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Gender Differences in the Influence of Economic,
Lifestyle, and Psychosocial Factors on Later-life
Health

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SEDAP Research Paper No. 76

GENDER DIFFERENCES IN THE INFLUENCE OF ECONOMIC, LIFESTYLE, AND PSYCHOSOCIAL FACTORS ON LATER-LIFE HEALTH

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Gender Differences in the Influence of Economic, Lifestyle, and Psychosocial Factors on Later-life Health *

(short running title: Gender Inequalities in Later-life Health)

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Abstract

This paper examines the differential impact of social forces on the health of men and women aged 65+ using data from the 1994-1995 National Population Health Survey. Multiple regression analysis is used to estimate gender differences in the influence of socio-economic, lifestyle, and psychosocial factors on both self-rated health and overall functional health. Some key findings are: 1) the relationship between income and health is significant for older women, but not for older men, while the opposite occurs for education; 2) having an acceptable body weight is positively associated with health for elderly women only; and 3) stress-related factors are generally much stronger determinants of health for older women. These findings shed light on the processes of healthy aging for men and women.

Introduction

Of the various group-based inequalities in health, gender differences have been consistently documented. [1-5] Research tends to show that women are more likely than men to experience morbidity and disability, but paradoxically have lower rates of mortality. 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. [6-8] In terms of the latter, gender disparities in health are often linked to differences between men and women in exposure related to three factors.

First, the health of individuals is affected by their social class position. Socio-economic status is positively correlated with understanding health education information, making informed decisions about health and health care, access to health care services, health maintenance, and healthier lifestyle. [9-12] These factors contribute to better health of those with higher socio-economic status. Socio-economic factors are also cited as mediating the relationship between gender and health. Specifically, the differential socio-economic experiences of men and women in labour force participation, financial independence, and domestic responsibilities, for example, contribute to gender differences in health status throughout life. [13-16]

Second, exercise, diet, smoking, and alcohol consumption are behavioural factors that are commonly cited as major social determinants of health, especially in later life. A healthy lifestyle can help prevent, for example, weight gain, high blood pressure, diabetes, arthritis, stress, and early mortality. The cumulative effects of unhealthy lifestyles begin to produce noticeable differences in the health of older persons who were physically inactive and/or were heavy smokers and consumers of alcohol over the life

course verses those were not. [17] Further, differences in health status between men and women have been attributed to gender-specific health- and longevity-related behaviours. For example, women are more likely than men to describe themselves as non-drinkers and non-smokers, yet are less physically active.[18] Women also tend to be more concerned about health matters and to use the health-care system for treatment compared to men. [19]

Third, research on the social production of health shows that psychosocial factors such as social support, chronic stress, and stressful life events influence health. For instance, low levels of social integration/support can gravely influence a person's morale and adjustment and, hence, their mental and physical health. [20-21] Because of their higher life expectancy, women are more likely than men to live without a partner, and their source of informal care giving, emotional and financial support, and so on. They are also more likely to experience chronic stress and stressful life events. [22]

In summary, gender differences in the exposure to social (i.e., socio-economic, lifestyle, and psychosocial) resources play a significant role in influencing gender inequalities in health. However, a related question asks if these inequalities are also influenced by differential vulnerabilities to social forces between men and women; in other words, do social factors have a differential impact on the health of men and women. For example, does health status increase at the same rate for men and women as income increases? Or, do men and women with similar levels of stress in their lives, or who have experienced the same stressful life event, have comparable health status?

Research Question   Canadian research that has addressed this question shows that there are various gender differences in the effect of social forces on health. [16, 22] Focusing on individuals age 20 and over, Denton and Walters, [16] for example, find that social-

structural factors, such as income, labour force activity, and social support, are stronger predictors of health for women, yet health-behavioural factors (namely smoking and alcohol consumption) are more important determinants of health for men. This paper adds a unique contribution to the Canadian literature by examining gender differences in the vulnerability to the health consequences of high/low socio-economic status, good/bad health behaviours, and high/low psychosocial resources among elderly (65+) individuals.

Methods

Data source   The data used here come from the cross-sectional household component of the 1994-1995 National Population Health Survey (NPHS), which is the only NPHS survey that contains a comprehensive set of psychosocial-resource indicators (e.g., chronic and critical life event stressors). The NPHS cross-sectional household component contains information on a representative sample of private household residents in Canada, excluding those on Indian Reserves, Canadian Forces Bases, and some remote areas in Quebec and Ontario. The findings in this paper are therefore generalized to Canadians living outside of institutions and these communities.

