



Health of mothers of young children in Canada: identifying dimensions of inequality based on socio-economic position, partnership status, race, and region

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Abstract

Objectives Little is known about the nature of health inequalities present among women who are mothers of young children in Canada. Therefore, the purpose of the study is to identify dimensions of inequalities based on socio-economic position, race, partner status, and region and determine whether each type of inequality is independent of another.

Methods Data are from the 2014 Canadian Community Health Survey. Women identifying as a parent living with a child ≤ 5 years, with complete data on the variables of interest, were selected ($n = 2656$). Poor health was defined as the presence of two or more chronic conditions. Exposures included partner status, education level, race, income, and region (Québec vs. rest of Canada). Logistic regression was used to estimate the odds of poor health according to each exposure unadjusted and adjusted for all other exposures. All analyses controlled for age and employment status.

Results In the fully adjusted model, among mothers of young children, the odds of poor health were significantly higher among non-white identifying (OR = 1.72; 95% CI = 1.34–2.21) and lone mothers (OR = 1.80; 95% CI = 1.35–2.39), but were significantly lower among those with higher incomes (OR[per decile] = 0.86; 95% CI = 0.82–0.90) and those from Québec (vs. the rest of Canada; OR = 0.50; 95% CI = 0.38–0.67).

Conclusions Living in Québec compared to elsewhere in Canada appears to protect against poor health among mothers of young children. Regardless of region, health inequalities exist by socio-economic position, race, and partnership status. These findings have implications for public health programs and policies, such as universal child care.

Résumé

Objectifs On en sait peu sur la nature des inégalités de santé présentes chez les mères de jeunes enfants au Canada. C'est pourquoi nous avons cherché à définir les formes d'inégalité fondées sur le statut socioéconomique, la race, l'état matrimonial ou civil et la région, et à déterminer si chaque forme d'inégalité est indépendante des autres.

Méthode Nos données proviennent de l'Enquête sur la santé dans les collectivités canadiennes de 2014. Nous avons sélectionné les femmes qui s'identifiaient comme étant mères d'un enfant ≤ 5 ans et pour lesquelles il existait des données complètes sur les variables qui nous intéressaient ($n = 2656$). La mauvaise santé était définie comme la présence de deux états chroniques ou plus. Les expositions étaient l'état matrimonial ou civil, le niveau d'instruction, la race, le revenu et la région (Québec et reste du Canada). Nous avons estimé par régression logistique la probabilité d'une mauvaise santé selon chaque exposition, ajustée et non ajustée selon toutes les autres expositions. Toutes les analyses ont tenu compte de l'âge et de la situation d'emploi.

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Résultats Selon le modèle entièrement ajusté, chez les mères de jeunes enfants, la probabilité d'une mauvaise santé était sensiblement plus élevée chez les femmes s'identifiant comme étant de race autre que blanche (RC = 1,72; IC de 95% = 1,34–2,21) et chez les mères de familles monoparentales (RC = 1,80; IC de 95% = 1,35–2,39), mais elle était sensiblement plus faible chez les femmes ayant un revenu élevé (RC[par décile] = 0,86; IC de 95% = 0,82–0,90) et chez les Québécoises (par rapport aux femmes du reste du Canada; RC = 0,50; IC de 95% = 0,38–0,67).

Conclusions Vivre au Québec et non ailleurs au Canada semble être un facteur de protection contre la mauvaise santé chez les mères de jeunes enfants. Sans égard à la région, les inégalités de santé se manifestent selon le statut socioéconomique, la race et l'état matrimonial ou civil. Ces constatations ont des conséquences pour les programmes et les politiques de santé publique comme les régimes universels de garde d'enfants.

Keywords Québec · Maternal health · Lone mothers · Education level · Income · Social policy

Mots-clés Québec · Santé maternelle · Mères de familles monoparentales · Niveau d'instruction · Revenu · Politique sociale

Introduction

Research on the health of mothers has tended to focus only on the early postpartum period. This combined with the prominence of the biomedical perspective has, until more recently, precluded analysis of maternal health through a structural lens that illuminates the social, material, and economic pathways through which mothers of young children are made vulnerable to health risks (Onarheim et al. 2016), risks that extend well beyond the first year postpartum.

