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The impact of changes in social policies on household food insecurity in British Columbia, 2005–2012

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ABSTRACT

As concerns about food insecurity in high income countries grow, there is a need to better understand the impact of social policy decisions on this problem. In Canada, provincial government actions are particularly important because food insecurity places substantial burden on provincial health care budgets. This study was undertaken to describe the socio-demographic and temporal patterning of food insecurity in British Columbia (BC) from 2005 to 2012 and determine the impact of BC's one-time increase in social assistance and introduction of the Rental Assistance Program (RAP) on food insecurity rates among target groups. Using data from the Canadian Community Health Surveys, logistic regression analyses were conducted to identify trends and assess changes in food insecurity among subgroups differentiated by main source of income and housing tenure. Models were run against overall food insecurity, moderate and severe food insecurity, and severe food insecurity to explore whether the impact of policy changes differed by severity of food insecurity. Overall food insecurity rose significantly among households in BC between 2005 and 2012. Following the increase in social assistance benefits, overall food insecurity and moderate and severe food insecurity declined among households on social assistance, but severe food insecurity remained unchanged. We could discern no effect of the RAP on any measure of food insecurity among renter households. Our findings indicate the sensitivity of food insecurity among social assistance recipients to improvements in income and highlight the importance of examining severity of food insecurity when assessing the effects of policy interventions.

1. Introduction

Food insecurity is recognized as a serious social and public health problem in many high income countries. In Canada and the U.S., inadequate or insecure access to food because of financial constraints is routinely monitored at the household level, and the adverse health effects of this condition across the life cycle are becoming increasingly well-documented (see review by Gundersen and Ziliak (Gundersen & Ziliak, 2015)). In Europe and the United Kingdom, concerns about growing food insecurity were initially spawned by reports of escalating demands for charitable food assistance (Loopstra et al., 2015a), but more recently, analyses of indicator questions about compromises in diet quality on European surveys have confirmed this trend (Loopstra et al., 2016; Davis & Baumberg, 2016). Changes in food insecurity rates have been linked to changing macroeconomic conditions such as unemployment rate (Loopstra et al., 2016; Tapogna et al., 2004; Bartfeld & Dunifon, 2006; Gundersen et al., 2014; Sriram & Tarasuk, 2015), wage levels (Loopstra et al., 2016; Bartfeld & Dunifon, 2006) and food price inflation (Gregory & Coleman-Jensen, 2013), but social policy reforms have also been implicated in relation to this problem (Loopstra et al., 2015b; Riches, 2002; Dowler & O'Connor, 2012; Emery et al., 2013a).

Although there has been considerable research in the US to examine the effects of food stamps and other food supplement programs on problems of household food insecurity in that country, e.g. (Wilde & Nord, 2005; Kabbani & Kmeid, 2005; Yen et al., 2008; Mykerezi & Mills, 2010; Arteaga et al., 2016), much less is known about the effects of social policy decisions on problems of food insecurity in welfare states without large-scale public investments in food assistance. A recent cross-national comparison of EU countries found that spending on social programs protected households from food insecurity in the context of the rising unemployment and declining wages that accompanied Europe's recent recessions (Loopstra et al., 2016), but data limitations precluded identification of the specific investments that mitigated food insecurity in these countries. Studies of the effects of policy decisions on households' vulnerability to food insecurity are more viable in Canada, however, where food insecurity has been monitored annually since 2005 in most jurisdictions, using the 18-item Household Food Security Survey Module (HFSSM), the same module used to monitor food insecurity in the US.

Indications that the mix of federal and provincial/territorial income transfer programs intended to mitigate problems of financial hardship

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(i.e., Canada's 'social safety net') shape households' risks of food insecurity come from the social patterning of this problem. Risk of food insecurity among low-income adults falls when they become eligible for an old-age pension because of the protection afforded by this guaranteed annual income (Emery et al., 2013a; Emery et al., 2013b). In contrast, food insecurity is ubiquitous among households reliant on social assistance programs (Tarasuk et al., 2014a), yet improvements to social assistance implemented as part of Newfoundland and Labrador's poverty reduction program halved food insecurity rates among recipients in that province (Loopstra et al., 2015b), suggesting that the extreme vulnerability associated with social assistance elsewhere is a function of the limited benefits provided. Given that food insecurity has been demonstrated to increase the risk of diabetes (Seligman et al., 2007; Seligman et al., 2010a), hypertension (Seligman et al., 2010a), dyslipidemia (Tayie & Zizza, 2009), cardiovascular disease (Ford, 2013), and depression (Muldoon et al., 2012; Heflin et al., 2005) and compromise disease management (Seligman et al., 2010b) and in Canada, it is a robust predictor of health care utilization and costs, independent of other well-established social determinants of health (Fitzpatrick et al., 2015; Tarasuk et al., 2015), a better understanding of how provincial policies can influence food insecurity rates is critical to the identification of strategies to reduce public expenditures in health care and improve overall health.

