



Examining individual and area-level factors associated with social isolation and loneliness using Canadian Longitudinal Study on Aging data

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Background



A large body of research shows that social isolation and loneliness have detrimental health consequences [1-4]. For example, social isolation has been shown to be associated with an increased risk of coronary heart disease and stroke, dementia, and mortality. Similarly, loneliness is associated with a wide range of physical and mental health outcomes, such as physiological measures like increased blood pressure and depressed immune system, reduced cognitive function, and mortality.

Although many studies have examined personal characteristics in relation to social isolation and loneliness, there is a relative paucity of research on whether area-level factors are related to social isolation or loneliness. Examining whether area-level characteristics are associated with social isolation and loneliness is useful as it may suggest areas to target for services; for example, if socially isolated or lonely individuals cluster into certain geographic areas (or neighborhoods).

Objectives

The present study had two objectives:

1. To examine the relationship between personal (e.g., sex, income, health) and area-level (e.g., socio-demographic composition) factors and social isolation and loneliness among Canadians.
2. To examine whether similar risk factors would emerge for women versus men.

Methods

Data Sources

This study involved a cross-sectional analysis of baseline data (Tracking and Comprehensive cohorts) from the Canadian Longitudinal Study on Aging (CLSA). Public access census data from 2016 were used to derive area-level variables. CLSA questionnaire data were linked to census data via the first three digits of participants' postal code (Forward Sortation Area, FSA).

Methods

Measures

Outcome variables

- **Social isolation:** A social isolation index was derived by allocating one point when each of the following conditions applied: 1) living alone and not married or in a common law relationship; 2) less than monthly visits with friends or neighbours; 3) less than monthly visits with relatives/siblings; 4) less than monthly visits with children; and, 5) being retired and less than monthly participation in 0 or 1 of 8 social activities. This resulted in a social isolation index ranging from 0-5, with higher scores reflecting greater social isolation. From this, a dichotomous social isolation variable was created whereby individuals with scores 3-5 on the index were classified as socially isolated and those with scores 0-2 as not socially isolated.
- **Loneliness:** A single-item loneliness question from the CESD depression scale was used: "How often did you feel lonely?" The item was dichotomized, with "all of the time" and "occasionally" responses considered lonely and the remaining response categories as not lonely.

Predictor variables

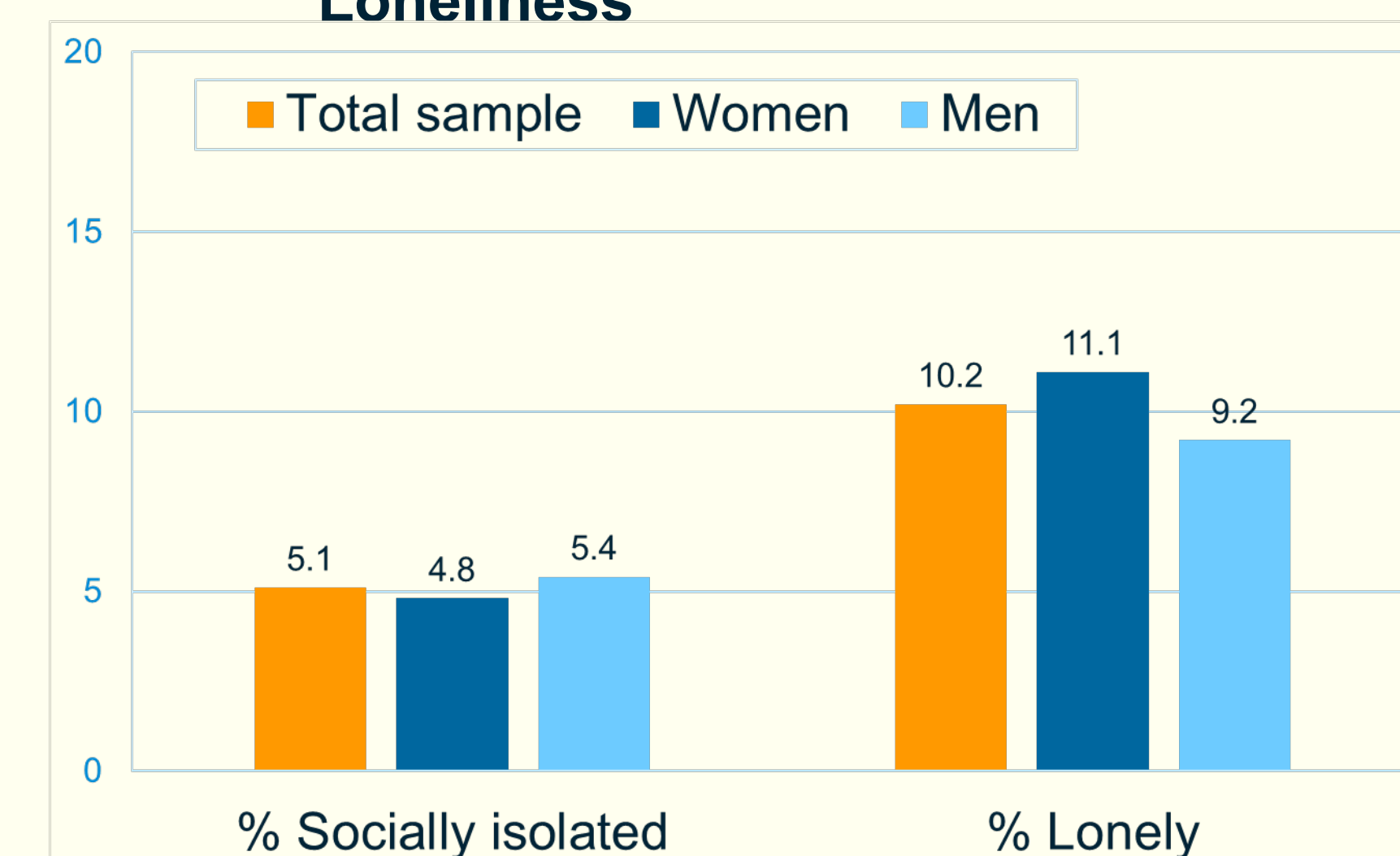
- **Personal characteristics** included: age, sex, education, household income, functional status, chronic conditions, and urban/rural location of residence (marital status and living alone were included for analyses with loneliness).
- **Area-level variables** included: % of women in a FSA; % of the population aged 65+; % of the population living alone; % of the population whose first language was not one of the two official languages (English, French); and the % of the population aged 65 or older with low income based on the after-tax low-income cut-offs (% living alone was included for analyses with loneliness).