Stress, excessive workloads, and economic strain (Parkes et al. 2015; Sperlich and Geyer 2015; van Veldhoven and Beijer 2012) are among the potential precursors (or intensifiers) of poor health experienced by mothers of young children on almost a daily basis. Not all mothers, however, are equally vulnerable to such insalubrious effects of caregiving (Parkes et al. 2015; Sperlich and Geyer 2015). As it has been well recorded in Canada and elsewhere (Van de Velde et al. 2014; Witvliet et al. 2014), lone mothers have poorer health than their partnered peers (Colton et al. 2015; Gucciardi et al. 2004). While this relationship is often explained through the mechanism of poverty (Van de Velde et al. 2014; Gucciardi et al. 2004; Curtis and Phipps 2004), other factors, such as time stress (Colton et al. 2015) and welfare state generosity (Van de Velde et al. 2014; Curtis and Phipps 2004; Burstrom et al. 2010) may be equally relevant. Socio-economic position (SEP), measured by education and income levels, has been positively associated with health among mothers of young children in the USA (Link et al. 2017; Shippee et al. 2015) and among European countries (Brennenstuhl et al. 2015). While socio-economic inequalities in birth outcomes and early postpartum health indicators have been identified in Canada (Daoud et al. 2015), how these inequalities play out for women's health in the years following giving birth appears to be largely unknown. Also unclear is the relationship between race and health of mothers of young children in Canada, despite evidence from the USA citing strong racial

inequalities in health among these women, which are not entirely explained by SEP (Link et al. 2017; Shippee et al. 2015).

As early motherhood is a particularly vulnerable life stage, most high-income countries have established some degree of welfare state protection for women, in the form of maternity leaves, parental leaves and/or subsidized forms of childcare (Gornick and Meyers 2003). There is some evidence that more generous social policy contexts are associated with better health among women overall (Borrell et al. 2014) and among lone mothers in particular (Van de Velde et al. 2014; Burstrom et al. 2010). Canada is considered among “Liberal” welfare states, which are known for promoting mostly market-based (private) care options and providing minimal caregiving leave supports (Gornick and Meyers 2003). However, since 1997, the province of Québec has diverged from the rest of Canada by implementing universal, government-subsidized daycare, with costs ranging from \$7 to \$20 per day (compared to almost \$90/day in some regions) (Macdonald and Friendly 2016). Also, since 2006, Québec has offered a stand-alone, parental leave program that provides more comprehensive and generous benefits than other Canadian provinces (Labour Standards in Québec 2016). Due to the unique nature of the social policies relating to being a mother of a young child in Québec, its comparison with other regions of Canada may be particularly informative.

The magnitude and type of health inequalities that exist among mothers of young children in Canada is largely unknown, with research being piecemeal and tending to focus on the immediate postpartum period. The purpose of this study, therefore, is to identify dimensions of inequalities in health among mothers of young children in Canada based on SEP, race, partner status, and region and determine whether they are independent of one another. It was hypothesized that being single, identifying as a person of colour, and/or having a low education level will be risk factors for poor health among mothers of young children, while higher income and living in Québec, a proxy for welfare state generosity, will protect against poor health. As health inequalities are known to be

reproduced across generations (Link et al. 2017; Shippee et al. 2015), a better understanding of how mothers of young children fare in Canada may help prevent this transmission and improve public health and, in particular, the well-being of women in the prime of their lives.

Methods

Sample

Data were derived from the public use version of the 2014 Canadian Community Health Survey (CCHS). The CCHS is a cross-sectional survey designed to address health status, health care utilization, and health determinants of the Canadian population aged 12 years and older and can provide reliable estimates at the health region level (Statistics Canada 2015). A multistage stratified cluster design was used to sample from the population, with the dwelling as the final sampling unit. Less than 3% of the population was excluded from the sampling frame. Data were collected using Computer-Assisted Interviewing either over the telephone (60%) or in person (40%). Of the selected units, 97,467 were in-scope for the survey, of which 73,190 households agreed to participate in the survey, resulting in an overall household-level response rate of 75.1%. One individual was selected from each responding household, and a response was obtained for 63,964 individuals, resulting in an overall person-level response rate of 87.4%. At the national level, these figures yield a combined response rate of 65.6%. For more details of the sample design, data collection, and data quality, see Statistics Canada documentation (Statistics Canada 2015).

