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Impact of the 2008 global financial crisis on the health of Canadians: repeated cross-sectional analysis of the Canadian Community Health Survey, 2007–2013

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ABSTRACT

Background Despite a clear impact on the Canadian economy, little is known about the subsequent health impacts of the 2008 global financial crisis (GFC) in this country. This study fills this gap in knowledge by conducting a repeated cross-sectional analysis of the Canadian Community Health Survey (CCHS).

Methods Data from 7 cycles (2007–2013) of the CCHS were combined to form a large data set representative of the Canadian working-age population (15–64 years) residing in 1 of 10 provinces. A logistic regression model was used to determine whether exposure to various periods of the GFC resulted in increased odds of reporting poor mental health. Exposure was categorised into 4 periods based on political and economic indicators, as follows: precrisis period (baseline), initial crisis period, stimulus period and austerity period. Other outcomes investigated included: anxiety disorders (AD), mood disorders (MD), poor physical health and health-related behaviours (heavy alcohol drinking (HAD) and decreased fruit/vegetable consumption (FVC)).

Results A significant increased odds of reporting poor mental health was observed during the austerity period compared with the precrisis period (OR=1.26 (1.16 to 1.32)); findings remain significant when adjusted for sex, marital status and education. Exposure to the austerity period was also significantly associated with increased odds of reporting AD, MD, HAD and decreased odds of FVC. No significant associations were observed for the poor self-perceived physical health variable.

Conclusions Statistically significant associations were observed between several negative health outcomes and the austerity period when compared with the precrisis period. Austerity has been linked to worsening health in other studies and represents an example of how the policy response can have greater detrimental impact on health than the financial crisis itself.

INTRODUCTION

Seven years have passed since the economic and political impacts of the 2008 global financial crisis (GFC) first became apparent in Canada; yet, little is known about the subsequent health impacts. Studies of major economic crises (including the 2008 GFC) have pointed to negative and positive health outcomes. For example, associations between exposure to the GFC and reduced mental health have been observed, suggesting an increased risk of poor self-reported mental health (SMH),[1–3] increased symptoms of depression/anxiety[2 4–8] and suicide/suicide ideation.[9–19] Evidence also suggests a likely association between the GFC and problematic alcohol drinking.[4 20–24] However, the association between the GFC and other health-related behaviours such as smoking and healthy eating remains less clear. Evidence also suggests a possible association between the GFC and a worsening of self-reported health,[25–30] while other studies demonstrate no significant association.[7 31 32]

The association between the GFC and health is complex and involves an interaction between pathways such as government policy response (eg, stimulus vs austerity), quality and quantity of employment, housing stability and income adequacy. The severity of the impact appears to differ greatly from one region to the next due to the way in which these pathways interact. Our current understanding of the health impact stems from studies conducted primarily in Europe and the USA. To date, three Canadian studies have been conducted, all of which analyse small and specific subgroups of the population and cover a short time period;[33–35] therefore, there is a significant gap in the understanding of how the GFC impacted the health of Canadians, and how this impact compares with findings from other countries.

The primary objective of this study was to determine whether exposure to the 2008 GFC resulted in a significantly increased risk of poor SMH among working-age adults aged 15–64 years in Canada. Secondary objectives were also established to assess the association between exposure to the GFC and other health-related outcomes, including poor self-reported physical health (SPH), presence or absence of a health professional diagnosis of anxiety disorders (AD) or mood disorders (MD) and health-related behaviours that contribute adversely to health such as heavy alcohol drinking (HAD) (5 or more drinks, at least once every month) and decreased fruit/vegetable consumption (FVC) (5 or more servings of fruits/vegetables per day). Based on trends observed in other studies,[1–4 9 36] another secondary objective was to determine whether men, low-income individuals and/or new individuals entering the labour market (aged 25–34 years) were more adversely impacted by the GFC than their counterparts.

METHODS

Data

A nationally representative sample of the Canadian working-age population (15–64 years) residing in

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the 10 Canadian provinces was examined. Data were obtained from pooling seven annual cycles of the Canadian Community Health Survey (CCHS) from 2007 to 2013, which is a large-scale nationally representative cross-sectional survey. As of 2007, the CCHS was redesigned to allow for data collection on an ongoing basis. Each data collection period is now made up of a 2-month reporting period. Each 2-month reporting period is made up of a sample that is representative of the Canadian population living in the 10 provinces. As such, as of 2007, it is possible to analyse trend data at bimonthly intervals. Additional details about the CCHS have been described elsewhere.[37 38]

Exposure to the GFC was assessed based on the date on which the respondent completed the survey. An exposure variable was created with four categories: precrisis, crisis, stimulus and austerity. The dates corresponding to each period of the crisis were determined based on an analysis of key political and economic indicators (see online supplementary appendix figures S1–S7 and box 1). Since bimonthly cross-section data were available, it was possible to assign respondents to a crisis period that accurately reflected their exposure. Table 1 shows the breakdown of how the exposure variable was created. Respondents exposed to the precrisis period were used as the control group. Important covariates included: age, gender, marital status, education, household income distribution, dwelling ownership and employment status.

