

DO PEOPLE WITH COGNITIVE IMPAIRMENT BENEFIT FROM COCHLEAR IMPLANTS? A SCOPING REVIEW

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INTRODUCTION

- Around half of older adults with severe–profound hearing loss are estimated to have mild cognitive impairment or dementia.
- Optimising quality of life for people with cognitive impairment is a global priority.¹
- Hearing interventions can be an effective, low risk, acceptable non-pharmacological method of improving outcomes.²
- Cochlear implants offer improved environmental sound and speech perception and can benefit wellbeing and social engagement in cognitively healthy older adults.³
- However, cochlear implants require outpatient surgery followed by rehabilitation, perceptual learning and adjustment to auditory stimulus.
- The cognitive demand may mean that they are unsuitable for many people with cognitive impairment.

OBJECTIVE

To synthesise the evidence base regarding cochlear implants for people with severe or greater hearing loss and cognitive impairment (mild cognitive impairment or dementia) for the following outcomes:

- Adverse events and non-use
- Speech recognition
- Quality of life
- Cognition
- Rate of cognitive decline
- Behavioural and psychological symptoms of dementia
- Mental wellbeing
- Activities of daily living
- Caregiver ‘burden’

The benefits and disadvantages of cochlear implants for people with cognitive impairment has not yet been studied systematically.

METHODS

- The review was conducted in accordance to the PRISMA Statement.⁴
- Inclusion criteria: Participants aged 50+, residing in the community or long-term care, clinically diagnosed with dementia or mild cognitive impairment OR identified with cognitive impairment based on a cognitive screening, acquired adult-onset severe or profound hearing loss (over 65 dB HL at 0.5–4kHz).
- Any language, methodological quality and publication date, both peer reviewed and grey literature.
- 10 electronic databases were searched (Dec 2023), reference lists of eligible papers were hand-searched and an expert network were consulted.
- Study titles, abstracts and full text were independently reviewed by 2 authors (HC, PD) against criteria.
- Data extraction was performed by one author and checked by a second author.
- Results were summarised descriptively according to change in respective outcome measure following cochlear implantation.
- Studies was appraised using Level of Evidence and Downs and Black checklist by 2 independent reviewers (HC, PD).
- Disagreements were recorded and resolved with a third author.

RESULTS

13 papers were included in the review:

- 2 non-randomised controlled trials, 6 case series, 2 single group trial, 3 single subject case studies.
- Study quality was low to moderate due to the lack of a controlled design and unclear generalisability to population of interest.
- Five studies reported no adverse events or rates similar to cognitively healthy controls.
- Five studies found improvements in speech recognition post-implant. Improvements were generally higher for healthy controls however. One case study reported poorer speech recognition due to steep cognitive decline.
- There were no conclusive changes in quality of life.
- Four studies reported improvements in cognitive scores – MMSE, MoCA etc. One study found no long-term improvements.
- One study reported no changes in depressive symptoms post-implant, however they were within a healthy range at baseline.

LIMITATIONS

Many studies used cognitive screening to identify cognitive impairment rather than clinical diagnostic testing. Screening measures can be impacted by hearing loss and it was unclear as to whether this was accounted for.

The heterogeneity of studies prevented a formal meta-analysis.

Many of the studies were of low methodological quality.

CONCLUSION

- Cochlear implants can improve outcomes (speech recognition and cognition) in people with cognitive impairment, however this was not always to the same level as healthy controls.
- There remains little evidence for improvements in quality of life, wellbeing, BPSD and caregiver outcomes due to limited research.
- There is currently no reason to conclude that there is an increased risk of adverse events in this population.

REFERENCES

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