For the current study, the sample was restricted to women living in a household with a child aged 5 or under ($n = 3611$). Those who did not identify as a parent living with a child(ren) were excluded ($n = 677$), as were those under the age of 20 or over the age of 50 ($n = 17$), resulting in a final sample of 2917. Further, those with missing data on one or more of the variables of interest were removed ($n = 261$; 8.9% of sample), resulting in a final sample size of $n = 2656$. All data were weighted using person-level weights as directed by Statistics Canada (Statistics Canada 2015). Sample size is reported in its unweighted form.

The primary outcome was poor health, defined as presence of two or more current chronic conditions. Multimorbidity is linked with increased health care use, including hospitalization, and when experienced at a younger age, may indicate increased vulnerability to poorer outcomes (Gruneir et al. 2016), making it a potentially useful indicator of poor health in younger samples. Chronic conditions included asthma, arthritis, back problems, high blood pressure, migraines, lung disease (e.g., COPD, chronic bronchitis), diabetes, heart disease, cancer, ulcers, stroke, bowel disorders (e.g., Crohn's

Disease, irritable bowel syndrome), depression, or anxiety. Respondents were asked to say yes to any “long-term conditions” they had which are “expected to last or have already lasted 6 months or more and that have been diagnosed by a health professional”.

Potential dimensions of inequalities included education level (coded as \leq high school or $>$ high school), race (white or non-white), income level (in deciles, missing data were imputed by Statistics Canada), and partnership status (married/common law or single/divorced/widowed) and the proxy for welfare state generosity: region (Québec or rest of Canada). Control variables included age (in 5-year age categories), and employment status in the last 12 months (employed or not employed).

Descriptive statistics were used to summarize the demographic characteristics of the sample, and included frequency counts and percentages and means and standard deviations for categorical and continuous variables, respectively. Multiple logistic regression was used to estimate the odds ratio of poor health according to each type of inequality being investigated. Two models were tested for each type of inequality: in the first model, the odds of poor health were calculated adjusted for age and employment status only. Increasing age is associated with poorer health status, as well as changes in the magnitude of health inequalities (Sacker et al. 2005). Non-employment is more common among mothers of young children, and varies by region, partner status, and race (Moser 2017; Chui and Maheux 2011), and, therefore, may help account for the health inequalities being tested. In the second model, the odds were additionally adjusted for SEP, as it has been shown to help explain the association between each of race (Link et al. 2017; Shippee et al. 2015) and partner status (Van de Velde et al. 2014; Gucciardi et al. 2004; Curtis and Phipps 2004) and health among mothers of young children. In the final model, the odds were adjusted for age, employment status, SEP, and all other types of inequality to determine whether each form of inequality was independent of each another. In total, ten models were tested separately for each type of inequality, plus one fully adjusted model including all inequalities simultaneously. Statistical significance was established at $p < 0.05$. The analysis was undertaken using SPSS (version 24).

To validate the findings, a number of sensitivity analyses were undertaken. First, the robustness of the definition of poor health as the presence of two or more chronic conditions was tested by respecifying the outcome as (a) one or more chronic conditions and (b) total number of chronic conditions, and re-running the analysis to ensure a similar pattern of findings was observed. Second, to further investigate the proxy for welfare state generosity (comparing the region of Québec vs. the rest of Canada), region was broken down into smaller units, including each of the three big provinces of Ontario, Alberta and British Columbia, the Eastern provinces together and the Prairie provinces together (combined due to smaller population sizes). This was done to determine if the hypothesized

protective effect of living in Québec was also found when comparing it to each region separately. It is possible that variation across regions would wash out an overall difference with Québec or, due to a strong difference with a large province, exaggerate the magnitude of the relationship. Last, to validate the selection of mothers, the analysis was rerun including only women who had given birth in the last 5 years and comparing the results with those of the primary analysis. The question on giving birth, however, was only asked in eight provinces/territories (including Québec), resulting in a less representative and smaller sample size ($n = 1923$, see Statistics Canada documentation for details).

