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SPEECH AND LANGUAGE THERAPY

Analysis of receptive skills of multilingual patients with cochlear implant
A systematic review

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Objectives

Decisive factors such as the age of acquisition and the level of language skills need to be considered in the diagnosis and therapy of patients with cochlear implants (PwCI) and multilingual background. Therefore, the aim of this systematic review was to investigate these factors with regard to their influence on the speech comprehension performance of PwCI with multilingual background and to examine speech comprehension as determined by receptive word and sentence comprehension performance in quiet and noise.

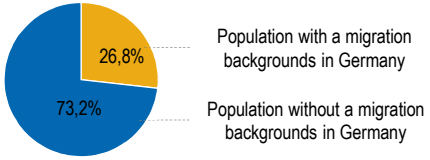


Figure 1. Distribution of population (Statistisches Bundesamt, 2021)

Methods

We included studies on both children and adults in our review. The extracted studies collected data on a total of n = 792 children (♂ 363/ ♀ 361) and n = 44 adults (♂ 12/ ♀ 32).
The systematic database search was conducted in September 2023.Four main search components with subsearch components were developed for the search.

a: Hearing loss and cochlear implantation

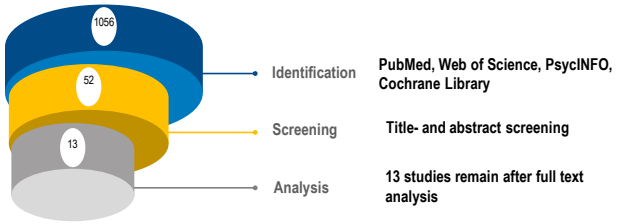
b: Multilingualism and migration

c: Linguistic-cognitive functions and rehabilitation

d: Noise and speech intelligibility

Results

Three reviewers independently assessed the eligibility of the studies. Study quality was assessed using the Newcastle-Ottawa Quality Assessment Scale.



Age at CI implantation	Sample Size	Test Instrument	Outcome word and sentence comprehension	Outcome word and sentence comprehension in noise
CHILDREN	CHILDREN	CHILDREN	CHILDREN	CHILDREN
Specified in months*: M = 18,8 SD = 12,49 *In 3 studies, no precise or no information at all was provided on the age at CI fitting.	Total: 792 ♂ total*: 363 ♀ total*: 361 *No information on gender distribution was provided in 3 studies.	In 3 studies bilingual instruments were utilized. In 9 studies the test instruments were utilized exclusively in the children´s second language	**4** studies found significantly lower scores for multilingual children with CI than for monolingual children with CI. **6** studies found no significant difference between these groups. **2** studies found significantly lower scores for multilingual children with CI than for multilingual children without CI. **1** study did not find a significant difference between these groups.	**1** Study found no significant difference between the scores for multilingual children with CI and monolingual children with CI
ADULTS	ADULTS	ADULTS	ADULTS	ADULTS
Specified in years: M = 21 SD = 9,3	Total:44 ♂ total*: 12 ♀ total*: 32	In 1 study a bilingual instrument was utilized.	No study identified	1 Study found significantly lower results for the group of multilingual PwCI than for the normal-hearing multilingual control group

Conclusion

When reviewing the studies on children, it was found that most studies lacked information on the age of acquisition and the level of the language skills, which makes a comprehensive interpretation of the results difficult. However, studies on the language acquisition of multilingual children without a CI show the importance and influence of the age of language acquisition on language performance. Overall, limitations of the studies are rarely discussed, such as the use of monolingual standardized test instruments and the linguistic heterogeneity within the study groups.

Furthermore, there seems to be a need for studies on the care of adults with CI and multilingual background, as only one study on this group could be identified. Overall, further research projects on the patient clientele seem to be useful, as increasing migration means that CI care centers are faced with additional tasks.

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