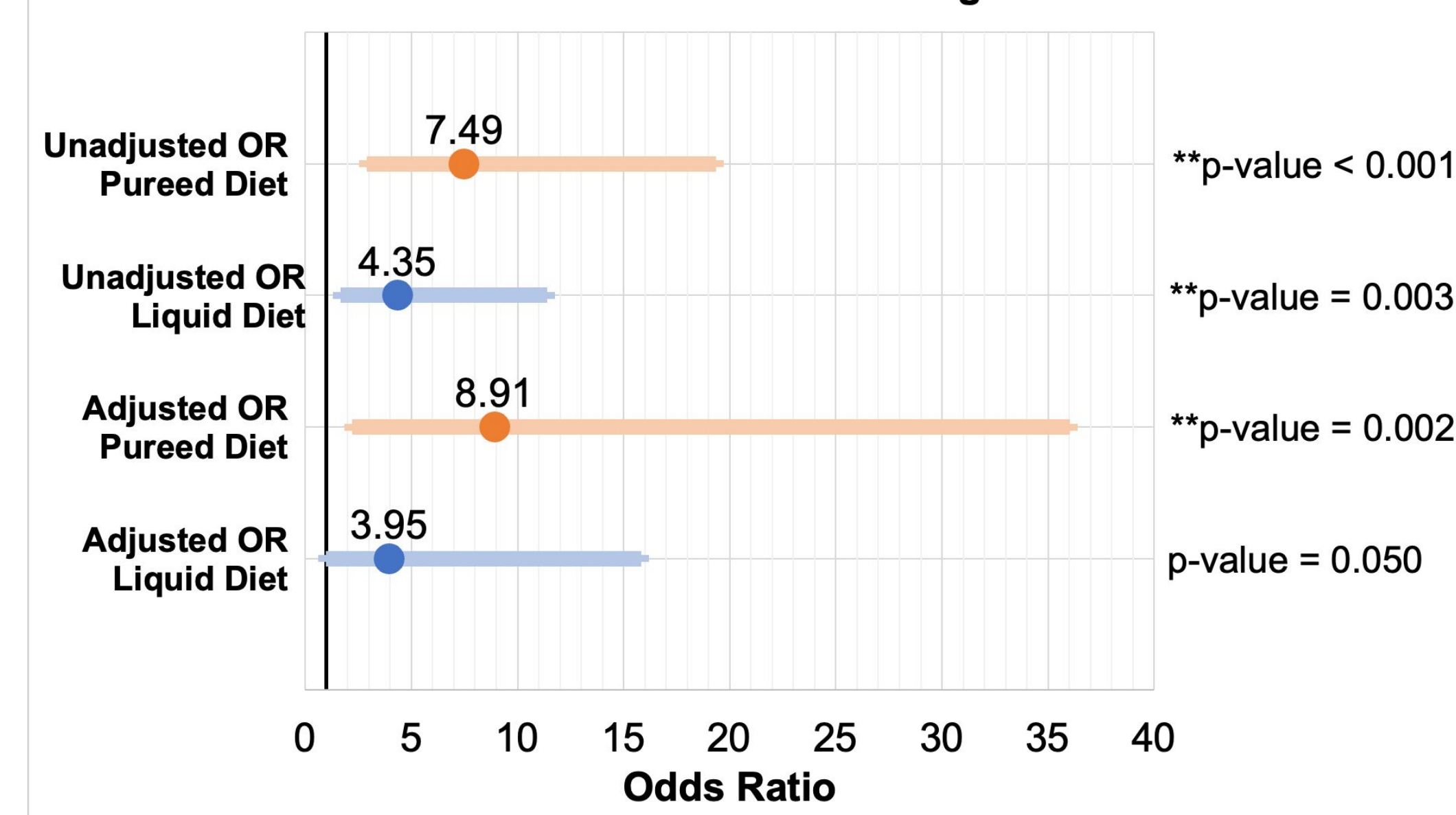


Figure 3. Forest plot demonstrating the unadjusted and adjusted odds ratios with 95% confidence intervals for language delay risk in relation to oral feeding patterns from logistic regression analysis. Adjusted analyses controlled for gestational age, birth weight, NICU length of stay, bronchopulmonary dysplasia, and periventricular leukomalacia. **Values of $p < 0.05$ were considered to be statistically significant.

Discussion

- **Key Findings and Interpretation:**
 - Infants fed **pureed diets** at 7-12 months CA had **8.9x higher odds** of expressive language delay at 13-20 months CA.
 - **Liquid diets** were also associated with delay, though only marginally significant after adjustment.
 - **Delayed exposure to textured foods** may hinder oral motor and sensory development.
 - Thus, impacting speech acquisition during critical neurodevelopmental windows.
 - **Early, age-appropriate feeding transitions** and **multidisciplinary support** (speech, OT, nutrition) are crucial for promoting language outcomes.
- **Limitations:**
 - Possible **recall bias**
 - Lack of data on **parental feeding behaviors**
 - **Single-center design** limiting generalizability
- **Strengths:**
 - Comprehensive **neurodevelopmental evaluations**
 - Use of both **unadjusted and adjusted analyses**
- **Future research** should explore:
 - **Long-term outcomes** later through childhood
 - **Intervention strategies**
 - **Neural mechanisms** through neuroimaging

References

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