Population Attributable Risk for Functional Disability Associated with Multiple Chronic Conditions in Canadian Adults

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Functional Disability

Public Health Implications
- Increase demand for health care
- Reduced quality of life
- Increase cost of health care
- Higher mortality

In older populations, chronic conditions are prevalent and the most important determinant of functional disability

But which chronic conditions? Are there many that are modifiable?
Multimorbidity

Coexistence of 2 or more chronic conditions where one is not necessarily more central than the others

Canadian Data\(^1\):
- 31% 45-54 years old
- 55% 65-79 years old
- 78% 80+ years old

Currently no clear consensus on how to operationalize Multimorbidity
- Simple disease counts (# and type of CCs vary across studies)
- Depending on definition prevalence of multimorbidity ranges from 13.1% to 71.8% in population-based studies\(^2\)

\(^1\)Public Health Agency of Canada. 2010

Previous Work

Using CSHA data we found that the combinations of chronic conditions that drive functional disability differed by sex and 5-year age groups.

Biggest drivers:
- Foot problems, arthritis and heart disease – 65-74 year olds
- Cognition and foot problems – 85 year and older

- Did not look at mental health conditions
- Did not consider other modifiable risk factors: e.g., physical activity, nutrition
Objectives

The purpose of this study was:

i) To identify a set of physical and mental chronic conditions that are independently associated with overall functional disability in (I)ADLs in community-dwelling older adults (PAR) and

ii) Compare the PAR for these chronic conditions with those associated other common risk factors: physical activity, nutritional risk and a psychological factor: satisfaction with life
Participants were asked to share:

- Their contact information with the CLSA (for recruitment)
- Their survey responses with the CLSA (for analysis)

20,087 (76.3%) of Eligible Participants provided data to CLSA

N=30,865
- >85: N=4,617
- 45-85: N=26,248
  - Contact + Survey: N=11,742
  - Survey Only: N=8,345
  - Contact Only: N=527
  - Neither: N=5,634
Functional Disability

Older Americans Resources and Services (OARS) Multidimensional Functional Assessment Questionnaire

- 14 items measuring both activities of daily living (ADL) and instrumental activities of daily living (IADL)
- Functional disability was defined as needing help with or inability to perform any of the ADL/IADL activities
Chronic Conditions

Identified a priori as putative risk factors for functional decline:

- cognitive impairment, AD, Parkinson’s disease
- hypertension, heart problems, stroke, diabetes
- respiratory disease
- hearing problems, vision problems
- arthritis
- depression

Conditions were self reported by participant
Other Risk Factors

**Nutrition: SCREEN II** (total score <38 → high nutritional risk)

**Physical Activity: Walking item of the Physical Activity Scale for the Elderly (PASE)** (Never, seldom or some times take a walk outside of the home/yard → low physical activity)

**Satisfaction with Life: Satisfaction with Life Scale (SWLS)** (neutral to extremely dissatisfied → low satisfaction with life)
Statistical Analysis

Preliminary analyses for chronic conditions:
1) Prevalence – had to be present in at least 10% of the population
2) Strength of association – Had to have a statistically significant relationship with functional disability using multivariable logistic regression for further PAR analysis.

These included:

cognitive impairment     hypertension     heart disease

diabetes                 arthritis       respiratory problems

hearing problems         vision problems  depression
Model-based, adjusted estimations of PAR were computed to explore the population impact of selected chronic conditions on functional disability while adjusting for relevant covariates.

PARs were calculated for:
- individual chronic conditions
- all chronic conditions
- life satisfaction
- nutritional risk
- physical activity (walking)

PARs were compared qualitatively.
Preliminary Results

ADL

Men

Women

All exposure  Life satisfaction  Nutritional risk  PASE walk

45-54  55-64  65-74  75-85

Canadian Longitudinal Study on Aging
Etude longitudinale canadienne sur le vieillissement
Preliminary Results, *ctd*

**IADL**

- **Men**
- **Women**

![Bar charts for Men and Women showing IADL scores across different exposure categories.]

**exposure** categories:
- **All exposure**
- **Life satisfaction**
- **Nutritional risk**
- **PASE walk**

**Age groups**:
- 45-54
- 55-64
- 65-74
- 75-85

*Source: clsa élcv*
Conclusions

Our findings suggest that in community-dwelling older adults, some other important risk factors had PARs in the same range as all important chronic conditions, but relationships differ by age, sex, and definition of functional disability.

Next Steps...
- CLSA will provide longitudinal data in time to assess these relationships.
- Examine some of the factors in older longitudinal data sets (PAR, Canadian Study on Health and Aging)