

Auditory Symptom Profiles in Alzheimer's Disease and Frontotemporal Dementia

Sunday-0129

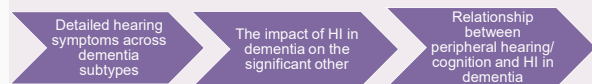
Sophie Jamieson, Benjamin A Levett, Lucy Core, Jessica Jiang, Sophie Froud, Jeremy CS Johnson, Doris-Eva Bamiou, Jason D Warren, Chris JD Hardy

BACKGROUND

There is good evidence of a **link between hearing impairment (HI) and cognitive decline** [1]. HI in dementia extends beyond sound detection and has been linked with **impaired auditory processing** [2], **reduced recognition of voices** [3] and **aversion to or increased preference for particular sounds** [4].

However, there have been **no studies characterising auditory symptom profiles across a range of dementia subtypes** [5]. In this study we used auditory symptom questionnaires to evaluate changes in everyday hearing function across different dementia subtypes.

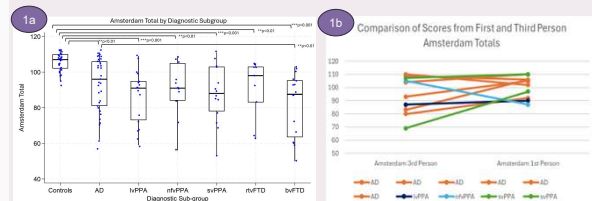
Aims were to further investigate:



RESULTS

Measure 1 – AIAD

1a) Hearing difficulties across many domains were described on the AIAD. Scores were most significantly different in the behavioural variant frontotemporal dementia (bvFTD) group ($\beta = -23.87, p < 0.001$), logopenic variant PPA (lvPPA) ($\beta = -19.20, p < 0.001$) and semantic variant PPA (svPPA) ($\beta = -19.32, p < 0.001$), when compared with healthy controls.



1b) Subgroup analyses revealed differences between self- and informant- completed AIAD ratings. Although a paired t-test showed that the difference was not statistically significant ($t = -1.32, p = 0.1095$).

MEASURES

1a) Amsterdam Inventory for Auditory Disability (AIAD) – targets different auditory impairments across a range of subthemes including auditory discrimination, intelligibility in noise and sound detection [7].

1b) 10 patients completed the AIAD independently to allow for comparison across caregiver- and self-rated scores; gaining insight into anosognosia for hearing impairment.

2) Khalfa Hyperacusis Questionnaire (KHQ) – measuring perceived sensitivity to different sounds and situations [8].

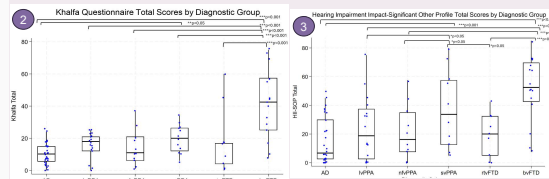
3) Hearing Impairment Impact – Significant Other Profile (HII-SOP) – focusing on the impact of the HI on the life of- and relationship between the person and their significant other [6].

4) Auditory Symptoms – Four specific questions targeting experience with specific auditory symptoms were included: tinnitus, auditory hallucinations and changes to preference for music and sound.

RESULTS

Measures 2 and 3 – KHQ and HII-SOP

2) The bvFTD group showed greater scores for hyperacusis when compared to all other subtypes ($p < 0.001$) and the svPPA group was significantly different from the AD group ($p < 0.05$).



3) The bvFTD group significantly differed from all other subgroups ($p < 0.001$) when measuring impact on the significant other except from svPPA. However the AD group was significantly different from svPPA ($p < 0.001$). Other differences were significant, and heterogeneity was noted within diagnostic groups.

PARTICIPANTS

Subtype	N=	Sex	Mean Age (SD)
Controls	35	M=11 F=24	69.4 (7.03)
Alzheimer's disease	34	M=17 F=17	73.5 (6.34)
Logopenic variant Primary Progressive aphasia (PPA)	17	M=13 F=4	70.6 (6.99)
Nonfluent variant PPA	11	M=6 F=5	74.4 (7.04)
Semantic variant PPA	15	M=8 F=7	63.5 (8.39)
Right Temporal variant FTD	9	M=7 F=2	69 (7.04)
Behavioural variant FTD	16	M=12 F=4	67.5 (6.66)

137 participants' questionnaires were reviewed in total.

ANALYSIS

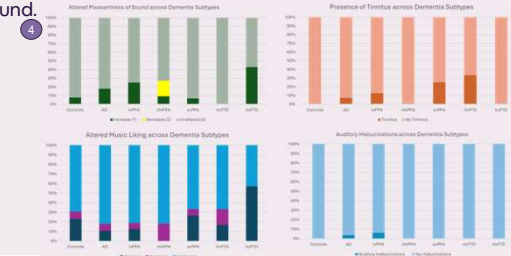
Analyses of covariance were used to assess whether score on each questionnaire differed significantly across dementia subtypes, after adjusting for age, sex and cognitive ability. Analysis also included a content analysis of comments from care-givers and participants about hearing symptoms.

Content analysis was completed on comments about the four hearing symptoms to identify key themes and thoughts.

RESULTS

Measure 4 – Auditory Symptoms

4) Responses to the four auditory symptom questions are displayed below with an increased presence of tinnitus noted particularly in svPPA and rtvFTD. NfvPPA patients also reported a decrease in music liking and pleasantness of sound.



REFERENCES

- [1] Livingston et al., 2024. doi:10.1016/S0140-6736(24)01296-0 [2] Hardy et al., 2016. doi:10.1007/s00415-016-8208-y [3] Hailstone et al., 2011. doi:10.1093/brain/awr205 [4] Fletcher et al., 2015. doi:10.1016/j.cortex.2015.03.021 [5] Johnson et al., 2021. doi:10.1093/brain/awaa429 [6] Kramer et al., 1995. doi:10.3109/00206099509071921 [7] Khalifa, et al., 2002. doi:10.1159/000067570 [8] Preminger et al., 2012. doi:10.3766/jaaa.23.10.6

CONCLUSION: Dementia subgroups have distinct auditory profiles with bvFTD often having the most distinct differences across questionnaires. Differences in self and caregiver ratings of hearing impairment were also noted. The findings of this study have implications for detection and management of hearing symptoms in dementia.

Next steps: Complete and analyse correlations between peripheral hearing scores / cognitive measures and auditory symptoms. Complete content analysis on comments around auditory symptoms.