For the primary outcome of interest (SMH), respondents were asked to rate their mental health on a five-point scale ('1' being excellent to '5' being poor). This variable was recoded into a dichotomous variable where participants reporting excellent, very good or good mental health were assigned a value of '0' representing good mental health, and those reporting fair or poor were assigned a value of '1' representing poor mental health. Secondary health measures were recoded in a similar way. All primary and secondary outcomes assess the outcome in the present tense, with the exception of HAD, which asks respondents to summarise their habits over the past 12 months. Also, only CCHS data from 2007 to 2012 were analysed for the HAD outcome; data from 2013 were excluded due to a change in the definition of the variable.

Statistical analysis

The bimonthly period prevalence of reporting poor self-perceived mental health was plotted from January 2007 to December 2013 and visually inspected for patterns. To account for the complex survey design of the CCHS, the appropriate weights were used to generate representative period prevalence estimates. The BOOTVAR V.3.2 macro provided by Statistics Canada was used to obtain 95% CIs using bootstrap resampling methods. Estimates were presented separately for men and women.

Following this descriptive analysis, we proceeded to use a logistic regression model to measure the association between the exposure to the GFC and poor health outcomes. Dummy variables for each period of the crisis were used in the model to represent exposure to the crisis, stimulus or austerity period compared with the precrisis period (control). The logistic regression models were adjusted to account for potential confounders, including age, sex, marital status and education. This analysis was limited due to the lack of an unexposed counterfactual population to follow concurrently with those affected by the GFC. To overcome this limitation, that is, to show that any observed associations are the result of exposure to the GFC, and not the result of underlying long-term trends, an external validation measure was used. The external validation method involved plotting long-term trends in the proportion of poor health outcomes in the Canadian population using annual estimates from 2003 to 2013 that were retrieved from publicly available Statistics Canada data.

Given previous evidence about potential factors that mediate the GFC-poor health relationship, we created a second logistic regression model that included measures of unemployment, precarious employment and income adequacy, anticipating that the effect of the crisis variable would be reduced on addition of these putative mediators. Finally, also based on previous evidence about effect modification by sex, age and/or income adequacy on the GFC-poor health relationship, we added interaction terms into our logistic regression model to determine whether certain subgroups (ie, men, low-income individuals or new individuals entering the labour market (aged 25–34 years)) were more vulnerable to the impacts of the GFC. The same methodology was applied to each of the health outcomes under investigation.

Table 1 Assignment of exposure to the global financial crisis and number of survey participants in each exposure period

Survey completion date	Exposure variable assignment	Sample size (*N=306 623)
January 2007 to August 2008	Precrisis period (control)	78 186 (23.2%)
September 2008 to June 2009	Crisis period	36 703 (11.7%)
July 2009 to February 2011	Stimulus period	80 262 (26.3%)
March 2011 to December 2013	Austerity period	111 472 (38.8%)

According to the C.D. Howe Institute Business Cycle Council, the initial crisis period lasted from October 2008 to May 2009 in Canada. At the onset, Canada responded to the crisis with stimulus spending introduced in the 2009 Federal Budget; however, after a short period of stimulus spending, the government adopted crisis-rationalised austerity measures, which officially began with the release of the 2012 Federal Budget (with early warning signs beginning in the 2011 budget), and continued in the 2013 and 2014 budgets. See online supplementary appendix, figures S1–S7 and box 1 for additional details regarding the categorisation of the exposure variable.
*The sample size represents the sample prior to the removal of missing observations.

RESULTS

Demographic and socioeconomic characteristics of the study population

After excluding those with missing covariate data or mental health outcome data, a total of 290 333 participants were included in the SMH analysis. During the precrisis period, the prevalence of poor SMH was 5.0%, during the crisis period, the prevalence rose to 5.3% and stayed constant through the stimulus period at 5.3%; however, during the austerity period, the prevalence grew to 6.1%, representing an absolute growth of 1.1% relative to the precrisis period. An increase in the prevalence of poor SMH during the austerity period was observed among all demographic and socioeconomic subgroups, as shown in table 2. The prevalence of poor SMH was consistently higher among women than men throughout all four periods. For the other health outcomes being investigated, the total sample size varied in each analytic data set because missing observations for the relevant outcome variable were removed. See online supplementary appendix, table S1 for the final sample size used in each analytical data set.