Results

A total of 2656 mothers of young children were included in the sample. The largest proportion of mothers was age 30 to 34 years (31.0%) and just under a third identified as being part of a racial group other than “white” (28.5%). More than three quarters of mothers were living as married or common law (87.7%) and had more than a high school diploma (82.1%). The mean income decile was 5.29 ($sd = 2.8$). Less than a third of the sample were not working in the year prior to the survey (30.7%). A full description of the sample is found in Table 1. In total, 484 mothers were coded as having poor health due to the fact that they reported having two or more chronic conditions, resulting in a weighted prevalence of 17.8% (95% CI = 16.4–19.3).

Table 2 provides the results of the logistic regression models of the presence of two or more chronic conditions. The first row presents the estimates from the models adjusted for age and employment status only. As shown, every dimension of inequality is significantly related to the odds of poorer health among mothers of young children. Among the binary risk factors, the magnitude of increased odds is greatest for being single (OR = 2.82; 95% CI = 2.17–3.65). As for protective factors, for every increase in income decile, the odds of poorer health decreases by about 18% (OR = 0.85; 95% CI = 0.82–0.89); living in Québec is associated with two times lower odds of poorer health (OR = 0.50; 95% CI = 0.38–0.67).

The second row of Table 2 presents the estimates from the models adjusting for age, employment status, and SEP. Including SEP in the model attenuates the odds of poor health for all dimensions of inequality excluding race, for which the odds of poor health increase to 1.77 (95% CI = 1.37–2.25). The largest attenuation is observed for single status, whereby the increased odds of poorer health decline by about 26% (OR = 2.07; 95% CI = 1.37–2.25). Notable attenuation is also noted for education level, which is reduced to a non-significant OR of 1.29 (95% CI = 0.99–1.68). Very little or no attenuation is noted for the protective factors of higher income and living in Québec.

Table 1 Characteristics of mothers of young children in Canada ($n = 2656$)

	<i>N</i> (%)
Age	
20–24	137 (5.7)
25–29	570 (21.2)
30–34	841 (31.0)
35–39	761 (28.4)
40–44	305 (12.1)
45–49	42 (1.6)
Race	
Non-white identity	553 (28.5)
White identity	2103 (71.5)
Current partner status	
Married/common law	2278 (87.7)
Single	378 (12.3)
Education level	
Low (\leq high school)	552 (17.9)
High ($>$ high school)	2104 (82.1)
Region	
Québec	557 (24.0)
Other parts of Canada	2099 (76.0)
Income (mean decile, SD)	5.29 (2.82)
Employment status (last 12 months)	
Employed	1873 (69.3)
Not employed	783 (30.7)

Sample sizes are unweighted; means and percentages are weighted according to Statistics Canada guidelines

The third row of Table 2 presents the fully adjusted estimates from the models of presence of two or more chronic conditions. Full adjustment includes age, employment status, SEP, and each other dimension of inequality. Four of the five dimensions of inequality remain significant when all other variables are considered: single status (OR = 1.80; 95% CI = 1.35–2.39); non-white race (OR = 1.72; 95% CI = 1.34–1.21), income (OR [each decile] = 0.86; 95% CI = 0.82–0.90), and living in Québec (OR = 0.50; 95% CI = 0.38–0.67).

Several sensitivity analyses were undertaken to validate the findings. First, the outcome measure was re-specified using the threshold of one or more chronic conditions. The results of this analysis are highly consistent with the primary analysis; however, the odds ratios are slightly smaller on average. The outcome was also re-specified as number of chronic conditions. Once again, the results are consistent: four out of the five dimensions of inequality are significant in the fully adjusted model. These two sensitivity analyses are provided in a [supplementary file](#).

Second, smaller regional units were investigated to determine if the protective effect of living in Québec was maintained when compared to all other regions of Canada tested

Table 2 Adjusted odds ratios of presence of two or more chronic conditions among mothers of young children in Canada (*n* = 2656) for each dimension of inequality separately

	Low education		Single		Non-white race		Income (in deciles)		Live in Quebec	
	OR (95% CI)	<i>p</i> value	OR (95% CI)	<i>p</i> value	OR (95% CI)	<i>p</i> value	OR (95% CI)	<i>p</i> value	OR (95% CI)	<i>p</i> value
Model 1: adjusted for age and employment status only	1.56 (1.21–2.03)	< .001	2.82 (2.17–3.65)	< .001	1.37 (1.08–1.74)	.009	.85 (.82–.89)	< .001	.50 (.38–.66)	< .001
Model 2: adjusted for age, employment status and SEP ^a	1.29 (.99–1.68)	.059	2.07 (1.37–2.25)	< .001	1.76 (1.37–2.25)	< .001	.86 (.82–.89)	< .001	.50 (.38–.67)	< .001
Model 3: adjusted for age, employment status, SEP ^a and all other inequalities	1.13 (0.86–1.48)	.388	1.80 (1.35–2.39)	< .001	1.72 (1.34–2.21)	< .001	.86 (.82–.90)	< .001	.50 (.38–.67)	< .001

