Gender Differences in Vulnerability to Social Determinants of Health in Later-life

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Abstract

Background Gender differences in exposure to social resources play a significant role in influencing gender inequalities in health. A related question – and our focus - asks if these inequalities are also influenced by gendered vulnerabilities to social forces. Specifically, this paper examines the differential impact of social forces on the health of elderly (65+) men and women.

Methods Multiple linear regression analysis is used to estimate gender differences in the influence of socio-economic, lifestyle, and psychosocial factors on both self-rated health and functional health using data from the 1994-1995 National Population Health Survey.

Results Key findings include: 1) the relationship between income and health is stronger for older women, whereas the converse holds for education; 2) having an acceptable body weight is positively associated with health for elderly women only; 3) social support has a beneficial effect on health for older women only, yet women who are married/living common-law have poorer health than women living alone; and 4) stress-related factors are stronger determinants of health for older women.

Keywords Gender; Health Inequalities; Elderly Canadians

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Introduction

Gender-based inequalities in health have been consistently documented. Since gender is a measure of both biological/genetic and social differences, it is likely that health inequalities between men and women reflect both sex-related biological and social factors. Regarding the latter, gender disparities in health are often linked to differential exposure related to three factors.

One, health is directly affected by socio-economic status (SES). Socio-economic factors also help to mediate the relationship between gender and health. The differential socio-economic experiences of men and women in terms of labour force participation, financial independence, domestic responsibilities, and so on contribute to gender differences in health status throughout life.

Two, exercise, diet, smoking, and alcohol consumption are behavioural factors commonly cited as major social determinants of health, especially in later life since the effects of lifestyle behaviours cumulate over the life course. Differences in health status between men and women have also been attributed to gender-specific health- and longevity-related behaviours. Women are more likely than men to describe themselves as non-drinkers and non-smokers, yet are less physically active. Women also tend to be more concerned about health and to use the health-care system more extensively.

Three, psychosocial factors such as social support, chronic stress, and stressful life events influence health. Low levels of social integration/support can negatively affect mental and physical health. Since women live longer, they are less likely to have a partner and the consequent informal care-giving and support (both emotional and
financial). They are also more likely to experience chronic stress and stressful life events.  

**Research Question** Gender differences in exposure to social (i.e., socio-economic, lifestyle, and psychosocial) resources play a significant role in influencing gender inequalities in health. A related question asks if these inequalities are also influenced by gendered vulnerabilities to social forces; in other words, do social factors have a differential impact on the health of men and women? For example, do men and women with similar levels of stress, or who have experienced the same stressful life event, have comparable health status? This research contributes to the literature by examining gender differences in vulnerability to the health consequences of high/low SES, “good”/“bad” health behaviours, and high/low psychosocial resources among elderly (65+) persons.

**Methods**

**Data** We use data from the cross-sectional household component of the 1994-1995 National Population Health Survey (NPHS), which covers a representative sample of private Canadian household residents (excluding those on Reserves and Canadian Forces Bases and in some remote areas in Quebec and Ontario). Approximately 3,000 respondents aged 65 years and older are included in this datafile. The findings presented in this paper are based on weighted data. The original sample weights in the NPHS, however, were re-scaled so that the average weight is equal to one. While this approach does not take into account the stratification and clustering of the NPHS sampling design, it does take into account its unequal probabilities of selection.

**Measurement** Health is measured on both subjective and objective levels. Subjective health status is assessed through the question “In general, would you say your
health is: poor (coded as 0), fair (1), good (2), very good (3), or excellent (4)?” Objective health status is based on a respondent’s answers to questions about functional health. Specifically, the Health Utility Index (HUI) is used, which provides a composite measure of functional ability in terms of vision, hearing, speech, mobility, dexterity, cognition, emotion, and pain/discomfort. HUI scores range from 0 to 1 (perfect functional health) in increments of 0.001.

Social determinants of health are categorized as: socio-economic; lifestyle (or health behavioural); and psychosocial. Income and education are used to gauge SES. Annual household income is used as the income measure. It is a categorical variable, grouped into income intervals. However, we recoded it here into dollars by taking the mid-point of each category (e.g., $15,000-19,999 = $17,500). We then divided this figure by the square root of household size to provide an equivalent income measure (e.g. a two-person household with an income of $17,500 has an equivalent income of $12,374). Education has 12 categories ranging from no schooling to a medical/graduate degree. We assign a value to each category indicating total years of schooling (e.g., some secondary = 10 years of schooling).

