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Original Research

The longitudinal effects of neighbourhood social and material deprivation change on psychological distress in urban, community-dwelling Canadian adults

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ABSTRACT

Objective: The purpose of this study was to assess how longitudinal changes in neighbourhood material and social deprivation affect distress outcomes in adult Canadians.

Study design: This study used a prospective cohort approach.

Methods: We paired data from 2745 urban participants of Canada's National Population Health Survey—who completed the Kessler 6-Item psychological distress screening tool at baseline and follow-up—with neighbourhood social and material deprivation data from the census-based Pampalon Deprivation Index. Data were paired using participants' postal code. We conducted multiple linear regression models, which were stratified by baseline deprivation level and controlled for key confounders.

Results: Most participants lived in neighbourhoods that did not change drastically in social or material deprivation level during the six years between baseline and follow-up. We found that a worsening of material settings was significantly associated with worsening distress scores at follow-up. This finding is discussed in the context of existing literature, and made relevant for urban health research and policy.

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Introduction

Neighbourhood social, economic, and physical environments impact the mental health of their residents.^{1,2} Neighbourhoods are areas of chronic exposure to both socio-economic stressors and protective social ties.³ They can therefore impact affective symptomatology.⁴ Several systematic literature reviews and longitudinal studies have observed an association between neighbourhood-level measures, such as neighbourhood income, social capital, and social disorder, and prospective mental health outcomes such as depressive and distress symptoms in urban-dwelling adults.^{1,2,5–7} However, a limitation of neighbourhood mental health literature is that neighbourhood social and economic exposures have mostly been measured cross-sectionally. It is therefore unclear whether changes in neighbourhood environments impact the mental health outcome of residents over time.

Certain forms of neighbourhood change can occur due to planned public health, urban planning, or political interventions, while others are naturally-occurring. For example, several studies have examined the effects of neighbourhood renewal and regeneration projects designed to improve the mental or physical health outcomes of residents, as well as the social and aesthetic qualities of living environments.^{8–16} Their results are mixed, but most report that an improvement of the social, material, and economic environments of neighbourhoods are associated with bettered outcomes of psychological well-being.

In this study we are interested in naturally-occurring, population-level neighbourhood change, given that these are the changes most likely to affect general urban populations. To our knowledge only two studies have examined the longitudinal mental health effects of unplanned, naturally-occurring material, social, and economic changes at the neighbourhood level.^{17,18} One of these studies is a qualitative evaluation of the psychological impact of economic gentrification in working-class neighbourhoods of Montreal, Canada.¹⁷ The second study tested associations between fluctuations in perceived neighbourhood disorder and affective health.¹⁸ Both studies observed an association between neighbourhood change and worsening psychological well-being. When neighbourhood circumstances worsened (i.e. through an increase in disorder) or when the social networks of neighbourhoods were modified (i.e. through an influx of new residents, and a modification of social spaces), residents reported higher levels of distress.^{17,18}

The overall paucity of quantitative analysis on the subject of neighbourhood change and mental health is alarming in the Canadian context, given contemporary trends in neighbourhood transformation. In the past 20 years, researchers have noted that the social and economic inequalities in Canadian cities are becoming more apparent.¹⁹ It is therefore important to examine how changes in the socio-economic contexts of neighbourhoods impact the mental and physical health of Canadians. It is our intention with this study to assess the psychological effects of changes in neighbourhood social and material deprivation, by achieving the following goals: (1) describing types of neighbourhood change experienced by urban-dwelling Canadians between 2001 and 2006,

and (2) comparing the psychological distress outcomes of people living in neighbourhoods that have become better or worse—materially and socially—over time.

Methods

Sample

Data used in this study were drawn from the 4th and 7th waves (years 2000 and 2006, respectively) of the Canadian National Population Health Survey (NPHS), a longitudinal survey of a nationally-representative sample of Canadians (which has been described elsewhere²⁰). Ethics and study design for the NPHS study was originally approved by Statistics Canada. The sample of this study is restricted to urban²¹ community-dwelling, non-institutionalized adult participants (aged 18 years and above at baseline) from the NPHS who had not changed neighbourhood of residence between 2000 (Time 1) and 2006 (Time 2) ($n = 2745$). We excluded rural respondents ($n = 2522$) in order to improve the comparability of our findings to other studies conducted in urban settings, and to ensure internal validity.²² Furthermore, we chose to focus solely on non-movers in order to explicitly study the effects of neighbourhood change as experienced by the long-term residents of these neighbourhoods. We wanted to answer the question: how does it feel to live in a neighbourhood that is changing? This distinguishes our study from studies of mobility that have measured the effect of moving in or out of neighbourhoods with high or low deprivation. Compared to the non-movers, movers who were excluded from the sample ($n = 3198$) tended to be younger, single, divorced, or widowed, be of non-Caucasian race, have not completed a postsecondary education, have lower levels of income adequacy, and report higher distress scores at baseline (Supplementary Table A). We also excluded respondents who were institutionalized ($n = 20$), died ($n = 910$), did not respond to the questionnaire at either time point ($n = 1376$), or did not provide information on distress scores at follow-up ($n = 342$). The timeframe was restricted to the years 2000 and 2006 because information on neighbourhood deprivation from census data was only available at those times.²³

Measures

Mental health measure: psychological distress

Psychological distress is measured at baseline and follow-up. Psychological distress is measured using the Kessler 6-item Psychological Distress Scale, which encompasses an evaluation of both anxiety and depression symptoms.²⁴ Participants were asked, in relation to 30 days preceding the interview, how often they felt nervous, felt everything was an effort, felt so depressed that nothing could cheer them up, felt restless or fidgety, and felt hopeless. They answered with one of five responses: all, most, some, a little, or none of the time. Participants received scores ranging between 0 and 24, with the latter representing the highest level of psychological distress. Distress scores are used as continuous measures, which has been done previously.²⁵ However, to account for highly positively skewed baseline and follow-up scores, both of the latter

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