

Hearing & Dementia

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What Exactly is Hearing Loss?

- Many assume there is a lack of loudness
- Actually it's more common just to be a lack of clarity
- Mild loss; vowels often retained; what's missing is 'th', 'f', or 's'
- A word could be interpreted as 'that', 'fact' or 'sat'
- Comprehension suffers, and confusion results (unbeknown)
- Often, hearing loss is more apparent to others than the patient
- Cognitive capacity is overwhelmed by trying to integrate incompletely heard words with what is seen on the lips plus what is expected
- Early-stage hearing loss can present like early-stage dementia
- Having both is a synergetic interaction, esp as short-term auditory sequential memory loss removes the context

Possible Mechanisms to Inc Risk

- Psychosocial factors; such as loneliness, depression, and social isolation
- Reduced cognitive reserve from decreased environmental stimuli
- Increased cognitive resources needed for listening, and an interaction of these risks with brain pathology
- A causal link between hearing loss and dementia is supported by longer exposure to hearing loss being associated with higher dementia risk
- Maximum risk in people who were diagnosed with hearing loss for more than 25 years

Lancet Commission 2024 Report

- Hearing Loss in mid-life is one of the highest of the 14 potentially modifiable risk factors for dementia
- Relative risk (RR) probability for hearing loss and dementia was estimated to be 1.9 in 2020 (ie 90% higher dementia risk in those with hearing loss)
- Now reduced to 1.4 in 2024
- Limitations of RR calculations were on all people with hearing loss and didn't exclude those with hearing aids
- Commission reported that the evidence base was increasing, but there is still insufficient evidence that hearing aid use reduces dementia risk
- However, risk does not equal causation, and its difficult to separate effect of all the co-morbidities

Lancet Public Health Retracted Study

- An analysis of a large Biobank found that HA use was associated with a substantial reduction in risk of all-cause dementia (Compared w/ people w/ self-reported HL not using HAs)
- An error in the analysis was discovered: the codes for hearing aid users and nonusers were mixed up, causing the retraction
- In fact, risk of dementia was higher for HA users than non-HA users
- One explanation is hearing aid use is a reliable phenotype (observable traits) for hearing loss in the UK Biobank, & hearing loss is a well-replicated marker of risk for all-cause dementia

Methodological Challenges

- Could be unethical to do RCTs
- One power analysis found that a prospective study would need a sample of 44,000 subjects
- Extended time periods required
- Sampling bias
- Note the risk factor is for hearing loss in mid-life, but most studies focus on late-life samples
- OTC aids are increasing the possibility to improve mid-life hearing capability

My Perspective

- Even if there was zero benefit for reducing dementia, there is a long list of other very substantial benefits;
- Fewer misunderstandings
- Not needing to ask for repeats all the time
- Not having the TV blaring
- Greater environmental awareness + balance, so greater safety
- Reduced tinnitus awareness
- More inclined to socialise
- All of the modifiable risk factors are related to good general health anyway

UQ Paper 2024

- Perhaps over-simplifying the dementia/hearing loss message to laypeople confused association with causality
- Linking hearing loss to dementia risk may also exacerbate the stigma of hearing loss
- Discouraging people from seeking help for hearing
- Proposed that treating hearing loss may have important benefits in preventing or delaying diagnosis of dementia
- Via improving orientation and functioning in daily life
- But its not changing the underlying pathology

Uni of Michigan Study, N= 155,000

- Other studies show people with HL have much higher rates of dementia, depression & fall injuries than the general population
- Did a three-year study, compared HA users vs non HA users
- Only 12% of those who have a formal diagnosis of hearing loss actually get the devices
- Even with insurance coverage for at least part of the cost
- Found gaps in HA use among people of different racial and ethnic backgrounds, geographic locations and genders

UM study continued

- Found HA's could delay the onset of dementia, depression and anxiety, and the risk of serious falls
- Hearing aids can't yet be said to prevent these conditions
- Relative Risk of being diagnosed with dementia, within three years of a hearing loss diagnosis was 18% lower for HA users
- 11% lower risk of depression or anxiety diagnosis
- 13% lower risk of being treated for fall-related injuries

Hearing Aids

- Have evolved dramatically, with top-end ones performing better than normal hearing in BGN
- Highly discrete designs
- One translates more than 20 languages in real-time, has an automated fall-alert system, & fine-tuned via telehealth
- Mobile phone connection with facetime-type options
- Lost aids found on the map
- Rechargeables are more reliable
- Can transform people's QOL (??)



Existential Considerations

- It's amusing how many excuses people give why not to wear hearing aids..... (any examples?)
- Classic survey of those who didn't pursue aids despite needing them; found a strong gender split..... (guess the issues?)
- Often, it can be existential issues that prevent treatment
- Denial of hearing loss might be related to not addressing issues
- Not wishing to acknowledge the progression of aging
- Or grief about not preventing hearing damage
- Hearing misunderstandings can make them look old and weak
- Identifying those cognitive distortions & suggesting alternatives

In-the-Draw Hearing Aids

- Happens a lot (80% ??)
- Can be preventable or treatable
- Data logging can help identify disuse, so is a deterrent if they know we can tell
- When dispensing, we need to address existential issues to prevent it
- Expectation management is key- professional services needed
- Ensure the HAs suit their lifestyle; basic ones are only OK 1:1
- Absolutely fine to have basic ones if lifestyle is just in quiet
- Be aware that HA purchase is often a 'reluctant purchase'
- Demonstrate benefit with speech tests with/without HAs

Improving Hearing Needs of People With Dementia

- HL & dementia are highly age-associated, so are commonly comorbid
- A study of people with dementia in the general community reported 87% having clinically significant hearing loss
- In long-term care settings, hearing loss may be even more common
- Most cases of HL go unrecognised/untreated among people w dementia
- Hearing loss exacerbates the impact of dementia on QOL, mental well-being, social participation, communication, independence, & carer burden
- Untreated hearing loss also exacerbates symptoms associated with dementia including aggression, hallucinations, & agitation
- Early identification & treatment of hearing loss offers an opportunity to improve outcomes and improving QOL for people living with dementia

Tinnitus & Dementia

- In my experience, it is relatively rare (at least severe tinnitus)
- But case history indicated that at one stage, tinnitus was a problem
- Everyone has tinnitus, but normal hearing masks it
- My study (n= 470) showed a positive correlation with HL in the extra-high frequencies
- Inverse correlation with the level of HL in the speech range
- I expect that the experience of annoying tinnitus takes up a lot of cognitive reserve
- Improving hearing helps train down/ prevent tinnitus anyway
- Improving hearing helps cognitive functioning on many levels

Balance

- The inner ear and the balance organs share the same fluid
- So important to have vestibular issues investigated
- Balance problems greatly increase risk of falls
- Too many people assume that balance disorders are inevitable in aging
- HAs can improve balance, esp with asymmetry
- Medication reviews, specifically consulting GP & ENT
- BPPV can be diagnosed as well as treated with Dix/Hallpike, then Epley maneuvers

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