Sample sizes are unweighted; model estimates are weighted according to Statistics Canada guidelines

^a Adjusted for education level and income decile; for low education, adjusted for income decile only and for income decile, adjusted for low education only
OR odds ratio; CI confidence interval

separately. As shown in Table 3, the odds of poor health among mothers of young children are significantly higher in all regions tested compared to Québec. The ORs from the fully adjusted model range from about two times as large in the Eastern provinces (OR = 2.09 95% CI = 1.33–3.29) and British Columbia (OR = 2.20; 95% CI = 1.47–3.29) to over 80% higher in Alberta (OR = 1.86; 95% CI = 1.28–2.69).

Finally, the analysis was rerun using only women who had given birth in the last 5 years with complete data on the all the variables of inquiry (*n* = 1923). As shown in Table 4, the results are highly consistent with those presented from the primary analysis: four out of the five dimensions of inequality are associated with poor health in all models tested.

Discussion

There is a lack of research on the structural factors that influence the health of women in Canada during the period they are mothers of young children. This current research attempts to provide some illumination on this topic by revealing that, on one hand, women who are mothers of young children are not immune to health inequalities and, indeed, seem to be clearly differentiated by race, SEP and partner status. On the other hand, mothers living in regions providing more generous social policy contexts (i.e., Québec) appear to be protected from poorer health, providing preliminary evidence that social policies, such as universal access to affordable daycare and generous parental leaves, may help to mitigate the health risks precipitated by maternal caregiving.

This is the first study that I am aware of to demonstrate differences in the health of women who are mothers of young children by regions of Canada. There is a solid evidence base suggesting that welfare state generosity is related to better health status (Brennenstuhl et al. 2012), but despite the socio-economic vulnerabilities associated with motherhood, only a few of such studies have focused on the health of mothers in particular (Van de Velde et al. 2014; Burstrom et al. 2010; Brennenstuhl et al. 2015). The finding that mothers in Québec have lower odds of poor health than those in the rest of Canada, while preliminary, is consistent with this small literature in showing health variation by welfare regime. Interestingly, all of the dimensions of inequality (i.e., SEP, race, and partnership status) remained significant when region was included in the model, suggesting that while region (the proxy for welfare state generosity) may relate to overall health status, it does not necessarily account for health inequalities. This finding is consistent with the extant literature, which shows that the magnitude of health inequalities does not always correlate with welfare state generosity (Brennenstuhl et al. 2012). This oft-named “paradox” may be explained by social selection, whereby inequalities persist in more equal societies because, while fewer people are worst off, those

Table 3 Adjusted odds ratios of presence of two or more chronic conditions for region among mothers of young children in Canada ($n = 2656$)

	Model 1: adjusted for age and employment status only		Model 2: adjusted for age, employment status, and SEP ^a		Model 3: adjusted for age, employment status, SEP ^a , single status, and race	
	OR (95% CI)	<i>p</i> value	OR (95% CI)	<i>p</i> value	OR (95% CI)	<i>p</i> value
Québec (ref)	1.00		1.00		1.00	
Eastern provinces	2.54 (1.65–3.94)	< .001	2.52 (1.62–3.93)	< .001	2.09 (1.33–3.29)	.001
Ontario	1.94 (1.44–2.61)	< .001	1.92 (1.42–2.60)	< .001	1.97 (1.45–2.67)	< .001
Prairies	1.97 (1.28–3.01)	.002	1.94 (1.26–2.99)	.003	1.93 (1.25–2.99)	.003
Alberta	1.81 (1.26–2.60)	.001	1.76 (1.22–2.55)	.003	1.86 (1.28–2.69)	.001
British Columbia	2.08 (1.41–3.06)	< .001	2.24 (1.51–3.33)	< .001	2.20 (1.47–3.29)	< .001