Descriptive analysis of health-related outcomes

Figure 1 shows the bimonthly period prevalence estimates of poor SMH among the male and female working-age Canadian

Table 2 Prevalence (%) of poor self-reported mental health by demographic and socioeconomic factors during periods of the global financial crisis

	Total		Precrisis period		Crisis period		Stimulus period		Austerity period	
	*N	†%	*N	†%	*N	†%	*N	†%	*N	†%
Total sample	17 963	5.5	4164	5.0	2083	5.3	4721	5.3	6995	6.1
Sex										
Males	7881	5.0	1816	4.7	933	4.8	2090	4.9	3042	5.4
Females	10 082	6.0	2348	5.3	1150	5.8	2631	5.7	3953	6.8
Age (years)										
15–24	2365	4.6	528	4.4	269	3.8	577	4.0	991	5.3
25–34	2721	4.9	639	4.2	333	5.1	693	4.6	1056	5.4
35–44	3244	5.5	856	4.9	415	5.7	847	5.7	1126	5.8
45–54	4740	6.6	1143	5.8	547	6.2	1326	6.4	1724	7.3
55–64	4893	6.0	998	5.5	519	5.6	1278	5.6	2098	6.6
Marital status										
Married/common law	6837	4.2	1594	3.7	837	4.4	1815	4.1	2591	4.6
Widowed/divorced/separated	4259	10.9	1024	9.9	451	9.2	1165	11.2	1619	11.7
Single/never-married	6867	6.6	1546	6.1	795	6.1	1741	6.0	2785	7.3
Education										
Less than secondary school	4301	8.6	1032	8.2	534	7.6	1125	8.1	1610	9.5
Secondary school graduate	3160	5.5	650	4.6	306	4.2	820	5.6	1384	6.4
Some postsecondary education	1586	6.5	434	5.6	209	6.4	460	6.4	484	7.4
Postsecondary diploma/degree	8916	4.7	2048	4.2	1034	4.9	2316	4.5	3518	5.1
Income distribution										
Highest quintile (Top 20%)	2394	3.1	554	2.9	264	2.9	648	3.2	928	3.2
Upper-middle quintile	2651	3.8	615	3.4	298	3.7	700	3.7	1038	4.1
Middle quintile	2997	4.6	680	4.0	327	4.5	763	4.1	1227	5.2
Lower-middle quintile	3428	6.1	798	5.8	413	6.1	887	5.8	1330	6.6
Lowest quintile (bottom 20%)	6493	11.6	1517	10.2	781	10.8	1723	11.2	2472	13.0
Employment status										
Employed, full time	7079	3.8	1707	3.4	809	3.8	1855	3.6	2708	4.2
Employed, part-time	2014	5.5	441	5.1	237	5.2	529	4.7	807	6.3
Unemployed	5994	7.8	1327	6.0	702	7.2	1576	7.4	2389	8.6
Permanently unable to work	2876	32.4	689	30.9	335	30.8	761	33.4	1091	33.0
Dwelling ownership										
Owner	10 771	4.3	2441	4.0	1263	4.3	2825	4.1	4242	4.7
Renter	7192	8.8	1723	7.8	820	8.3	1896	8.6	2753	9.6

*'N' refers to the actual number of persons in the study sample, and is therefore unweighted.
†Prevalence (%) shows the weighted estimate, which accounts for the complex survey design of the CCHS to ensure that the study sample is representative of the entire population.

population residing in the 10 Canadian provinces, from 2007 to 2013. Visual inspection of these plots does not reveal any distinct changes in the short-term trends; however, for men and women, the prevalence remains consistent until the austerity period, at which point there appears to be more variability with a slight increase. Similar trends were observed for other measures of mental health, including AD and MD (see online supplementary appendix figures S8 and S9). The male and female plots of the bimonthly period prevalence estimates of poor SPH, on the other hand, appear to show no change in trend over time (see online supplementary appendix figure S10).

The trend in HAD for men and women is shown in figure 2. The plot indicates that an increase in HAD coincides with the occurrence of the stimulus period. However, this variable was operationalised by asking respondents about their drinking habits over the past 12 months; therefore, the increase observed in the stimulus period corresponds to the period immediately following the onset of the GFC. During the austerity period, the prevalence appears to return to precrisis levels among both sexes. The prevalence of FVC over time for men and women is shown in figure 3. The trends appear stable up until the austerity period, at which point the prevalence of FVC appears to decline.

