

Sensory Sensitivity and Its Impact on Nutritional Outcomes in Children with Neurodevelopmental Disorders

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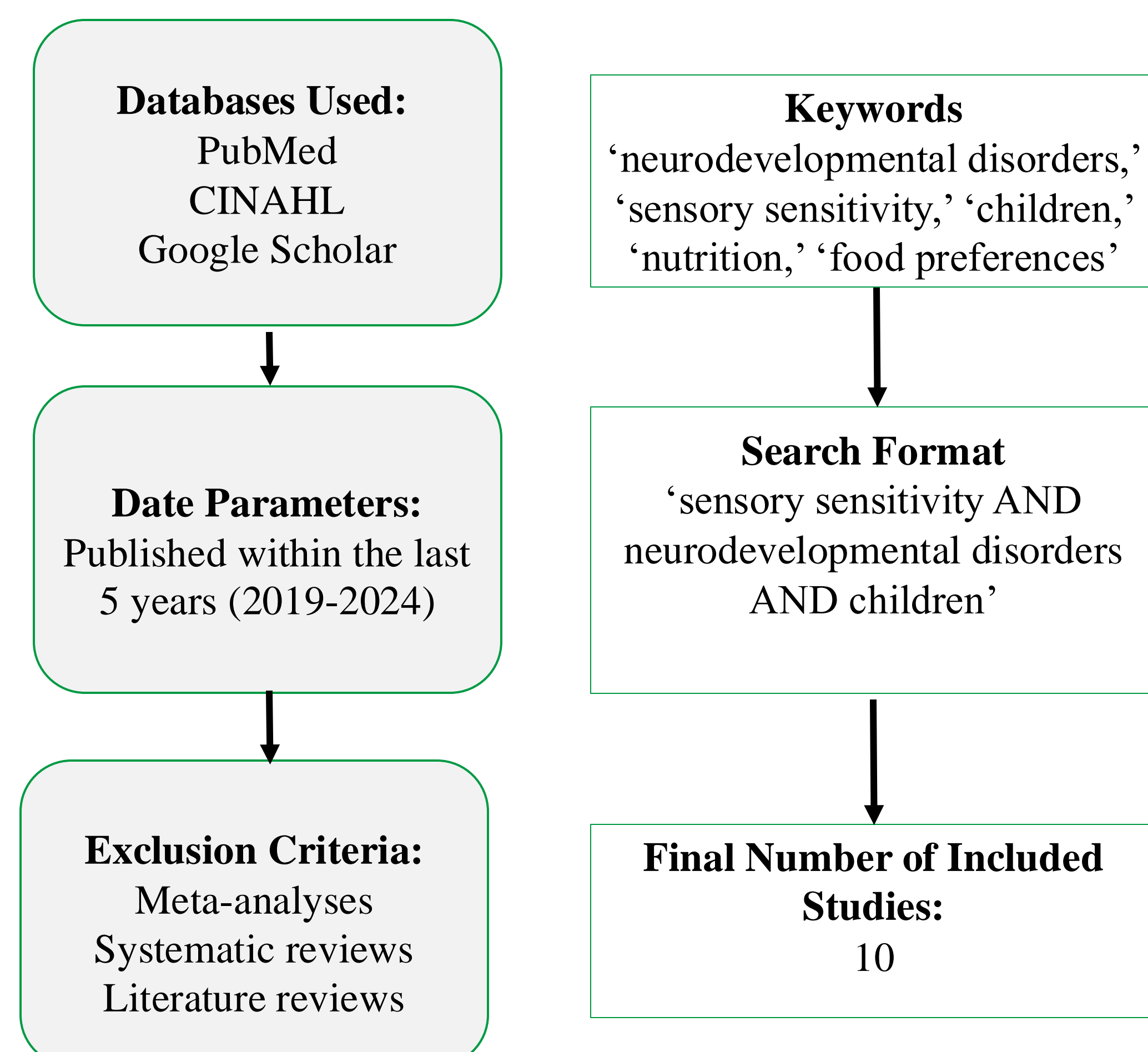
Background

- **Sensory sensitivity:** Defined according to individual differences in the detection of, and reaction to, sensory information, including information from the taste, touch, vision, and smell senses (Cappellotto & Olsen, 2021).
- **Neurodevelopmental disorders (NDDs):** Conditions associated with impairments in the development of the central nervous system and the brain (Smith et al., 2020).
 - Autism spectrum disorder (ASD)
 - Attention deficit hyperactivity disorder (ADHD)
 - Tourette syndrome (TS)
 - Intellectual disability (ID)
 - Learning disability (LD)
- This review aims to explore the influence of sensory sensitivity on the nutritional status and dietary habits of children with NDDs. The findings emphasize the importance of proper nutrition for healthy development and denote urgency for professionals to prioritize interventions that account for sensory sensitivity and its impact on nutritional status.