Sample sizes are unweighted; model estimates are weighted according to Statistics Canada guidelines

^a Adjusted for education level and income decile

OR odds ratio, CI confidence interval

who are have become increasingly homogeneous with respect to characteristics that predict poor health (Mackenbach 2012). At the same time, non-material factors, such as personality traits, which intervention by the welfare state has not addressed, may have become more strongly predictive of health, further adding to selection effects (Mackenbach 2012). Thus, living in a certain region can be protective of health even if health inequalities persist. Given the novel nature of our findings of regional differences in health among mothers of young children, ongoing research is needed, which can replicate these results using other datasets and different health indicators.

The findings regarding dimensions of inequalities based on race and SEP are consistent with hypotheses and aligned with prior research in the USA (Link et al. 2017; Shippee et al. 2015), although they are novel in the Canadian context. The results about partnership status further contribute to the body of evidence demonstrating the health risks associated with being a single mother in Canada (Colton et al. 2015) and internationally (Van de Velde et al. 2014; Witvliet et al. 2014). What is interesting is the finding that covariation among the dimensions of inequality does not appear to account for the relationships. Thus, while pathways to inequality may be somewhat interrelated, their effects on health among mothers of young children appear to be independent from one another. This suggests that each pathway should be considered separately when developing public health interventions. For instance, the race-health relationship may be explained by the experience of discrimination, which is thought to contribute to the poor health of mothers of colour (Shippee et al. 2015). Discrimination may be experienced through a variety of systems, including healthcare, childcare, and education. With women's increased reliance on these systems when their children are young, interventions that address systemic discrimination may help mitigate poor health. Along similar lines, time stress may help explain the relationship between partner

status and health, which has been proposed as an equally relevant mechanism of poor health as income (Colton et al. 2015). Thus, provision of flexible childcare options for lone mothers (e.g., longer/weekend hours) may be an effective public health intervention. To better understand pathways of inequalities among mothers of young children and to inform public health interventions to address them, future research should include more proximal causes of health inequality, such as discrimination and time stress, along with their structural roots, including race, gender, and SEP.

This research is vulnerable to a number of limitations that should be considered when interpreting its results. First and foremost, this research was not designed to address questions of causation. Health status prior to motherhood was not controlled for, so it is entirely possible that those in poor health were already so prior to becoming a mother. Regardless of how women achieved their health status, this research remains informative because it sheds light on the health inequalities that exist during a particularly vulnerable time in the lives of women and their young children. Future research using longitudinal data following women from prior to giving birth to at least 5 years postpartum would be able to shed light on questions of causation and provide insights into health dynamics over time.

Another important limitation is that the CCHS is not designed to provide a representative sample of mothers. Consequently, some mothers, especially those with fewer resources, may have been less likely to respond to the survey, reinforcing the need to replicate the findings of this research. Further to sampling issues, mothers themselves comprise a selected population. Previous research has suggested that social policies help shape whether, when and how women go on to become mothers, with women living in some less-generous welfare states being less likely to become mothers at all (Brennenstuhl et al. 2015; Rovny 2011). It is possible, therefore, that the circumstances surrounding decisions (or lack thereof) to become a mother vary across Canada,

Table 4 Adjusted odds ratios of presence of two or more chronic conditions among women who gave birth in the last 5 years in eight provinces ($n = 1923$) for each dimension of inequality separately

	Low education		Single		Non-white race		Income (in deciles)		Live in Québec	
	OR (95% CI)	<i>p</i> value	OR (95% CI)	<i>p</i> value	OR (95% CI)	<i>p</i> value	OR (95% CI)	<i>p</i> value	OR (95% CI)	<i>p</i> value
Model 1: adjusted for age and employment status only	1.80 (1.33–2.42)	< .001	2.88 (2.14–3.87)	< .001	1.36 (1.03–1.79)	.028	.83 (.79–.88)	< .001	.54 (.40–.73)	< .001
Model 2: adjusted for age, employment status and SEP ^a	1.48 (1.09–2.01)	.011	2.22 (1.63–3.01)	< .001	1.70 (1.27–2.27)	< .001	.84 (.80–.89)	< .001	.54 (.40–.73)	< .001
Model 3: adjusted for age, employment status, SEP ^a , and all other inequalities	1.22 (0.89–1.68)	.208	1.98 (1.44–2.71)	< .001	1.74 (1.30–2.33)	< .001	.84 (.80–.89)	< .001	.53 (.39–.73)	< .001

Sample sizes are unweighted; model estimates are weighted according to Statistics Canada guidelines

^a Adjusted for education level and income decile; for low education, adjusted for income decile only and for income decile, adjusted for low education only
OR odds ratio, CI confidence interval

and thus creating heterogeneity in the samples of mothers from each region. Future research could use methods such as propensity score matching to ensure the samples of mothers from Québec and elsewhere are truly comparative.

