

**Gender effect, quality of life and genetic biomarkers in a Portuguese sample with
ARHL with or without tinnitus**

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Has being estimated that Presbycusis or age-related hearing loss (ARHL) will affect up to 1.5 billion people by 2025. In addition, tinnitus occurs in a large majority of cases with Presbycusis being associated with negative psychological and emotional effects leading to impaired quality of life. The aim of this study was to explore gender effect on a presbycusis sample of older Portuguese with and without tinnitus according to their audiological and genetic profile concerning biomarkers for ARHL

Tonal and speech audiometry, tinnitus assessment, clinical interview, and DNA samples were obtained. The BSI, MOS-SF36 (Portuguese version) were also used respectively to evaluate psychological distress, quality of life, and emotional and social difficulties on a sub set of our sample. Tinnitus severity was evaluated through THI. *GRM7* analysis was performed by qPCR. Genotyping of SNPs in *NAT2* was performed by PCR amplification followed by Sanger sequencing or by qPCR.

We present epidemiological and psychological data from 475 elderly individuals. Our sample includes 366 women (77%), and nearly 51% of the individuals (n=241) present tinnitus, 69% (110) of the tinnitus subgroup are women. Results for comorbidities are discussed. Regarding emotional and social difficulties, the worst listeners present more difficulties and more depressive symptoms, being women more affected. Higher self-reported quality of life seems to be a protective factor towards tinnitus while psychological complaints and hearing loss, were both significant risk factors for tinnitus. T allele at *GRM7* was the most observed and individuals with a T/T genotype have a different risk for ARHL and for tinnitus, compared to A/A and A/T genotype. Slow acetylator was the most common NAT2 phenotype, also with a gender effect distribution.

Tinnitus and hearing loss disorders can have a high negative impact on quality of life and it is likely that the problems identified will be increasingly prevalent and add to the frailty of older adults.