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Adverse Outcomes of Combined Cochlear Implant and Hearing Aid Use: A Scoping Review

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ABSTRACT

Relevant articles highlighting adverse outcomes with the combination of hearing aid and cochlear implant published between 2000 and 2023 will be searched using manual search on search engines such as Google Scholar, PubMed, Science Direct, Elicit, Semantic Scholar, and ComDis Dome.

ATTACHMENTS

[Search Strategy for Scoping Review.pdf](#)

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We are still developing and optimizing this protocol

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Review Demographic details

- 1
- Title: Adverse Outcomes of Combined Cochlear Implant and Hearing Aid Use: A Scoping Review.
- 2
- Type of Review: Scoping Review
- 3
- Original language title: English
- 4
- Start Date: 25/02/2024
- 5
- End Date: 25/02/25
- 6
- Stage of review at time of this submission: Piloting of the study selection process

- 7 Named contact: Priyanka Jaisinghani, Ph.D.
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- 9 Review team members and their organisational affiliations: Priyanka Jaisinghani (Baylor University) and Augustina Noel (Vinayaka Mission's Research Foundation)
- 10 Funding sources/sponsors: None

Search Strategy

- 11 Condition or domain being studied: Cochlear Implant and Hearing Aid usage together leading to adverse outcomes
- 12 Review question: Prevalence of adverse outcomes by combination of cochlear implant and hearing aid use?
Cause of interference with combined cochlear implant and hearing aid use?
What are the outcome measures sensitive to interference?
- 13 Searches: Google Scholar, PubMed, ScienceDirect, Elicit, Semantic Scholar, and ComDIS Dome
Search Dates: January 2000- December 2023

- 14 Participants/population: Human subjects
Individuals using cochlear implant and hearing aid combination
Parents of children using cochlear implant and hearing aid combination
Audiologists handling patients using cochlear implant and hearing aid combination
- 15 Intervention(s), exposure(s): Cochlear Implant and Hearing aid combination as in Bimodal Hearing or Electric-Acoustic Stimulation
 - a) The studies must involve human subjects.
 - b) The studies must examine behavioral outcomes related to auditory, speech, or music, with the use of combined (CI+HA) technology in EAS or bimodal, CI alone, and HA alone.
 - c) The articles must examine parents' or patients' attitudes and communication with the use of combined CI alone and HA alone technology.
 - d) The articles should focus on or mention signal interference between CI and HA.
 - e) The articles must report the adverse outcomes of bimodal or EAS.
 - f) The articles must report the possible causes of discontinued HA use in bimodal listeners.
 - g) The articles must be peer-reviewed and published between 2000 and 2023.
 - h) The articles must be written in the English language.
- 16 Exclusion Criteria: The review's exclusion criteria will be as follows:
 - a) Articles that discussed all cases with bimodal benefit.
 - b) Review articles, case studies, editorials, editor letters, and commentaries.
 - c) Articles that focused only on bilateral cochlear implants or bilateral hearing aids.
 - d) Articles published after December 2023.
 - e) Unpublished papers.
- 17 Search keywords and boolean operators: Keywords
Bimodal |OR Bimodal Cochlear implant OR Bimodal hearing AND Benefit
Electroacoustic stimulation |OR Electric-acoustic stimulation OR Hybrid Implants AND Benefit
Bimodal interference |AND Benefit

Analysis/Synthesis

- 18 Themes: The review will report findings in following domains:
 1. Prevalence of interference with combined CI and HA use
 2. Cause of Interference
 3. Consequences of interference
 3. Measures suggested to avoid interference
 4. Outcome measures sensitive to interference
 5. Measures to increase benefit in combined CI and HA technology