The association between GFC exposure and health-related outcomes

Results from the SMH logistic regression analysis are presented in table 3. The unadjusted OR for the crisis and stimulus period compared with the precrisis period showed increased odds of reporting poor SMH, but these findings did not reach the threshold for statistical significance. The austerity period, however, was associated with a statistically significant increased risk of reporting poor SMH, which remained significant after adjusting for age, sex, marital status and education; in fact, accounting for these potential confounders had very little impact on the association between GFC and mental health. Exposure to the austerity period was associated with a 26% (aOR=1.26, 95% CI 1.17 to 1.34) increase in the odds of reporting poor SMH.

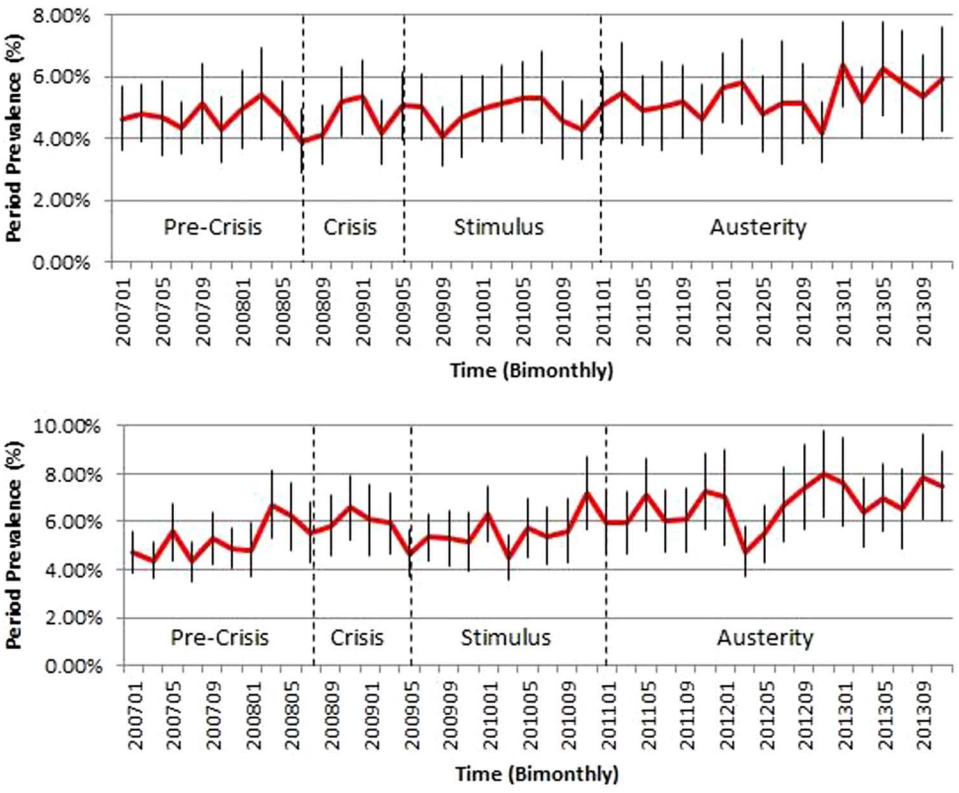

Figure 1 Prevalence of poor self-reported mental health among men (top) and women (bottom), aged 15–64 years and residing in one of 10 Canadian provinces, from 2007 to 2013. Note: the dashed line represents the beginning of a new period of the global financial crisis.