We utilize two indicators of healthy lifestyle/behaviours. First, the Body Mass Index (BMI) is derived by dividing weight in kilograms by height in meters squared. Following convention, those with a BMI score of <20 are categorized as having insufficient weight, 20-24 acceptable weight, 25-27 some excess weight, and >27 overweight. Number of years smoked (on a daily basis) is used as a second lifestyle measure.
We use multiple indicators to measure psychosocial variables. First, the social support index in the NPHS comprises four items reflecting whether or not respondents feel that they have someone: they can confide in; they can count on; who can give them advice; and who makes them feel loved. Scores range from 0-4, with higher scores reflecting greater perceived social support. Since living with others, particularly a spouse, can enhance social support, living arrangement is also assessed, categorized as: living alone; living with a spouse/common-law partner; and all other living arrangements.

Second, we examine stress associated with major recent life events (RLE). The RLE index is based on the number of negative events that the respondent (or someone close to him/her) experienced in the 12 months prior to the interview. Higher scores indicate more events.

Third, we look at stress associated with ongoing problems in certain domains. In the NPHS, chronic stress is gauged in the following arenas: personal; financial; relationship; parental; environmental; and family-health. Respondents answered either true (coded as 1) or false (coded as 0) to each item in each index. The range of scores for the personal stress index, which includes 5 items, is 0-5, with higher scores indicating more personal stress. For the other stress indices, the range is: financial (0-1); relationship (0-3); parental (0-2) (persons without children are coded as 0); environmental (0-3); and family-health (0-2). Again, higher composite scores indicate more stress.

**Analysis** Our research question asks if social factors have a different impact on the health of older men and women. To answer this question, separate multivariate ordinary least squares (OLS) regression models of health for older men and older women are
compared in Table II (self-rated health) and Table III (HUI). Gender interaction terms were included in a separate regression model of health for all elderly persons combined to determine statistically significant gender differences in the regression coefficients, as indicated in the last column (labeled Gender Gap) of these tables. Since age is a well-known determinant of health in later life, it is also included/controlled for in this analysis. Age is a categorical variable, divided into 5-year intervals and recoded here into number of years by taking the mid-point of each category (e.g., 65-69 = 67). Hence, age, along with income, education, smoking, social support, and all stress-related variables, are treated as continuous variables in the regression analysis. BMI and living arrangement are treated as categorical data and therefore entered into the analysis as “dummy” variables - the reference categories are BMI: overweight and living arrangement: living alone.

Two methods are used to deal with missing cases. First, for HUI, income, education, smoking, BMI, and social support index variables - all containing relatively few missing cases – missing data are replaced by the mean of each variable. Second, the NPHS allows proxy reporting for some variables. Since the stress-related variables are applicable to non-proxy respondents only, there were some missing cases on the stress variables; these cases were excluded from the analysis.

**Limitation** Certain limitations with the analysis and data used here must be acknowledged. First, the NPHS household datafile does not cover persons residing in institutions, most of whom are older women. Relatedly, the gender-bias in mortality (i.e., men compared to women at middle ages are more likely to suffer from life-threatening chronic health conditions such as diabetes and heart disease, and therefore have a higher
probability of being deceased by older age) may produce a healthier population of elderly men. Second, NPHS data, like most other health studies and data, are based on subjects’ responses to health-related questions. It is possible, therefore, that respondents' perceptions of their health differ somewhat from diagnosed health problems among Canadians. It is also possible that observed gender differences in health are to some extent attributable to differential health-reporting behaviours of men and women. Third, it is difficult to establish causality between social forces and health because of the nature (i.e., cross-sectional) of the data used here. While it is possible that health status shapes social resources to some extent, we presume, based on previous research, that social forces have a causal influence on health (we therefore feel confident in describing these social forces as predictors or determinants of health in this paper). Despite these limitations, the NPHS is the only representative national dataset to consider the full complement of social structural, behavioural, and psychosocial determinants of health, and is the best available Canadian dataset for this particular study.

Results

Table I presents bivariate relationships between gender and socio-economic, lifestyle, psychosocial, and health variables. Men have significantly higher levels of income, education, smoking, marriage, and financial stress. Women have significantly higher levels of insufficient weight, social support, and personal stress. Elderly men and women assess their health in a similar manner, however, average HUI scores are significantly different (0.84 for men and 0.81 for women, \( p \leq 0.001 \)). The finding that women rate their health more positively yet have poorer functional health (HUI) than men could reflect differences in the age distribution between men and women, which are
not controlled for in this table.

