The Role of Linguistic Input in Language Development Among Children with Hearing Loss: A Narrative Review

Charikleia Nicolaidou[1], Paris Binos[1]

[1]CIRCLE Laboratory, Department of Rehabilitation Sciences, Cyprus University of Technology

Objectives

Typically developing children (TD) exhibit linguistic outcomes commensurate with their chronological age, as linguistic input critically shapes early language development. Conversely, children with sensory deficits, such as hearing loss (HL), lack access to the auditory-linguistic information essential for developing spoken language. This inability to receive on-time the necessary auditory-linguistic input may lead to language delays, especially in the auditory environment with background noise, the distance between the listener and speaker or reverberation. This study seeks to provide a contemporary qualitative narrative review, illuminating recent literature on the influence of language input on the language development of children with HL.

Methodology

The current narrative review follows an FRP (flexible, rigorous, practical) methodology that includes a wide range of studies and provides an overall summary with interpretation and critique. The review was designed based on a general research question about the current role of language input in language development of hard-of-hearing children wearing a hearing aid (HA) or cochlear implant (CI) and searched on the PubMed/MEDLINE database during the last ten years. Although narrative reviews do not typically involve strict exclusion criteria, all searching papers of this study were analyzed based on exclusion criteria.

Results

This review synthesizes findings from studies focused on the language development of children with hearing impairments and those typically developing. The results of this narrative review revealed that toddlers with HL are exposed to approximately 1400 adult words and 60 conversational turns per hour. Despite considerable variability, conversational turns, rather than adult word count, positively correlate with communication outcomes at ages two and three, underscoring the importance of interactive communication. Electronic media exposure negatively impacts receptive language abilities, but this effect is mediated by conversational turns. Many studies employ the LENA Pro system to analyze the language environments, revealing a strong correlation between parental linguistic input and child vocalizations. Negative effects are noted with increased electronic device use. The results assess the impact of early intervention with HAs and CIs, indicating that earlier device fitting correlates with better language outcomes, although children from many studies wearing HAs or CIs still perform below their TD peers. Finally, the study examined conversational turn-taking, showing that interactions with adult females and siblings played a significant role in language development, particularly as children age. Collectively, these studies emphasized the critical role of rich, interactive linguistic environments for optimal language development.

Discussion

This narrative review underscores the profound impact of linguistic input on the language development of children with HL. The data reveals that conversational dynamics, particularly the number of turns rather than mere word exposure, are pivotal for enhancing communication outcomes in children with HL. The significant variability in exposure to adult words and electronic media highlights the need for tailored interventions. Moreover, the role of familial interaction is emphasized as critical to language acquisition. This review advocates for an integrated approach that combines technological solutions with robust family-centered communication practices to optimize language development outcomes for children with HL.