For the NPHS datafile used here, approximately 3,000 respondents are 65 years of age and older. However, this sample is weighted. Further, while the original sample weights in the NPHS take into consideration both sampling design and population representation, we re-scaled them so that the average weight is equal to one (i.e., survey weights are rescaled to sum to the sample size). This method permits the use of conventional tests of statistical significance while taking into consideration the unequal probabilities of selection in the sample's design.

Measurement A multifaceted approach is used to measure both health status and the social determinants of health. To provide a more inclusive picture of a respondent's global health status, health is measured on a subject level and on a more objective one (i.e., self-reported indicators of physical health). In the NPHS, subjective health status is based on 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 more tangible, and is based on a respondent's answers to questions about his/her functional health/ability. Specifically, the Health Utility Index (HUI), which combines both qualitative and quantitative aspects of health (i.e., a description and a valuation of a respondent's health attributes, namely vision, hearing, speech, mobility, dexterity, cognition, emotion, and pain/discomfort), is used here to measure physical health. HUI scores range from about 0 (completely unfunctional) to 1 (perfect functional health) in increments of 0.001.

Social determinants of health are categorized here into three general groups: socio-economic, lifestyle (or health behavioural), and psychosocial. Income adequacy and education are used to gauge socio-economic status (SES). Income adequacy is based on annual total household income and the number of persons in the household. This measure, produced by Statistics Canada, has five discrete income adequacy categories: low, low-middle, middle, upper-middle, and high. Those in the low income adequacy category, for example, are 1 to 4 person households with incomes of less than $10,000 and 5+ person households with incomes of less than $15,000. On the other hand, those in the highest income adequacy category have incomes of $60,000+ for 1 to 2 person households and $80,000+ for households of 3 persons or more. Education has 12

categories ranging from no schooling to a medical or graduate degree. We assign a value indicating total years of schooling to each category (e.g., some secondary schooling = 10 years of schooling).

We utilize two commonly used indicators of healthy lifestyle/behaviours. First, the Body Mass Index (BMI) is used to identify conditions of excess weight. The BMI is derived from dividing weight in kilograms by height in meters squared. Following conventional guidelines, those with a BMI sore of <20 are categorized as having insufficient weight, 20-24 acceptable weight, 25 to 27 some excess weight, and >27 overweight. It should be noted that older persons are more prone to overestimate their height, possibly producing an underestimation of the overweight rate among seniors. Number of years smoked is used as a second measure of health behaviour. It refers to those who currently or who have ever smoked cigarettes daily. Those who do, or who did, smoke cigarettes occasionally or those who never smoked are assigned a value of 0 years smoked.

Multiple indicators are also used to measure psychosocial determinants of health. First, we gauge social support using a perceived social support index and a respondent's living arrangement. The social support index comprises four items that reflect 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. The overall range of scores is 0 to 4, and a higher score reflects greater perceived social support. Because living with another person, particularly a spouse, can additionally enhance social support, living arrangement is also used in this analysis, and is categorized as follows: 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 "recent life events" index in the NPHS is based on the number of negative events which the respondent or someone close to the respondent experienced in the 12 months prior to the interview, such as physical abuse, increased arguments with a partner, and major financial crisis. Higher scores indicate more numerous events.

Third, we look at stress associated with ongoing problems – that is, chronic stressors that respondents are exposed to in certain domains of their lives. In the NPHS, the following dimensions of chronic stress are gauged: personal problems, financial problems, relationship problems, parental problems, environmental problems, and family-health problems. A respondent answered either true (coded as 1) or false (coded as 0) to each of the items in each index.