Analyses

Data were analyzed using multilevel logistic regressions given the nested nature of the data (individuals within FSA) using Proc Glimmix. Analyses were based on CLSA participants aged 45-85, with 977 FSAs included that had 10+ participants in it. Analyses were conducted for the total sample and for women and men, respectively. In Model 1, all individual level variables were included; in Model 2, area-level variables were added.

Results

Figure 1: Prevalence of Social Isolation and Loneliness



Results

Social Isolation

In Model 1, age, education, household income, functional impairment, chronic conditions, and living in an urban core were all significantly associated with social isolation. The results were similar in Model 2. However, noteworthy was that whereas living in an urban core was related to increased odds of social isolation in Model 1 without area-level variables for both the total sample and women (adjusted odds ratio, AOR=1.36 and 1.55, respectively), this was no longer the case when area-level variables were added in Model 2. This suggests that the urban/rural difference was mostly accounted for by the percent 65+ with low income (AOR=1.05, $p < .001$) and, to a lesser extent, by the % 65+ in general (AOR=1.02; $p < .01$).

Results for Model 2 for the total sample are summarized in Table 1:

Table 1: Summary of Results for Social Isolation, Full Sample, Final Model

	Odds of being socially isolated
45-54 vs. 75-85	↓
Men vs. women	↑
Less than postsecondary education vs. postsecondary	↓
Household income \$20,000+ vs. less than \$20,000	↓
Functional impairment vs. no impairment	↑
Number of chronic conditions	↑
% Age 65+ in FSA	↑
% 65+ with low income in FSA	↑

Note: Only statistically significant results are included.

Loneliness

Results for Model 2 for the total sample are summarized in Table 2. None of the area-level variables was associated with loneliness.

Table 2: Summary of Results for Loneliness, Full Sample, Final Model

	Odds of being lonely
45-64 vs. 75-85	↑
Men vs. women	↑
Not married vs. married	↑
Living alone vs. with somebody	↑
Less than postsecondary education vs. postsecondary	↑
Household income \$20,000+ vs. less than \$20,000	↓
Functional impairment vs. no impairment	↑
Number of chronic conditions	↑

Note: Only statistically significant results are included.

Conclusions

- Overall, the prevalence of social isolation and loneliness was 5.1% and 10.2%, respectively, but there was substantial variation across personal characteristics in prevalence rates.
- Although most findings were similar for women and men, there were two exceptions related to age effects:
 - Whereas younger women aged 45-54 were less likely to be socially isolated than their older counterparts (those 75-85 years old), they were more likely to be lonely.
 - For men, social isolation did not differ across age groups, yet younger men were more likely to be lonely than older men.

On the one hand, these findings highlight that social isolation is not synonymous with loneliness, consistent with what has been argued in the literature, and that one can be lonely regardless of the frequency of contact with social network members. On the other hand, it may suggest that older adults may adapt to a shrinking social network, perhaps by adjusting their expectations of how frequent contact with social network members should be. Alternatively, older adults may intentionally "prune" peripheral social network members in order to focus on core, emotionally meaningful relationships [5].

- Both personal and area-level factors were associated with social isolation, but only personal characteristics were associated with loneliness. From an intervention perspective, this suggests that in order to reduce loneliness one may need to identify at risk **individuals**, whereas for social isolation, support and resources could, to some extent, be targeted at certain **areas**, particularly city neighborhoods with a high proportion of older adults who live on low income.

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