With the current study design, the effect of social policy arrangement on health outcomes cannot be isolated. A time series design that can look at trends in maternal health before and after implementation of universal daycare in Québec, for example, may be one method for attaining stronger evidence in that regard. Finally, a very broad measure of race including only two categories was used, which does a poor job of representing the multicultural makeup of Canada. The findings of this research, as well as a previous work suggesting that the relationship between maternal and child health might be stronger among certain races (Shippee et al. 2015), underline the need for a more nuanced population-based study of the relationship between race and health among mothers within the Canadian context.

To conclude, this research provides preliminary evidence that health inequalities exist among mothers of young children in Canada by income, race, and partnership status, and that living in Québec appears to protect against poor health. The identification of these structurally-based inequalities has important policy implications. For example, it suggests that public health programs that address the root causes of inequalities may be more effective in mitigating poor maternal health than the individual approach most commonly used in postpartum care (Storey-Kuyil et al. 2015). An example of such programs is universal access to childcare, which has been endorsed as a method for reducing health inequalities by the World Health Organization (World Health Organization 2008), but has yet to be implemented nationally in Canada. If we seriously want to help mitigate the reproduction of health inequalities across generations and improve the well-being of women today, investments need to be made now.

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Compliance with ethical standards

Conflict of interest The author declares that she has no conflict of interest.

References

Borrell, C., Palencia, L., Muntaner, C., Urquia, M., Malmusi, D., & O'Campo, P. (2014). Influence of macrosocial policies on womens health and gender inequalities in health. *Epidemiologic Reviews*, 36(1), 31–48.

Brennenstuhl, S., Quesnel-Vallee, A., & McDonough, P. (2012). Welfare regimes, population health and health inequalities: a research synthesis. *J Epidemiol Community Health*, 66(5), 397–409.

