Journal of Speech Pathology & Therapy
ISSN: 2472-5005

Open Access

# A Scoping Review of Velopharyngeal Insufficiency, Speech, and Language Impairment in Craniofacial Microsomia

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## Abstract

**Background:** Craniofacial microsomia (CFM) is a congenital disorder characterized by underdevelopment of the craniofacial structures, a ecting both hard and soft tissues. Velopharyngeal insu ciency (VPI) commonly coexists with CFM, leading to challenges in speech and language development. This scoping review aims to provide a comprehensive overview of the existing literature on VPI, speech, and language impairment in individuals with CFM.

**Methods:** A systematic search was conducted across major electronic databases, including PubMed, Embase, and Scopus, to identify relevant studies published up to the present date. The search strategy incorporated keywords related to CFM, VPI, speech disorders, and language impairment. Inclusion criteria encompassed studies reporting on the prevalence, assessment, management, and outcomes of VPI and speech and language di culties in individuals with CFM.

**Results:** The search yielded a diverse range of studies, including clinical trials, observational studies, and case reports. The prevalence of VPI in CFM varied across studies, and assessment tools and intervention strategies were heterogeneous. Speech and language impairment were frequently reported in individuals with CFM, with multifactorial inþuences such as anatomical variations, surgical interventions, and psychosocial factors contributing to the observed di culties.

**Conclusion:** This scoping review highlights the need for standardized approaches in assessing and managing VPI, speech, and language impairment in the context of CFM. Future research should focus on establishing consensus guidelines for diagnosis and intervention, considering the multidimensional nature of these challenges. The synthesis of eq no ǯ ǁ ψ þ 0 ³ ή غ ر شه ∃024) A Scop

Speech, and Language Impairment in Craniofacial Microsomia. J Speech Pathol

location), participant demographics (e.g., age, gender, and severity of craniofacial microsomia), assessment tools utilized for VPI and speech and language outcomes, as well as reported prevalence rates and intervention strategies.

## Da a, he i

A narrative synthesis approach was employed to summarize and analyze the extracted data. e ndings were organized according to prevalent themes, including prevalence rates of VPI, speech and language assessment tools, intervention strategies, and reported outcomes. e synthesis aimed to identify patterns, gaps, and areas of consensus in the existing literature.

## Ma i g he e ide ce

e evidence was systematically mapped to provide a visual representation of the distribution of studies across di erent dimensions such as study design, geographic location, and key outcomes. is mapping process assisted in identifying clusters of research and potential gaps in the existing knowledge base.

## C cl i

In conclusion, this scoping review has systematically examined and synthesized the existing literature on velopharyngeal insu ciency (VPI), speech, and language impairment in individuals with craniofacial microsomia (CFM). Our exploration of the available evidence highlights the intricate relationship between CFM-related anatomical anomalies and the multifaceted challenges faced by individuals in the domains of speech and language. e prevalence of VPI in CFM varies across studies, emphasizing the need for a nuanced understanding of the heterogeneity within this population. Anatomical variations, surgical interventions, and psychosocial factors contribute to the complex interplay of factors in uencing speech and language outcomes. is scoping review underscores the importance of considering CFM as a multidimensional condition, recognizing that its impact extends beyond the physical characteristics to encompass functional aspects crucial for e ective communication.

e diversity in assessment tools and intervention strategies identi ed in the literature points to the lack of standardized approaches in addressing VPI, speech, and language impairment in CFM. Standardization in diagnostic criteria and outcome measures is imperative for facilitating comparison across studies, fostering evidence-based practices, and ultimately improving the quality of care for individuals with CFM.

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