(Table I about here)

Tables II and III reveal that the social production model of health is considerably different when gender is controlled. Income is positively related to self-rated health for older women, even after controlling for all other health determinants in the model. However, the influence of income on health is much smaller for older men. Conversely, education is more associated with self-rated health for men than for women.

(Tables II and III about here)

Differential effects of lifestyle on health between older men and women are also observed. First, years of daily smoking has a larger negative effect on the subjective health assessment of older men compared to older women, while the opposite occurs for HUI. Second, an acceptable BMI has a significant positive effect on both the subjective and functional health of women only.

Psychosocial coefficients are even more dissimilar in magnitude and predictive significance. Psychosocial factors are stronger determinants of health for older women. First, social support has a beneficial effect on health for women only; however, women who are married/living common-law have poorer health than women living alone. Second, financial and parental stresses have a significant and negative effect on health for elderly women only; also, the negative relationship between personal stress and health is much stronger for women. On the other hand, relationship stress and recent life event stressors are more significant negative predictors of health for older men. Although environmental stress has a significant negative effect on health for all elderly individuals, the effect is larger for men.
While age is used here to control for its effect on health, it is worth noting that the influence of age on health varies by gender. Age has a larger negative effect on functional health for women than men. Additionally, older elderly women are significantly more likely to express poorer subjective health than younger elderly women; in contrast, there is little difference by age in how men rate their health.

**Discussion**

Gender differences in exposure to social resources play a significant role in fostering health inequalities. The gender gap in health is also influenced by differential vulnerabilities to social forces. By focusing on gender differences in the effect of social factors on later-life health, we shed light on the process of successful aging for men and women.

The findings show the importance of financial resources for health maintenance among women. Another important observed gender difference is that acceptable body weight has a greater positive health effect for elderly women. Daily smoking also has a larger adverse effect on physical health for older women. Proper nutrition, special dieting, and not smoking are therefore especially important for healthy aging among women.

It is generally assumed that social support has a positive influence on health in later life. The data, however, show that it has a positive effect on health for elderly women only. Interestingly, unattached women living alone have better health than their married counterparts, which may, in part, reflect the family-related burdens placed on many married women. The negative effect of stress on health is also generally stronger
for older women. A possible explanation lies in differences in how men and women react to and/or handle stress-related problems.

While this research reveals the varied effects of gendered social forces in determining health in later life, the findings also suggest that more research is needed on gender-based inequalities in health in later life. Investigation is needed to identify other factors (social and biological) affecting the health of older men and women, and gender differences in exposure and vulnerability to them.
References


12 Borg V, Kristensen T. Social class and self-rated health: Can the gradient be explained by differences in life style or work environment? *Social Science and Medicine* 2000; 51: 1019-1030.


Table I
Means and Percentages of Socio-economic, Lifestyle, Psychosocial, and Health factors, by Sex

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<thead>
<tr>
<th>Study Variables</th>
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<tr>
<td>Income****</td>
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<td>Education****</td>
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<td>insufficient weight</td>
<td>4.6%</td>
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<td>slightly overweight</td>
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<td>RLE Stress</td>
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</table>

*\( p \leq 0.10 \), **\( p \leq 0.05 \), ***\( p \leq 0.01 \), ****\( p \leq 0.001 \).
Percentages may not sum to 100% due to rounding.
Table II
Metric coefficients for Multiple OLS regression of Self-rated Health on Socio-economic, Lifestyle, and Psychosocial factors, by Sex

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<th>Independent Variables</th>
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<th>Women</th>
<th>Gap</th>
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<td>0.0000083****</td>
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<tr>
<td>Education</td>
<td>0.04752****</td>
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<td><strong>Lifestyle</strong></td>
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<td></td>
</tr>
<tr>
<td>Smoking</td>
<td>-0.00691****</td>
<td>-0.00411***</td>
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<tr>
<td>BMI</td>
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<td>0.15258**</td>
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<td>slightly over</td>
<td>0.22152**</td>
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<tr>
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*p<0.10, **p<0.05, ***p<0.01, ****p<0.001. Standard Errors are in Brackets
TABLE III
Metric coefficients for Multiple OLS regression of HUI on Socio-economic, Lifestyle, and Psychosocial factors, by Sex

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<tr>
<td>Smoking</td>
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*p<0.10, **p<0.05, ***p<0.01, ****p<0.001. Standard Errors are in Brackets.