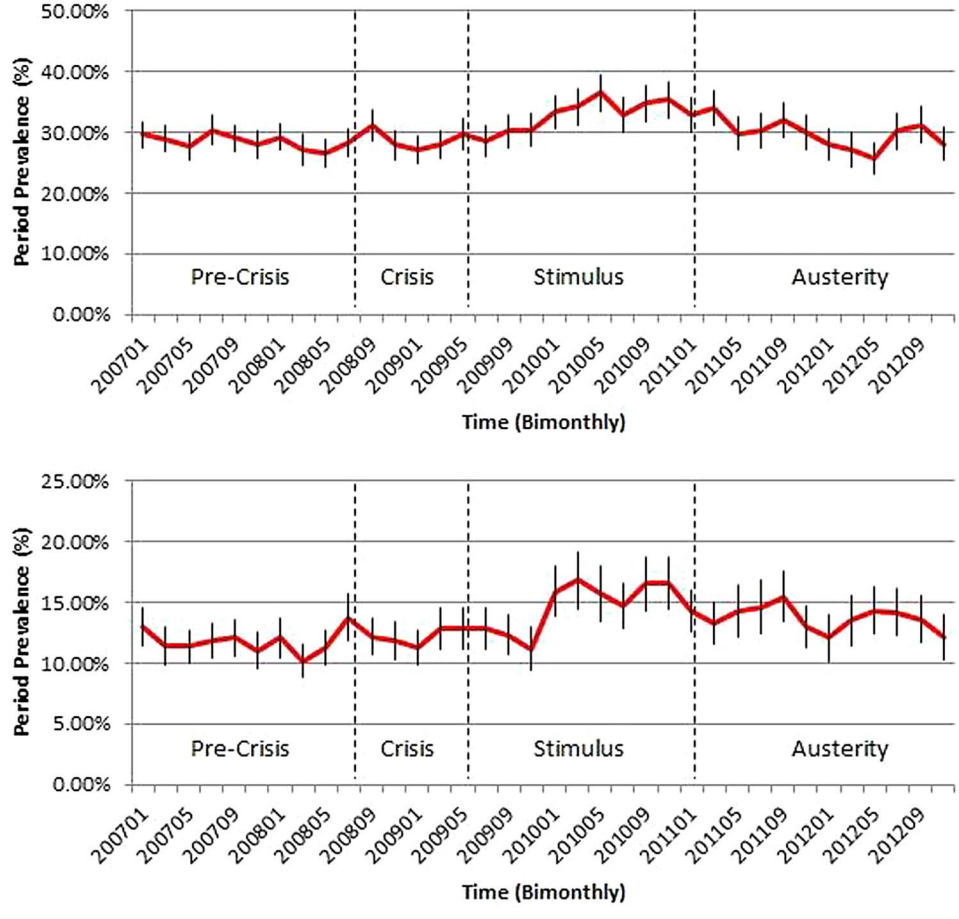

Figure 2 Prevalence of reporting heavy drinking among men (top) and women (bottom), aged 15–64 years and residing in one of 10 Canadian provinces, from 2007 to 2012. Note: the dashed line represents the beginning of a new period of the global financial crisis.

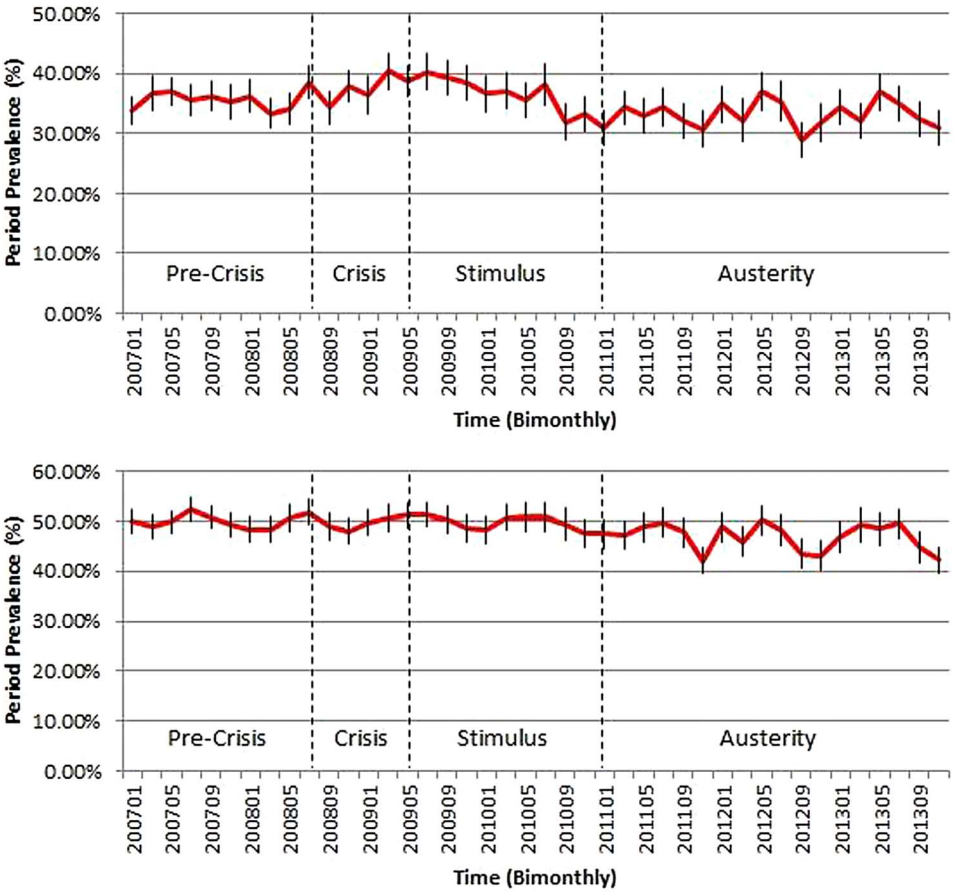

Figure 3 Prevalence of healthy fruit/vegetable consumption among men (top) and women (bottom), aged 15–64 years and residing in one of 10 Canadian provinces, from 2007 to 2013.

