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Noise damage accelerates auditory aging and tinnitus: a Canadian population-based study

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Age-related hearing loss (ARHL or presbycusis) is the third most challenging disability in older adults after hypertension and arthritis. Noise is a known modifiable risk factor of ARHL, which can drive adverse health effects. Few population-based studies, however, have shown how chronic noise exposure (CNE) impacts the severity of ARHL and the prevalence of tinnitus. In this large-scale study, 928 participants aged 30-100 years without (n=497) or with the experience of CNE (n=431) were compared in hearing thresholds and tinnitus status. In order to only investigate the impact of chronic occupational noise exposure on ARHL and tinnitus, individuals with other risk factors of hearing loss were excluded from the study. Most participants with CNE were males (91.3%). Noise damage was associated with increased severity of ARHL per age decade, an acceleration of developing a significant ARHL at least by two decades, and an increased loss of word recognition scores (≤ 0.001). Tinnitus prevalence also was around 50% in the noise group compared to 20% in the control group, including more than triple for constant tinnitus (28.10% vs. 8.85%, ≤ 0.001) and near to a double for intermittent tinnitus (19.10% vs. 11.10%, ≤ 0.001). Our findings emphasize the significant contribution of long-term [occupational noise exposure](#) to auditory aging and the precipitation of both ARHL and tinnitus.

Recent Publications

1. Jafari Z, Copps T, Hole G, Nyatepe-Coo F, Kolb BE, Mohajerani MH. Tinnitus, sound intolerance, and mental health in long-term noise exposure. 2022 Mar 31. doi: 10.1007/s00405-022-07362-2.
2. Jafari Z, Copps T, Hole G, Kolb BE, Mohajerani MH. Noise damage accelerates auditory aging and tinnitus: a Canadian population-based study. *Otology Neurotology*. 2020, 41(10): 1316-26.
3. Jafari Z, Baguley D, Kolb B, Mohajerani M. A systematic review and meta-analysis of extended high-frequency hearing thresholds in tinnitus with a normal audiogram. *Ear and Hearing*.

May 13, 2022.

4. Jafari Z, Kolb BE, Mohajerani MH. Noise exposure accelerates the risk of cognitive impairment and Alzheimer's disease: Adulthood, gestational, and prenatal mechanistic evidence from animal studies. *Neuroscience Biobehavioral Reviews*. 2020, 117: 110-28.
5. Jafari Z, Kolb BE, Mohajerani MH. Age-related hearing loss and tinnitus, dementia risk, and hearing amplification outcomes. *Ageing Research Reviews*. 2020, 56: 100963.
6. Jafari Z, Kolb BE, Mohajerani MH. Neural oscillations and brain stimulation in Alzheimer's disease. *Progress in Neurobiology*. 2020, 194: 101878.
7. Jafari Z, Kolb BE, Mohajerani MH. Prepulse inhibition of the acoustic startle reflex and P50 gating in aging and Alzheimer's disease. *Ageing Research Reviews*. 2020, 56: 101028.
8. Jafari Z, Kolb BE, Mohajerani MH. Hearing loss, tinnitus, and dizziness in COVID-19: a systematic review and meta-analysis. *Canadian Neurological Science*. 2021, 12: 1-12.

Biography

Zahra Jafari is currently a Research Associate in the Department of Neuroscience, Canadian Center for Behavioral Neuroscience at the University of Lethbridge. She is interested in interdisciplinary research and building and advancing collaborations in academia. Zahra's research interests lie primarily in the area of Auditory Cognitive Neuroscience. Her current line of research focuses on auditory-related modifiable risk factors of cognitive decline and dementia, including age-related hearing loss (ARHL), environmental/occupational noise exposure, and tinnitus.

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