In 2012, 12.7% of households in the province of British Columbia (BC) were affected by some degree of food insecurity (Tarasuk et al., 2014b). While similar to the national prevalence of 12.6%, this was the highest rate observed since measurement began in the province in 2005 (Tarasuk et al., 2014b). Like other provinces in Canada, the BC government has yet to mount any intervention with the explicit goal of food insecurity reduction, but two policy changes with the potential to impact the material well-being of households at high risk were implemented between 2005 and 2012. First, there was an increase of welfare benefits from 2005 to 2007, with incomes rising by as much as 11.7% among single parent households (Tweddle et al., 2013). Second, the Rental Assistance Program (RAP) was introduced in 2006 to provide support to low-income working families in private market rental accommodations, giving an average of $379/month to participating families (British Columbia Government, n.d.).

The primary objectives of this study were to describe the sociodemographic and temporal patterning of food insecurity in BC from 2005 to 2012 and determine whether BC's increase in social assistance and introduction of the RAP affected food insecurity among the target groups. A secondary objective was to compare the sensitivity of different levels of household food insecurity to these two policy interventions.

2. Methods

All analyses were conducted using master files of the Canadian Community Health Survey (CCHS) from 2005 to 2012. The survey is a de-identified repeated cross-sectional survey that is representative of 98% of the Canadian population aged 12 and over, omitting individuals living on First Nation reserves, in institutions, in the Canadian Armed forces, or in some remote areas. Since 2007, CCHS has included a national sample of approximately 65,000 per year. Because the sample for 2005 and 2006 was concentrated in 2005, we treat that survey as having taken place in 2005. This study was limited to respondents from BC, excluding those with incomplete data on the HFSSM. The analytic sample consisted of 58,656 households. All analysis adopted a bootstrap variance estimation method and household weights supplied by Statistics Canada.

The outcome of interest was household food insecurity over the prior 12 months, determined by the number of affirmative responses to the 18 questions on the HFSSM. Models were run against three different thresholds to explore whether the impact of policy changes differed depending on the severity of food insecurity considered. It should be noted that the coding and terminology we applied to classify severity of food insecurity are based on Health Canada's approach to interpreting data from the HFSSM (Health Canada, 2007), which differs from that employed by USDA (see Appendix A). Overall food insecurity was defined as any affirmative response, in keeping with research indicating heightened vulnerability among households with even a single affirmative response (i.e., 'marginally food insecure' households) (Tarasuk et al., 2015; Coleman-Jensen, 2010; Loopstra & Tarasuk, 2013). We then considered a more conservative measure, including only households classed as moderately or severely food insecure as defined by Health Canada (Health Canada, 2007). Finally, recognizing the higher health risks and health care costs associated with severe food insecurity (Seligman et al., 2007; Tarasuk et al., 2015; Laraia et al., 2006; Whitaker et al., 2006), we considered this outcome alone.

We first examined study population characteristics from 2005 to 2012, applying chi-squared tests (for categorical variables) and linear contrasts (for continuous variables) to identify statistically significant changes over time arising from variations in sampling or macroeconomic or demographic trends within the province. Our goal was to identify compositional changes in the study population that could influence food insecurity over this period.

We next ran a multivariable logistic regression to identify sociodemographic characteristics associated with household food insecurity and examine whether the observed increase in the prevalence from 2005 to 2012 was statistically significant after accounting for compositional variations. We considered household characteristics associated with food insecurity in prior studies (McIntyre et al., 2000; Che & Chen, 2001; Vozoris & Tarasuk, 2003; Tarasuk et al., 2013; McIntyre et al., 2015), including household composition, highest level of education among household members, housing tenure, main source of household income, region of residence (denoted by health authority), and household income. Income was adjusted for household size (by dividing household income by the square root of the number of household members) and inflation (converting income to 2012 constant dollars using the Consumer Price Index for BC), and a dummy variable was included to identify households with income imputed by Statistics Canada (approximately 30% of the sample). We also included respondents' aboriginal status and immigration status, variables not available at the household level but known to associate with risk.

To explore the effects of the two policy interventions of interest, we tested whether temporal changes in food insecurity in BC differed by main sources of household income or housing tenure by testing the joint interactions between i) survey year and main source of income (employment/self-employment income being the comparison group), and ii) year and housing tenure (home owner being the comparison group), in two separate multivariable logistic regression models. Each model was run for all three food insecurity outcome variables and each included the above-listed covariates. Because social assistance payments are part of total household income, income was omitted from the models exploring possible changes in food insecurity related to main source of income. Income was retained in the models considering the vulnerability by housing tenure because rental assistance is unlikely to be reported as income.

Upon observing jointly statistically significant interactions between year dummies and main source of income, we conducted subgroup analyses among households relying on social assistance and employment to confirm that the observed relative decrease in food insecurity among households on social assistance was not attributable to a simultaneous increase in the risk among households relying on employment. The subgroup analyses were only run for the food insecurity outcome variables for which statistically significant interactions were identified, with significance defined as $p < 0.05$.

Similarly, upon observing jointly statistically significant interactions between survey years and housing tenure, we stratified the sample by housing tenure and tested whether the observed relative decline in food insecurity among renter households was spuriously caused by