Table 3 Logistic regression models of the association between different periods of the global financial crisis and reporting poor self-reported mental health

	Unadjusted OR (95% CI)	†Adjusted OR (95% CI)	‡Mediation analysis OR (95% CI)
Exposure to the GFC			
Precrisis period	1.0	1.0	1.0
Crisis period	1.16 (0.98 to 1.17)	1.08 (0.98 to 1.18)	1.07 (0.97 to 1.17)
Stimulus period	1.07 (0.99 to 1.16)	1.08 (1.00 to 1.18)*	1.06 (0.98 to 1.15)
Austerity period	1.24 (1.15 to 1.32)***	1.26 (1.17 to 1.34)***	1.23 (1.15 to 1.32)***

N=290 333.
*p<0.05, **p<0.01, ***p<0.001.
†Adjusted by age, sex, marital status and education.
‡Testing for mediators: logistic regression model includes potential explanatory variables to test accuracy of conceptual model. Mediators include: income adequacy (quintiles), employment status (employed, unemployed, precarious (Part-Time) employment, permanently unable to work) and home ownership (ownership, renting).
All estimates have been weighted and 95% CIs shown in parentheses were derived using bootstrap resampling methods.

Table 4 shows the adjusted OR for all other secondary outcomes. Exposure to the crisis period immediately following the GFC was not significantly associated with any of the investigated outcomes. Similar findings were obtained with regard to exposure to the stimulus period, with the exception of HAD where there was a 26% (aOR=1.3, 95% CI 1.20 to 1.31) increase in the odds of reporting HAD, reflecting prior consumption habits during the crisis period. Similar to the findings obtained with the SMH outcome, exposure to the austerity period was significantly associated with increased odds of reporting a health professional diagnosis of AD, MD and HAD, and decreased odds of consuming at least five servings of fruit/vegetables per day. Exposure to the GFC, regardless of period, was not significantly associated with a change in the odds of reporting poor SPH.

External validation of key findings

Age-standardised annual prevalence estimates of fair/poor mental health, HAD and consumption of at least five servings of fruit/vegetables per day among Canadians from 2003 to 2013, using the same data source as the present analysis (CCHS) show that, in all cases, the long-term trends in the prevalence of these health-related outcomes remain stable from 2003 to 2008. From 2008 onwards, the prevalence of fair/poor mental health begins to rise at an accelerated rate from 4.9% in 2008 to 6.1% in 2013; the prevalence of heavy drinking also begins to rise from 17.9% in 2008 to 20.3% in 2011 before dropping to 18.8% in 2012; finally, the prevalence of FVC had been steadily increasing, but experiences a shift in trend after 2009 at which point the prevalence begins to decline from 45.7% to 41.1% by 2013.[39] This long-term trend analysis confirms that trends

Table 4 Association between different periods of the global financial crisis and various health outcomes

	†Adjusted OR (95% CI)			
	Precrisis period	Crisis period	Stimulus period	Austerity period
Poor SMH	1.0	1.08 (0.98 to 1.18)	1.08 (1.00 to 1.18)*	1.26 (1.17 to 1.34)***
Anxiety disorder	1.0	0.97 (0.89 to 1.06)	0.95 (0.89 to 1.02)	1.25 (1.17 to 1.33)***
Mood disorder	1.0	1.00 (0.93 to 1.08)	0.98 (0.92 to 1.04)	1.12 (1.06 to 1.19)***
Poor self-perceived physical health	1.0	0.94 (0.88 to 1.01)	1.01 (0.95 to 1.06)	0.99 (0.93 to 1.04)
Heavy alcohol drinking	1.0	1.03 (0.97 to 1.08)	1.26 (1.20 to 1.31)***	1.09 (1.04 to 1.14)***
Healthy fruit/vegetable consumption	1.0	1.03 (0.98 to 1.08)	0.98 (0.94 to 1.02)	0.88 (0.85 to 0.91)***

All estimates have been weighted and 95% CIs shown in parentheses were derived using bootstrap resampling methods.
*p<0.05, **p<0.01, ***p<0.001.
†Adjusted by age, sex, marital status and education.

observed postcrisis were not a continuation of trends observed prior to the crisis (see online supplementary appendix, figures S11–S13).