Specifically, the following items were included in the Chronic Stress section of the NPHS questionnaire: Personal (You are trying to take on too many things at once; There is too much pressure on you to be like other people; Too much is expected of you by others; Your work around the home is not appreciated; People are too critical of you or what you do); Financial (You don't have enough money to buy the things you need); Relationship (for respondents with a mate only - Your partner doesn't understand you; Your partner doesn't show enough affection; Your partner is not committed enough to your relationship; for respondents without a mate only - You find it is very difficult to find someone compatible with you); Parental (One of your children seems very unhappy; A child's behaviour is a source of serious concern to you); Environmental (Your friends are a bad influence; You would like to move but you cannot; Your neighbourhood or community is too noisy or too polluted); Family-health (You have a parent, a child or

partner who is in very bad health and may die;   Someone in your family has an alcohol or drug problem). Hence, the range of scores for the personal stress index, which includes 5 items, is 0 to 5, with higher composite scores indicating more personal stress. For the other stress indexes, the range is: financial (0 to 1); relationship (0 to 3); parental (0 to 2); environmental (0 to 3); and family-health (0 to 2); again, higher composite scores indicate more stress. Because the parental stress index applies to those with children only, respondents without children are coded as 0 or having no child-related stress.

Finally, since age is a well-known determinant of health in later life, it is also included/controlled for in this study. 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, 70-74= 72).

In terms of dealing with missing cases, various methods were used. First, a dummy variable for the missing cases in the income adequacy measure, which are considerably more common than missing cases in any other variable, was created and used in the analysis. Second, HUI, education, smoking, BMI, and social support index variables also contained (relatively few) missing cases, which were simply replaced by the mean of each variable. Third, the NPHS uses 'proxy' reporting for some variables (i.e., information about all household members is obtained from one knowledgeable household member - usually the person at home at the time of the interviewer visit). However, the stress-related variables are applicable to non-proxy respondents only – questions concerning stress applied to and were answered by the knowledgeable household member only. This resulted in some missing cases on the stress variables; these missing cases were completely excluded from the analysis.

Analysis   To assess gender differences in the impact of SES, lifestyle, and psychosocial factors on health, separate multivariate (ordinary least squares) regression models of health were computed for older men and for older women. Further, gender interaction terms were included in a separate regression model of health for all elderly persons combined to determine significant gender differences in the regression coefficients. In the regression models, age, education, smoking, social support, and all stress-related (i.e., recent life events, personal, financial, relationship, parental, environmental, and family-health stressors) variables are treated as continuous variables. All other independent variables are treated as categorical data, and therefore entered in the analysis as "dummy" variables. The reference categories are: income adequacy, low; BMI, overweight; and living arrangement, living alone.

Limitations   A few issues with the data used here must be acknowledged. First, the NPHS household datafile does not cover older persons residing in institutions, most of whom are 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 old age) may produce a healthier population of elderly men. Second, NPHS data are based on a subject's response to health-related questions. The data, thus, may somewhat misrepresent the actual health problems among Canadians. It is also possible that any observed gender differences in health are to some extent contributable to health-reporting behaviours of men and women (e.g., men and women may differently interpret self-rated health questions). 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.

However, while the NPHS has a longitudinal component that can be used to explore causality, many of the social (namely psychosocial) indicators used here are available in the first wave (1994-1995) of the NPHS only. Furthermore, while it is possible that health status shapes social resources to some extent, we presume, based on previous research, that social forces have a greater causal influence on health. For instance, using panel data from the administrative Canada Pension Plan database, Wolfson et al. [23] find that the relationship between social class position and health is primarily one of social causation (i.e., social position affecting health status), rather than the opposite (i.e., social selection). Based on data from the 20-year Ontario Longitudinal Study of Aging, Hirdes and Forbes [24] also find that social position is causally prior to health. We also acknowledge the importance of using panel data, and are in the process of examining gender inequalities in health from a longitudinal perspective for a second paper. In the end, the data used here are the best available data for this particular study, and interpreted with a high level of confidence.

Results

Bivariate relationships between gender and the socio-economic, lifestyle, psychosocial, and health variables used in this study are described in Table I. There are many significant differences in the social resources of elderly men and elderly women, namely men in general have significantly higher levels of income, education, smoking, marriage, and financial stress (i.e., 22% of men experience financial stress compared to just 17% of women; this relationship between gender and financial stress is also statistically significant at p<.01), while women have significantly higher levels of insufficient weight, social support, and personal stress. Further, elderly men and women

are likely to assess their health in a similar manner, yet there is a significant gender difference in average HUI score (0.84 for men and 0.81 for women, p<.001).

(Table I about here)

The primary research question asks if social factors have a different impact on the health of older men and women. To answer this question, separate multivariate regression models of health for older men and for older women are compared in Table II (self-rated health) and in Table III (HUI). Statistically significant gender differences (i.e., absolute gaps) in the effect of each factor are indicated in the last column of the tables.