Research Questions

- How does sensory sensitivity influence nutritional outcomes in children with neurodevelopmental disorders?
- What implications does sensory sensitivity have for nutrition practice in this population?

Methods



Results

Author, Year	Study Design	Results
Bandini et al. (2019)	Comparative; cross-sectional	Children with ID display more food selectivity and refuse more foods than TD peers, specifically those with a co-occurrence of an ASD diagnosis. Fruit and vegetable intake was significantly lower compared to that of TD children.
Cui et al. (2024)	Cross-sectional	Nutrient deficiencies were correlated with sensory sensitivity; ASD participants had lower SSP scores, but better nutritional quality compared to those with ID.
Mayes & Zickgraf (2019)	Comparative; cross-sectional	Atypical eating behaviors were significantly more common in ASD (70.4%) than in children with other disorders (13.1%) and TD children. Behaviors included limited food preferences, hypersensitivity to food textures, eating only one brand of food, pocketing food without swallowing, and pica.
Mendive Dubourdiou & Guerendiain (2022)	Descriptive; cross-sectional	Scores for tactile sensitivity, taste/smell sensitivity were higher in TD group than ASD group, showing greater sensitivity in children with ASD. Children with ASD, presenting with higher sensory sensitivity, had a lower intake of total dairy products and a higher intake of total cereals and protein foods than those with typical sensory performance with ASD.
Molina-López et al. (2021)	Cross-sectional; case control	Food rejection, limited variety, and disruptive behavior were found in children with ASD as compared to neurotypical children.
Raj et al. (2024)	Cross-sectional	Children with ASD exhibited cravings for food, taste and smell, ate only certain foods, and were limited with respect to textures. Feeding issues and behaviors such as chewing food poorly, less variety of fruits and vegetables, getting up from the table during mealtime, and taking more than 20 minutes to finish their meal were observed.
Raspini et al. (2021)	Comparative; cross-sectional	Prevalence of overweight and obesity in the ASD group were 23% and 6%. Children with ASD consumed significantly higher amounts of simple sugars, processed and ultra-processed carbohydrates, both low- and high-fat animal proteins, and lower amounts of fruits and vegetables compared to those with TD.
Rodríguez-Armenariz et al. (2024)	Cross-sectional; observational	All conditions (ADHD, ASD, DD, and LD) exhibited impairments in tactile and movement, with the ASD group presenting impairments in oral processing.
Smith et al. (2020)	Comparative; cross-sectional	Higher levels of both food fussiness and taste/smell sensitivity were reported in all children with NDDs, with children with ASD and TS having less preference for fruit than TD children.
Smith & Ludlow (2022)	Cross-sectional	Children with TS exhibited more food approach behaviors, specifically greater food responsiveness, emotional overeating and desire to drink, and increased BMI.

Discussion

- Research revealed the following nutrition-related outcomes:
 - Food rejection; hypersensitivity to food textures
 - Limited food variety/restricted food preferences
 - Disruptive behavior at mealtime; emotional overeating
 - Inadequate intake of certain food groups/nutrients
 - ↓ fruit and vegetable intake
 - Inadequate intake of vitamins and minerals
 - ↑ intake of simple sugars and processed carbohydrates
 - ↑ risk for increased BMI and obesity

Highlights the significance of nutrition assessment, including calculation of energy needs, nutrient needs, and appropriate growth evaluations for this population.

Provides opportunities for advancement with nutrition education and intervention for families of children with these disorders.

Multidisciplinary collaboration among dietitians, speech-language pathologists (SLPs), occupational therapists (OTs), and psychologists is crucial for improving food familiarity, increasing acceptance, and managing feeding challenges to promote success at mealtime.

Limitations

- Self-reporting questionnaires completed by caregivers
- Food records were obtained over the course of three days; not longitudinally accurate
- Lack of a universally accepted instrument for assessing atypical eating behaviors in children

Future Research

- Expansion of research that examines effective therapies and interventions for children with sensory sensitivity, particularly those with NDDs, is integral for those navigating childhood feeding problems

Conclusion

- Existing research supports the association between sensory sensitivity in children with NDDs and nutritional implications.
- There remains a gap in understanding the importance of identification, assessment, and development of therapeutic interventions to ensure children with NDDs, characterized by sensory sensitivity, receive adequate nourishment.
- Further research is warranted to gain a comprehensive understanding of the implications of sensory sensitivity on food intake, which is crucial for developing effective dietary interventions and support strategies for children and caregivers.

References