Potential factors that mediate the GFC-poor health relationship and subgroup analysis

Accounting for the potential mediating variables that were selected based on previous evidence in the literature did not appreciably reduce the association of the austerity period with SMH. Table 3 shows that when adjusted for potential mediating factors, the OR changed from 1.26 (95% CI 1.17 to 1.34) to 1.23 (95% CI 1.15 to 1.32). Similar findings were obtained for all other health-related outcomes that were investigated.

When the SMH logistic model was adjusted to include an interaction term between exposure to (1) austerity and sex, (2) austerity and age and (3) austerity and income quintile, the findings were not statistically significant, and therefore do not provide evidence to suggest that certain population subgroups were more adversely impacted by the austerity period than others. HAD was the only outcome that demonstrated statistically significant differences with respect to subgroup analysis. Women had statistically significant increased odds of reporting HAD during the austerity period compared with men, but this interaction was not significant during the stimulus period. Conversely, the lower two income quintiles had statistically significant increased odds of reporting HAD compared with the highest income respondents during the stimulus period, but this same interaction was no longer significant during the austerity period (see online supplementary appendix, tables S2 and S3).

DISCUSSION

Main findings

Relative to the precrisis period, the crisis and stimulus periods of the GFC were not significantly associated with poorer mental health in working-age adults aged 15–64 years in Canada. However, the austerity period was associated with a 26% increase in the odds of reporting poor SMH. With regard to other measures of mental health, the findings suggest that the austerity period was associated with a 25% increase in the odds of reporting an AD, and a 12% increase in the odds of reporting an MD, relative to the reference precrisis period. Exposure to the GFC appeared to have no significant impact on SPH.

This study also examined whether the odds of engaging in two health-related behaviours were significantly greater among those exposed to the GFC: the likelihood of reporting HAD in the past 12 months and the likelihood of reporting consumption of fruits/vegetables at least five times per day. The logistic regression analysis revealed that the stimulus and austerity periods demonstrated significantly increased odds of HAD when compared with the precrisis period. This was the only outcome that showed a significant association with the stimulus period. The austerity period was associated with a 12% decrease in the odds of reporting adequate FVC.

A secondary objective of this analysis was to determine whether any subgroups were more adversely impacted by the crisis than others. In most cases, no significant interactions were observed. Even in the analysis of HAD, where evidence of a potential interaction was observed, there was considerable variability in the findings with no distinct pattern; therefore, no conclusions can be drawn based on these findings alone. Based on previous evidence, the mechanism by which the GFC is anticipated to have an impact on health is through a series of interacting societal level (government policy response) and individual-level (employment, housing, income) pathways that undermine key social determinants of health. In order to validate these proposed mechanisms, a mediation analysis was conducted. Contrary to what was expected, the findings from this study show that accounting for these variables did not affect the observed associations. This was likely due to the limited nature of the data and the proxy variables (unemployment, precarious (part-time) employment, income distribution and home ownership status) used to represent the individual-level pathways (quantity of employment, quality of employment, income adequacy and housing stability). Since data were obtained from repeated cross-sectional surveys, as opposed to a longitudinal survey, the proxy variables did not actually measure whether the individual experienced a change in the outcome throughout the GFC period. Owing to this limitation, additional research would be required to either confirm or reject the proposed mechanisms by which the GFC is anticipated to have an impact on health.

Strengths and limitations

Although this analysis presents evidence of increased odds of poor health outcomes among those exposed to the austerity period, it is not clear whether this association is actually the result of the implementation of austerity measures, or whether the association represents a lagged effect of the GFC in general. Owing to a reliance on secondary data, this analysis assumes all participants responding during the GFC period were equally affected by the GFC. Although the analysis was adjusted for potential confounding variables, there is always the possibility that unaccounted confounders could explain all or part of the observed associations. Finally, this analysis is based on repeated cross-sectional data; therefore, the unexposed and exposed populations were not being assessed concurrently. To overcome

this challenge, it would be useful for future research to focus on stratifying the population by province and grouping the provinces into categories based on severity of impact; this would create a counterfactual population that could be observed concurrently.