Overall, the social production model of health is considerably different when gender is controlled. Looking first at SES coefficients, income adequacy is positively related to health (especially health perception) for older women, even after controlling for all other health determinants in the model. However, income is not a predictor of either measure of health for older men. Conversely, education is more associated with self-rated health and HUI for men compared to 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 subject health assessment of males relative to females, while the opposite occurs for HUI. Second, an acceptable BMI has a significant positive effect on both the subject and functional health of females only.

Psychosocial coefficients are even more dissimilar in magnitude and predictive significance between older men and women. Generally, psychosocial factors are stronger determinants of health for older women. First, social support has a beneficial effect on

health for women only (i.e., as level of social support increases, health improves), yet women who are married/in a common-law relationship or living with others have poorer health relative to unattached women living alone. Second, financial and parental stresses have a significant and negative effect on health for elderly women only, and the negative relationship between personal stress and health is much stronger for women than it is for men. 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 also larger for males.

Age is used in this analysis to control for its effect on health. However, it is worth noting that there are differential patterns in the influence of age on health. There is a steadier decline in functional health with age for women compared to men (-0.006, p<.001 opposed to -0.004, p<.001, respectively). Additionally, "younger" elderly women are significantly more likely to express better subjective health than "older" elderly women; by contrast, there is little difference by age in how men rate their health - -0.022 (p<. 001) for women and -0.003 (p>.10) for men.

Discussion

Gender-based inequalities in health in later-life are well documented. This paper shows that elderly women have poorer functional health compared to elderly men, while other research consistently finds that they are also more likely to experience chronic health conditions, distress, and so on. Gender differences in the exposure to social resources play a significant role in fostering these inequalities. However, the gender gap

in health is additionally influenced by differential vulnerabilities to social forces between men and women.

By focusing on gender differences in the effect of social factors on health, we shed light on the process of successful aging for men and women. First, the data show the importance of financial resources for health maintenance among women (i.e., income adequacy and financial stress are more important determinants of health for women). Pension policy reform that increases government transfers to older persons may well reduce the incidence of morbidity and disability in later life, helping to ease health-care demand and expenditures in light of an aging population.

An important gender difference observed in lifestyle factors is that acceptable body weight has a greater positive health effect for elderly women. Additionally, daily smoking has a larger adverse effect on physical health for older women. Hence, good nutrition, special dieting, and not smoking are especially important for healthy aging among women.

In terms of psychosocial determinants of health, it is generally assumed that social support has a positive influence on health in later life, since a person with social support has someone to confide in, get advice from, and depend on. However, the data show that it has a positive effect on health for elderly females only. Paradoxically, unattached women living alone have better health compared to their counterparts. This may, in part, reflect the domestic and family-related burdens placed on many married women. Stress' negative effect on health is also generally stronger for older women compared to older men. A possible explanation for this finding may be differences in the way men and women react and handle stress-related problems.

In conclusion, this study not only reveals the importance of considering social resources in improving the health of older Canadians, but in the need for health-care planners to consider the varied effects of social forces by gender in designing and implementing health policies, such as health and well-being promotion. The findings also suggest that more research is needed on gender-based inequalities in health in later life. For example, investigation is required to explain why older women are as likely as older men to have a positive perception of their health, yet experience higher rates of morbidity and disability as reflected in lower HUI scores. Further research is also needed to identify other factors, social and biological, affecting the health of older men and women.

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

Study Variables	Men	Women
Socio-economic		
Income Adequacy****		
low	4.5%	7.8%
low-middle	14.1	22.2
middle	41.6	39.5
upper-middle	27.3	20.8
high	7.2	4.8
missing	5.3	4.9
Years of Education****	11.5	11.0
Lifestyle		
Smoking****	28.6	13.0
BMI****		
insufficient weight	4.6%	9.7%
acceptable weight	39.8	43.0
slightly overweight	22.8	14.9
overweight	32.9	32.0
Psychosocial		
Living Arrangement****		
married/common-law	63.8%	40.6%
alone	21.2	43.5
other	15.0	15.9
Social Support***	3.5	3.6
Personal Stress****	0.48	0.61
Financial Stress***	0.22	0.17
Relationship Stress	0.23	0.25
Parental Stress	0.36	0.37
Environmental Stress	0.19	0.17
Family health Stress	0.17	0.16
RLE Stress	0.20	0.19
Health		
Self-rated Health	2.21	2.23
HUI****	0.84	0.81
[Age**]**	[72.3]	[73.2]
n	**1,131**	**1,841**

*p<.10, **p<.05, ***p<.01, ****p<.001.
Percentages may not sum to 100% due to rounding.

