

ASSOCIATION BETWEEN SENSORY LOSS AND SOCIAL OUTCOMES: A PRELIMINARY REPORT

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1 Introduction

Social relationships are an important determinant of health. Indeed, a recent meta-analysis of 148 studies found a 50% greater likelihood for survival for individuals with stronger social relationships, comparable to the effect on mortality of smoking and alcohol consumption, and exceeding the influence of physical inactivity and obesity [1]. The effects of social relationships on health may be mediated through social network size or characteristics, participation in social activities, availability of social support, or loneliness [2]. Our population is growing older, and a large segment of seniors report feeling isolated or lonely. Improving social function is therefore an important public health goal. One of the ways in which we can work towards this goal is by addressing modifiable risk factors or by directing social interventions towards at-risk populations.

Hearing and sight affect mobility and communication and thus may influence an individual's social function. The degree to which sensory loss affects social lives at the population level is not well understood. Presbycusis and uncorrectable age-related vision loss are common, increasing in prevalence, and important for social interaction. Studies examining the relationship between sensory loss and social outcomes have been qualitative, measured only single aspects of social function, focused on hearing or vision loss in isolation, or have not been conducted in the Canadian population. Therefore, we set out to determine if hearing loss, vision loss, or dual sensory loss are associated with social network diversity, social participation, availability of social support, and loneliness in a nationally-representative sample of Canadians ranging in age from 45 to 85 years, and whether age or gender modified these associations.

2 Method

2.1 Study cohort

The Canadian Longitudinal Study on Aging (CLSA) [3] is comprised of English- and French-speaking Canadians who, at baseline, were 45-85 years of age, did not live on First Nations reserves, were not institutionalized, and had normal cognition. Our analysis was conducted using the first wave

of data released for the CLSA tracking cohort, a nationally representative sample of 21,241 adults who underwent a telephone survey [4]. Participants were excluded if they had missing data for any of the variables in the analytic dataset.

2.2 Outcome variables

Associations were analyzed between hearing, vision and dual sensory loss and social network diversity, social participation, availability of social support, and loneliness.

Social network diversity was determined using a slightly modified version of the Social Network Index (SNI) [5]. The original SNI measures 12 possible social roles. In the present analyses, participants were scored on the SNI out of 10 instead of 12 roles because the frequency of contact with parents or parents-in-law is not measured in the CLSA. Participants received 1 point if they were married or in a domestic partnership. They also received 1 point (each) if they had interpersonal contact at least every 1-2 weeks (over the past year) with children, other close family members, friends, neighbours, work colleagues, schoolmates, fellow volunteers, members of non-religious community groups, or members of religious groups.

Social participation was measured using 8 items developed for the Canadian Community Health Survey 4.2 [6]. Participants were classified as having low social participation if they did not participate in any social activities at least once per week. Activities included family or friendship activities outside the household, church or religious activities, sports or physical activities with others, educational or cultural activities with others, service club activities, community or professional association activities, volunteer work, or any recreational activity with others.

Availability of social support was determined using the Medical Outcomes Study-Social Support Survey [7], a validated scale of overall social support with four domains of social support (emotional/informational, tangible, affectionate, and positive interactions). For the overall score and the score for each domain, participants were categorized as having low availability of social support if their scores were below the median.

Loneliness was determined using the following questionnaire item: "In the past week, how often did you feel lonely?" Participants were classified as lonely if they responded "some of the time (1-2 days)", "Occasionally (3-4 days)" or "All of the time (5-7 days)". Those who responded "Rarely or never (less than 1 day)" were considered not to be lonely.

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2.3 Sensory variables

Self-reported hearing was determined using the multiple-choice item: “Is your hearing, using a hearing aid if you use one...” Participants were classified as having hearing loss if they responded “fair” or “poor or non-existent/deaf” (versus “good”, “very good” or “excellent”). Self-reported vision was determined using the item: “Is your eyesight, using glasses or corrective lens if you use them...” Participants were classified as having vision loss if they responded “fair” or “poor or non-existent/blind” (versus “good”, “very good” or “excellent”). Individuals were considered to have dual sensory loss if they had both hearing loss and vision loss defined according to the criteria described above.

2.4 Covariates

In multivariate models, we adjusted for age, sex, race/ethnicity (white/non-white), annual household income (<\$20,000, \$20,000-49,999, \$50,000-99,999, \$100,000-149,999, >\$150,000), education level (less than secondary school, secondary school graduate, some post-secondary school, post-secondary graduate), smoking status (never smoker, former smoker, current smoker), and dichotomous self-reported medical histories of diabetes, hypertension, angina, myocardial infarction, transient ischemic attack, stroke, cancer, kidney disease, hypo- or hyper-thyroidism.

2.5 Statistical analysis

Univariate analyses were performed to assess cross-sectional associations between hearing, vision and dual sensory loss and the social, demographic, and medical variables. The chi-square test was used to assess differences in proportions for categorical variables. Analysis of variance was used to test for differences between groups (defined by sensory status) on means for continuous variables.

Multivariate regression models were used to analyze associations between sensory loss (hearing, vision, dual) and SNI score, lack of social participation, low availability of social support and loneliness. Linear regression was used for SNI score and logistic regression for the other outcomes. The CLSA is a complex sample survey requiring mathematical variance approximation procedures to estimate sampling errors and produce estimates that are representative of the Canadian population. Inverse probability weights were used in univariate and multivariate analyses as per CLSA guidelines [8].

3 Preliminary Results & Discussion

Hearing loss was independently associated with low availability of social support and loneliness, but not low social network diversity or social participation. In contrast, vision loss and dual sensory loss were independently associated with poor scores on all social outcome variables.

These results are important for a number of reasons. Living with chronic health conditions often entails relying on others for help with instrumental tasks and emotional support. Social support can provide coping mechanisms that

may mitigate the effects of sensory loss. Hearing loss has been associated with cognitive decline and dementia, and low social support or loneliness may mediate this pathway. The focus of therapy for these individuals is usually on augmenting sensory abilities (e.g., with hearing aids or lenses), without addressing activity and participation consequences in more comprehensive auditory or visual rehabilitation programs. Individuals with sensory impairments may also benefit from community interventions that aim to increase participation and social engagement and reduce loneliness and isolation. Such community-based approaches could include more attention to the needs of older adults with sensory impairments when buildings and public spaces are designed and built.

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