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# Health behaviours and health: evidence that the relationship is not conditional on income adequacy<sup>☆</sup>

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## Abstract

This study used Canadian data to examine whether the relationships between two health behaviours (physical activity and smoking) and two measures of health (self-perceived health status and number of chronic health conditions) are conditional on income adequacy. Studies that have investigated the manner in which socioeconomic circumstances, such as income adequacy, and health behaviours interact to influence health are few in number and characterized by inconsistent findings. In addition, there is a complete absence of published Canadian research that has explored these relationships. I investigated the relationship between health behaviours and health by income adequacy with a secondary analysis of data from the first cycle of the National Population Health Survey (NPHS), conducted by Statistics Canada in 1994-95. The sample consisted of 11,941 NPHS respondents 20–64 years of age who did not have an illness or disability that prevented them from being employed. As a whole, findings from a series of hierarchical multiple regression analyses did not provide adequate evidence to conclude that the effects of physical activity and smoking on self-perceived health status and chronic health conditions are conditional on income adequacy. Instead, findings showed that the health behaviours each had a similar degree of influence on the self-perceived health status and number of chronic health conditions of respondents at all income adequacy levels. Moreover, the magnitude of the relationships between the health behaviours and health measures was very small. By enhancing knowledge about both the nature and magnitude of the relationships among Canadians' income adequacy, health behaviours, and health, this study makes a significant contribution to the small body of research that has explored the possibility that the relationship between health behaviours and health varies by socioeconomic circumstances. I conclude the paper with a discussion of the implications that the findings have for public health policies and programs. © 2000 Elsevier Science Ltd. All rights reserved.

*Keywords:* Income adequacy; Health behaviours; Health; Poverty

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## Introduction

This study investigated the interaction effect of income adequacy and health behaviours upon the health of Canadians. Its impetus is rooted in some of the findings from a previous study in which I examined the relationships among poverty status,<sup>1</sup> health behaviours, and health. As part of the previous study, I explored the relationships that both health promoting and health damaging behaviours have with the health of people living in working poor families and those living in families receiving social assistance. Findings from multivariate analyses indicated that, for the most part, there was no statistical association between the health of study participants and either health promoting behaviours (exercise, home dental care, sleep, preventative dental care, and preventative medical care) or health damaging behaviours (smoking and alcohol consumption) (Williamson, 1995).

These findings differed substantially from what has become conventional wisdom about the role that individual health behaviours play in the determination of health. Results from numerous studies conducted during the past two decades have shown consistently that health is positively associated with behaviours such as physical and recreational activities, optimal body weight for height, and preventative medical examinations (Adams, 1993; Belloc, 1973; Belloc &

Breslow, 1972; Blair, 1993; Blair, Kohl, Gordon & Paffenbarger, 1992; Kooiker & Christiansen, 1995; Mackenbach, Van Den Bos, Joung, Van De Mheen & Stranks, 1994; Segovia, Bartlett & Edwards, 1989; Stephens, 1986, 1993). As well, results have shown that health is negatively associated with behaviours such as smoking (Adams, 1993; Belloc, 1973; Belloc & Breslow, 1972; Kooiker & Christiansen, 1995; Mackenbach et al., 1994; Pederson, 1993; Stephens, 1986). The studies from which these findings were obtained utilized an assortment of health indicators, research designs, and statistical analyses. Indeed, it is curious that the findings from my study about poverty status, health behaviours, and health did not coincide with other findings about the influence that health behaviours have on health. Why is it that health promoting and health damaging behaviours did not play a role in the health of people living in two groups of poor families?

One explanation is suggested by the findings from a large study by Blaxter (1990), in which data from the 1984/85 British Health and Lifestyle Survey were used to explore the relationships between health behaviours and health by socioeconomic circumstances. Blaxter's (1990) principle discovery was that both health promoting and health damaging behaviours had the greatest impact on the health of respondents with the most favourable socioeconomic circumstances, and relatively less influence on the health of respondents with less favourable circumstances. These results suggest that the findings from my study about poverty status, health behaviours, and health may not have coincided with other research results about the influence that health behaviours have on health because health behaviours have less of an influence on the health of people living in poverty<sup>2</sup> than on the health of those who have adequate incomes. In other words, the relationship between individual health behaviours and health may be conditional on income adequacy. This explanation suggests that since all of the participants in my study were living in poverty, the effect that their health behaviours had on their health may have been too small to be demonstrated by the statistical analyses that I employed.

However, the results from other studies that have explored the manner in which health is influenced by the interaction of socioeconomic circumstances and health behaviours (Davey Smith & Shipley, 1991; Kooiker & Christiansen, 1995; Marmot, 1986; Marmot, Shipley & Rose, 1984) have not been consistent with the findings from Blaxter's (1990) study. Davey Smith and Shipley (1991), Marmot (1986), and Marmot et al. (1984) analysed data from the Whitehall Study and found that age standardized 10-year mortality rates from all causes and from both coronary heart disease and lung cancer among civil

<sup>1</sup> For this study, poverty status indicated whether poor families were receiving social assistance or whether they were working poor. In Canada, these two groups of poor families differ with respect to their source of income and their eligibility for in-kind benefits. Working poor families receive the majority of their total income from family members who are employed. Families receiving social assistance obtain the majority of their income from government sources. In Alberta, the province in which the study was conducted, most families receiving social assistance also are eligible for a variety of in-kind benefits, including comprehensive health care (Alberta Family and Social Services, 1994). Comprehensive health care benefits allow for the provision of services beyond those provided by Alberta Health Care, which provides physician and hospital services. Alberta Health Care does not provide dental care or prescription medications. Examples of comprehensive health care benefits include a wide range of medications, coverage for eye glasses, and dental benefits. Most working poor families do not have access to these types of comprehensive health care benefits (Family Service Association of Edmonton & Income Security Action Committee, 1991; Williamson & Fast, 1993).

<sup>2</sup> Poverty is conceptualized here as the relative deprivation of income that is necessary to meet basic needs and a standard of living that is consistent with the norms of the society within which one lives (Reitsma-Street & Townsend, 1996; Ross, Shillington & Lochhead, 1994).

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