A Research Review: Children with Cochlear Implants and Additional Disabilities
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Description of the studies: Eighteen studies (2000-2011) of children with cochlear implants who had a diagnosis of hearing loss and additional disabilities were reviewed. The studies were primarily retrospective chart reviews with additional assessment of participants’ gains in communication skills comparing pre-implantation to post-implantation scores and participants’ quality of life. The researchers examined participants’ speech perception abilities (16 studies), speech and language skills (8 studies), association of cognitive level with communication outcomes (9 studies), and quality of life (6 studies).

The purpose of the research review was to (a) describe the findings across the 18 studies about communication and other outcomes of the 510 participants, and (b) analyze and report the methodological strengths and weaknesses of the studies. The results of two research reviews of approximately 2000 typically developing children with cochlear implants and hearing loss were provided to support the rationale for the present review.

Results: For those participants who could complete standardized assessments, the gains were improved auditory perception skills at the detection and word levels, communication skills, and quality of life. Between 10 and 20 of the 510 participants used spoken language as their primary method of communication post-implantation.

Several researchers concluded that spoken language might not be a realistic expectation for some children with additional disabilities; however, almost all of the parents reported improved quality of life. The benefits reported were participants’ sense of safety, connectedness, environmental awareness, communication, and attending skills. For the majority of participants, speech and language scores increased but remained within the severely disordered range. A trend for participants’ change from a visual to an auditory-oral communication system was evident. Twelve of the eighteen studies included reports of the use of sign language by participants. Several researchers found no correlation between participants’ mode of communication and the children’s scores on auditory perception measures. An analysis of outcome trends for participants within three disability categories was completed. Children who had a diagnosis of deaf-blindness demonstrated the greatest gains in communication scores (6 studies, 18 children). Children with a diagnosis of autism showed the least improvement (6 studies, 18 children). As the level of children’s cognitive impairment increased, speech perception scores decreased (9 studies, 104 of 111 children). A trend toward participants’ improved quality of life post-implantation was evident in all disability categories.

Limitations: The methodological weaknesses included the lack of operational definitions, a lack of control for participants’ maturation, the number of participants who could not complete assessments, the variety of methods researchers used to report findings, and the non-randomized designs. The research review limitations were the small number of participants in each disability category and the difficulty constructing conclusive findings due to the heterogeneity of study designs as well as the variety of methods researchers used to report findings.

Discussion: Based on the review of the 18 studies and the literature, a continuum with three outcome trajectories for all children who receive cochlear implants was proposed: (a) Children attain auditory-oral skills for functional communication and as the primary method of communication for activities of daily living. Sign language is likely not required by the participants. Quality of life improves. (b) Children benefit from cochlear implantation but do not achieve proficiency using only an auditory-oral method of communication. Sign language or augmentative systems are used and might be combined with spoken language. Children’s spoken language proficiency levels vary. Quality of life improves. (c) Children receive no measurable benefit from cochlear implantation and use sign language or an augmentative communication system to communicate.

The implications for future research include: (a) the need for additional studies of children with cochlear implants examining the impact of the diagnosis of additional disabilities on outcomes; (b) research designs that include more precise operational definitions for the dependent variables; (c) research designs that control for participants’ maturation, (d) the inclusion of sign language interpreters when assessing children who sign; and (e) an investigation of the need for additional standardized assessment tools to measure children’s sign language skills, functional communication skills for activities of daily living, as well as quality of life.
References

The 18 studies included in the research review


**Poster References**


