Introduction

Published estimates of the prevalence of hearing loss in elderly adults in Singapore rely on data from inpatients and those attending community rehabilitation and social day care services for senior citizens. This is the first study to estimate prevalence using a population-based sample of community-dwelling elderly Singaporeans.

Objectives

This study investigated the prevalence and profile of hearing loss among participants in the Singapore Longitudinal Ageing Study (SLAS), a population-based longitudinal study of ageing and health of community-dwelling Singaporeans >55 years.

Methods

241 subjects (156 female, 85 male; mean age 71.5 years) were included. Variables collected included age, gender, hearing aid use, first spoken language and education level. Pure tone audiometry was performed using an automated audiometer (KUDUWave, eMoyoDotNet, South Africa) with both air and bone conducted thresholds.

Results

44.0% of participants had hearing loss based on better ear 4 frequency pure tone average air conduction thresholds at 0.5, 1, 2 and 4kHz (4FA) >25dB. Older patients had a higher degree of hearing impairment. There was a moderate, positive correlation between better ear 4FA and age, which was statistically significant (Spearman’s correlation, \( r_s = 0.491, p < 0.0001 \)).

Overall, there was an increase in the proportion of participants who had hearing loss with each decade, except for the 55-60 year group, which can be explained by the small sample of 3 participants in that age group.

The prevalence of hearing loss amongst males was higher at 55.3% compared to females at 37.8%. This was statistically significant (Chi Square Test, \( \chi^2(1) = 6.818, p = 0.010 \)).

The profile of hearing impairment based on better ear 4FA is shown above. Better ear 4FA ranged from 2.5 to 90dB. Asymmetry between the better and worse ears (≥15dB) was present in 5.0%. Conductive hearing loss (4FA ABG ≥15dB) in at least one ear was present in 8.3%. Only 16.7% of the 10.0% of subjects with a disabling hearing loss of >40dB 4FA wore a hearing aid.

Better ear 4FA was first language dependent (English 4FA median 21.3dB, interquartile range (IQR) 12.5-26.3; Mandarin median 24.4dB, IQR 17.5-32.5; Cantonese median 25.0dB, IQR 17.5-31.9; Teochew median 31.3, IQR 27.5-37.5; Hokkien median 30.0dB, IQR 20.0-41.3; Hakka median 16.25dB, IQR 7.2-19.7). This was statistically significant in univariate analysis (Kruskal-Wallis H test, \( \chi^2(6) = 8.520, p = 0.001 \)).

Multiple regression analysis was run to predict better ear 4FA from age, gender, education level and first language. These variables statistically significantly predicted better ear 4FA, \( F(4, 236) = 18.971, p < 0.0001, R^2 = 0.243 \). Only 2 out of the four variables added (age and gender) statistically significantly to the prediction with \( p < 0.05 \).

Conclusion

- Audiological features that may indicate significant pathology (asymmetrical hearing loss and conductive hearing loss) were present in a minority of subjects.
- Despite the prevalence of hearing loss in older Singaporeans, the uptake of hearing rehabilitation is extremely low.
- Increasing age and male gender are the main risk factors associated with hearing loss in this study.