Table II
Metric coefficients for OLS regression of Self-rated Health on Socio-economic, Lifestyle, and Psychosocial factors, by Sex

Independent Variables	Men		Women		Gender Gap
Socio-economic					
Income Adequacy					
low-middle	-0.32886*	(.187)	0.02111	(.119)	
middle	-0.23823	(.175)	0.19926*	(.116)	**
upper-middle	-0.13970	(.181)	0.48158****	(.130)	***
high	-0.02357	(.218)	0.44991***	(.176)	*
missing	-0.39426*	(.226)	-0.06513	(.166)	
Education	0.05059****	(.013)	0.02695**	(.011)	*
Lifestyle					
Smoking	-0.00673****	(.002)	-0.00394***	(.001)	
BMI					
insufficient	0.04155	(.178)	0.06824	(.107)	
acceptable	-0.01100	(.083)	0.15972**	(.067)	*
slightly over	0.23108**	(.095)	-0.02353	(.090)	**
Psychosocial					
Living Arrangement					
married/common-law	-0.04845	(.095)	-0.29283****	(.072)	**
other	-0.09874	(.122)	-0.18936**	(.090)	
Social Support	-0.07054	(.044)	0.08862**	(.040)	***
Personal Stress	0.00485	(.043)	-0.11330****	(.032)	**
Financial Stress	0.11833	(.089)	-0.25636***	(.081)	***
Relationship Stress	-0.07435	(.062)	-0.02172	(.057)	
Parental Stress	0.02696	(.058)	-0.08915**	(.046)	*
Environmental Stress	-0.28450****	(.077)	-0.13706**	(.069)	
Family health Stress	-0.09360	(.089)	0.09857	(.078)	*
RLE Stressors	-0.213642***	(.073)	-0.01080	(.064)	**
[Age]	-0.0034	(.007)	-0.02273****	(.006)	**
R^2	**0.105**		**0.113**		
Constant	**2.618**		**3.357**		
n	**1,131**		**1,841**		

*$p<.10$, **$p<.05$, ***$p<.01$, ****$p<.001$.
Standard Errors are in Brackets

TABLE III

Metric coefficients for OLS regression of HUI on Socio-economic, Lifestyle, and Psychosocial factors, by Sex

Independent Variables	Men		Women		Gender Gap
Socio-economic					
Income Adequacy					
low-middle	-0.01727	(.028)	-0.01400	(.019)	
middle	-0.01280	(.026)	0.02826*	(.018)	
upper-middle	-0.01431	(.027)	0.02972*	(.020)	
high	0.00695	(.032)	0.01787	(.028)	
missing	-0.04444	(.033)	-0.01900	(.026)	
Education	0.00279*	(.002)	0.00149	(.002)	
Lifestyle					
Smoking	-0.00048**	(.001)	-0.00065***	(.001)	
BMI					
insufficient	0.01911	(.026)	0.01743	(.017)	
acceptable	-0.00246	(.012)	0.02134**	(.011)	
slightly over	0.01033	(.014)	0.00339	(.014)	
Psychosocial					
Living Arrangement					
married/common-law	-0.00345	(.014)	-0.03417***	(.011)	*
other	0.00795	(.018)	-0.02496*	(.014)	
Social Support	0.00223	(.006)	0.01715***	(.006)	*
Personal Stress	-0.01122*	(.006)	-0.01224**	(.005)	
Financial Stress	0.00266	(.013)	-0.04431****	(.013)	**
Relationship Stress	-0.02774***	(.009)	-0.01086	(.009)	
Parental Stress	0.00204	(.009)	-0.00970	(.007)	
Environmental Stress	-0.03333***	(.011)	-0.02925***	(.011)	
Family health Stress	0.01470	(.013)	-0.00838	(.012)	
RLE Stressors	-0.02411**	(.011)	-0.01815*	(.010)	
[Age]	-0.00427****	(.001)	-0.00630****	(.001)	*
R²	**0.085**		**0.112**		
Constant	**1.157**		**1.237**		
n	**1,131**		**1,841**		

*p<.10, **p<.05, ***p<.01, ****p<.001.
Standard Errors are in Brackets

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