- Brennenstuhl, S., Worts, D., Hildebrand, V., Siddiqi, A., & McDonough, P. (2015). Who has the mother lode of health? A comparative study of socio-economic inequalities in health among mothers of young children. *Canadian Public Policy-Analyse De Politiques*, *41*, S80–S88.
- Burstrom, B., Whitehead, M., Clayton, S., Fritzell, S., Vannoni, F., & Costa, G. (2010). Health inequalities between lone and couple mothers and policy under different welfare regimes—the example of Italy, Sweden and Britain. *Soc Sci Med*, *70*(6), 912–920.
- Chui, T. & Maheux, H. (2011). *Visible minority women*. Available at: <http://www.statcan.gc.ca/pub/89-503-x/2010001/article/11527-eng.pdf> (accessed November 6 2017).
- Colton, T., Janzen, B., & Laverty, W. (2015). Family structure, social capital, and mental health disparities among Canadian mothers. *Public Health*, *129*(6), 639–647.
- Curtis, L., & Phipps, S. (2004). Social transfers and the health status of mothers in Norway and Canada. *Social Science & Medicine*, *58*(12), 2499–2507.
- Daoud, N., O'Campo, P., Minh, A., Urquia, M. L., Dzakpasu, S., Heaman, M., et al. (2015). Patterns of social inequalities across pregnancy and birth outcomes: a comparison of individual and neighborhood socioeconomic measures. *BMC Pregnancy and Childbirth*, *14*.
- Gornick, J., & Meyers, M. (2003). *Families that work: policies for reconciling parenthood and employment*. New York: Russel Sage Foundation.
- Gruneir, A., Bronskill, S. E., Maxwell, C. J., Qing Bai, Y., Kone, A. J., Thavorn, K., et al. (2016). The association between multimorbidity and hospitalization is modified by individual demographics and physician continuity of care: a retrospective cohort study. *BMC Health Services Research*, *16*, 154.
- Gucciardi, E., Celasun, N., & Stewart, D. E. (2004). Single-mother families in Canada. *Canadian Journal of Public Health-Revue Canadienne De Sante Publique*, *95*(1), 70–73.
- Labour Standards in Québec (2016). Commission des normes, de l'équité, de la santé et de la sécurité du travail. Available at: <http://www.cnesst.gouv.qc.ca/en/Publications/Documents/DC200-1584Aweb.pdf> (accessed August 18 2017).
- Link, B. G., Susser, E. S., Factor-Litvak, P., March, D., Kezios, K. L., Lovasi, G. S., et al. (2017). Disparities in self-rated health across generations and through the life course. *Social Science & Medicine*, *174*, 17–25.
- Macdonald, D., Friendly, M. (2016). A growing concern: 2016 child care fees in Canada's big cities. Centre for Policy Alternatives. Available at https://www.policyalternatives.ca/sites/default/files/uploads/publications/National%20Office/2016/12/A_Growing_Concern.pdf (Accessed August 28 2017).
- Mackenbach, J. P. (2012). The persistence of health inequalities in modern welfare states: The explanation of a paradox. *Social Science & Medicine*, *75*(4), 761–769.
- Moser, M. (2017). *Women and paid work: A gender based statistical report*. Available at: <http://www.statcan.gc.ca/pub/89-503-x/2015001/article/14694-eng.htm> (accessed November 6 2017).
- Onarheim, K. H., Iversen, J. H., & Bloom, D. E. (2016). Economic benefits of investing in women's health: a systematic review. *Plos One*, *11*(3), e0150120.
- Parkes, A., Sweeting, H., & Wight, D. (2015). Parenting stress and parent support among mothers with high and low education. *Journal of Family Psychology*, *29*(6), 907–918.
- Rovny, A. E. (2011). Welfare state policy determinants of fertility level: a comparative analysis. *Journal of European Social Policy*, *21*(4), 335–347.
- Sacker, A. P., Clarke, P., Wiggins, R. D., & Bartley, M. (2005). Social dynamics of health inequalities: a growth curve analysis of aging and self assessed health in the British household panel survey 1991–2001. *J Epidemiol Community Health*, *59*, 495–501.
- Shippee, T. P., Rowan, K., Sivagnanam, K., & Oakes, J. M. (2015). Examining the impact of maternal health, race, and socioeconomic status on daughter's self-rated health over three decades. *International Journal of Aging & Human Development*, *81*(3), 155–175.
- Sperlich, S., & Geyer, S. (2015). The mediating effect of effort-reward imbalance in household and family work on the relationship between education and women's health. *Soc Sci Med*, *131*, 58–65.
- Statistics Canada (2015). Canadian Community Health Survey (CCHS) Annual component User guide 2014 and 2013–2014 Microdata files. Available at: http://sda.chass.utoronto.ca/sdaweb/dli2/cchs/cchs2014/more_doc/CCHS_2014_2013-2014_User_Guide.pdf. (accessed August 18 2017).
- Storey-Kuyll, M., Bekemeier, B., & Conley, E. (2015). Focusing “upstream” to address maternal and child health inequities: two local health departments in Washington state make the transition. *Maternal and Child Health Journal*, *19*(11), 2329–2335.
- Van de Velde, S., Bambra, C., Van der Bracht, K., Eikemo, T. A., & Bracke, P. (2014). Keeping it in the family: the self-rated health of lone mothers in different European welfare regimes. *Sociology of Health & Illness*, *36*(8), 1220–1242.
- van Veldhoven, M., & Beijer, S. E. (2012). Workload, work-to-family conflict, and health: gender differences and the influence of private life context. *Journal of Social Issues*, *68*(4), 665–683.
- Witvliet, M. I., Arah, O. A., Stronks, K., & Kunst, A. E. (2014). A global study on lone mothers: exploring the associations of self-assessed general health with motherhood types and gender inequality in 32 countries. *Womens Health Issues*, *24*(2), E177–EE85.
- World Health Organization (2008). Closing the gap in a generation: Health equity through action on the social determinants of health. Available at: http://apps.who.int/iris/bitstream/10665/43943/1/9789241563703_eng.pdf. (accessed August 18 2017).