Despite the above limitations, this study is the largest and most comprehensive analysis of the impact of the GFC in Canada. The findings are robust, precise and representative of the Canadian population. The available data were sufficient to cover time before and following the crisis period. Our analysis also combined CCHS data in a novel way that allowed us to disaggregate the GFC period according to stimulus and austerity responses, which added further insight into the GFC-poor health relationship.

Findings from this study suggest that, consistent with existing literature from other OECD countries, the risk of fair/poor mental health, AD and MD, and heavy drinking increased following the onset of the GFC, whereas the likelihood of healthy eating decreased. On the other hand, no association between the GFC and fair/poor self-perceived health in general was observed. This is consistent with findings from existing literature, which also showed variability with respect to the association between measures of physical health and exposure to the GFC.

By dividing exposure to the crisis into phases categorised according to policy response, we were able to identify which period was associated with increases or decreases. The present study was unique in its ability to disaggregate the post-GFC period according to stimulus and austerity policy responses. The austerity period was the only phase of the crisis that observed consistently significant associations with the outcomes discussed above. This is also consistent with the findings from existing literature, which found that areas which were more severely impacted by the implementation of austerity experienced the most severe health consequences.

Connecting the GFC and austerity in Canada to the social determinants of health

At the onset of the GFC, Canada responded to the crisis with stimulus spending rather than austerity cuts; however, shortly afterwards, the government adopted crisis-rationalised austerity measures. In general, the rationale for using austerity-driven policies is to free up more capital and bank-lending capacity to the private sector, on the assumption that the private sector is more efficient, effective and essential in generating economic growth, and that the lack of credit access (ie, no surplus cash) is the problem. According to critics of austerity, this rationale ignores the more pressing issues being faced by Canadians following the GFC, which include, among others, slow economic recovery, lack of employment, increasing household debt, stagnant wages and reductions in employment insurance coverage and retirement security.[40] Indeed, many such issues were observed in Canada following the GFC and the implementation of austerity, including increased unemployment with slow economic recovery, deteriorating quality of employment and insignificant growth in average after-tax income throughout the recession period, despite rising costs and inflation (see online supplementary appendix figures S1–S7 and box 1).

Austerity has been criticised for undermining the social determinants of health; for example, the austerity budget in Canada following the GFC allowed for additional corporate tax reductions, which led to decreased revenue for Canada. To compensate for this revenue loss, the government curtailed federal spending on social programmes as well as reduced social and health transfers to the provinces.[41] Federal programme spending as a percentage of GDP declined; while tax and total revenues as a percentage of GDP remain far below levels prior to the GFC.[42 43] Healthcare spending nationally as a percentage of GDP has also declined since the GFC.[40 41] The shift towards a government that is increasingly neoliberal in its economic and social policies represents a political trend that began well before the crisis; however, the timing at which the crisis occurred may have sped up and deepened the severity and impact of such policy choices. A recent change in federal government (in late 2015), which campaigned on a programme of deficit-financed stimulus spending, may indicate a slight shift away from the austerity policies of the previous government.[44]

CONCLUSION

This analysis provides evidence of a modest statistically significant association between the GFC (particularly during the austerity period) and poor mental health, AD/MD, increase in heavy drinking and a decrease in adequate FVC. The magnitude of the association observed is similar to what would be expected with important contextual factors that operate at the population level (ie, social determinants of health). Long-term trend data confirm that underlying trends did not exist prior to the crisis, and therefore, the GFC appears to have been a precipitating event leading to a change in the observed trends.

What is already known on this subject?

- Evidence from existing literature, primarily concentrated in the European Union and USA, suggests that the 2007/2008 global financial crisis (GFC) was likely associated with several health outcomes, including self-perceived poor mental health, increased symptoms of depression/anxiety and increased problematic alcohol drinking. The association between the GFC and health is complex and involves an interaction between various pathways, including the government's policy response, and the severity of the impact appears to greatly differ from one region to the next due to the different ways in which these pathways interact. Despite a clear impact on the Canadian economy, little is known about the subsequent health impacts following the GFC.

What this study adds?

- This study provides evidence of modest statistically significant associations between the global financial crisis (GFC) and various negative health outcomes among the Canadian population, particularly during the austerity period. The analysis is unique in that it was possible to disaggregate the GFC period according to stimulus and austerity policy responses. The findings are robust since they rely on data that is representative of the Canadian population, and that covers a sufficient time period before and following the crisis period. The analysis included large data sets, which contributes to the precision of the estimates obtained. Long-term trend data confirm that these observed associations are not the result of underlying trends. Finally, this study represents the largest and most comprehensive analysis of the GFC' impact in Canada, filling an important gap in the existing literature.

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