

# Adults' food skills and use of gardens are not associated with household food insecurity in Canada

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## ABSTRACT

**OBJECTIVES:** To determine the extent to which Canadian adults' food preparation and cooking skills and use of home or community gardens relate to their household food insecurity status; and to compare the food shopping and cooking behaviours of adults in food-secure and food-insecure households.

**METHODS:** Data were drawn from two Rapid Response Modules appended to the Canadian Community Health Survey in 2012 and 2013. The analytic sample comprised 16,496 respondents 18 years and older. Multivariable logistic regression analyses were conducted to determine the association between food insecurity and adults' self-rated cooking abilities, food preparation skills score, use of gardens, food shopping behaviours, and cooking behaviours, while adjusting for socio-demographic characteristics.

**RESULTS:** Adults in food-insecure households did not differ significantly from others with respect to their food preparation skills or cooking ability, and neither variable predicted the odds of household food insecurity when socio-demographic characteristics were taken into account. Adults in food-insecure households were less likely to use a garden for food, but gardening was unrelated to the odds of food insecurity. Shopping with a budget was more common among adults in food-insecure households, but no other differences in food shopping behaviours were observed after adjustment for socio-demographic characteristics. Adults in food-insecure households were as likely as others to adjust recipes to make them healthier, but they had higher odds of adjusting recipes to reduce their fat content.

**CONCLUSION:** Our findings suggest that household food insecurity in Canada is not a problem of insufficient food skills.

**KEY WORDS:** Canada; food insecurity; gardening; cooking

La traduction du résumé se trouve à la fin de l'article.

*Can J Public Health* 2016;107(6):e526–e532  
doi: 10.17269/CJPH.107.5692

Food insecurity is a serious population health problem in Canada, affecting 12.6% of households in 2012<sup>1</sup> and tightly linked to health and health care spending.<sup>2</sup> Both the socio-demographic correlates of household food insecurity and its observed sensitivity to improvements in households' material circumstances<sup>3–7</sup> suggest that this problem is largely one of resource constraints. Less is known about the importance of adults' food skills and self-provisioning activities in mitigating the effects of limited incomes on household food security, but community cooking and gardening programs and other educational initiatives aimed at strengthening individuals' basic food skills are widely perceived as valuable interventions to improve the food security of low-income households.<sup>8–12</sup>

While the resourcefulness and frugality of adults tasked with food shopping in the context of limited resources have been well documented,<sup>12–16</sup> there has been little assessment of the relation between adults' food skills and household food security. The few Canadian studies of programs designed to strengthen the budgeting and cooking skills of at-risk adults suggest that these interventions have limited impact on food insecurity,<sup>8,17</sup> but more structured evaluations of broader-scale, targeted nutrition education initiatives in the US have shown reductions in household food insecurity with improved food shopping and cooking skills (see for example refs.18–20). While changes in

food insecurity have been assessed over relatively short periods and the participant groups have been highly selected, these program evaluations nonetheless suggest that at least among some population subgroups, household food insecurity is sensitive to adults' food skills. At a population level, however, the relationship between food skills and food insecurity remains unexamined.

Drawing on population survey data from two Rapid Response Modules on food skills that were appended to the Canadian Community Health Survey (CCHS) in 2012 and 2013, this study was undertaken to i) determine the extent to which Canadian adults' self-rated food preparation and cooking skills and reported use of home or community gardens relate to their household food insecurity status; and ii) compare the food shopping and cooking behaviours of adults in food-secure and food-insecure households.

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**Acknowledgements:** This research was supported by a Programmatic Grant in Health and Health Equity, Canadian Institutes of Health Research (CIHR) (FRN 115208). Orr was supported by a CIHR Fellowship Award.

**Conflict of Interest:** None to declare.

## METHODS

### Data and measures

The CCHS is an annual, cross-sectional population survey of approximately 65,000 Canadians, 12 years of age and older. The survey is designed to be representative of 98% of the Canadian population, excluding individuals living on First Nation reserves or in institutions, full-time members of the armed forces, those without addresses, and residents of two remote northern regions of Quebec.<sup>21</sup> Household food insecurity over the past 12 months is assessed using the 18-item Household Food Security Survey Module (HFSSM).

Rapid Response Modules were administered in 2012 and 2013 to a subset of 10,000 respondents residing in one of the ten provinces to assess their food preparation skills, meal planning and preparation practices, and food purchasing habits.<sup>22</sup> The modules, developed jointly by the Office of Nutrition Policy and Promotion and Statistics Canada, were adapted from published food skills questionnaires using expert consultation and then subject to cognitive and qualitative testing.<sup>22</sup> Both modules included a question asking respondents to describe their “personal ability to cook from basic ingredients”. Possible responses ranged from “I don’t know where to start when it comes to cooking” to “I frequently prepare sophisticated dishes”.

The module administered in 2012 (FS1) also included five questions about food shopping habits, asking whether the respondent had a budget, used a written grocery list, planned meals prior to going shopping, used the recommendations from Canada’s Food Guide, and selected foods based on their nutrition labels. The first question included an option to identify oneself as “never shopping for groceries”; respondents who never shopped for groceries were asked no further questions.

The module administered in 2013 (FS2) asked respondents to rate their technical and mechanical food preparation skills across eight domains: using a knife; peeling, chopping and slicing; cooking raw meat, chicken or fish; freezing raw vegetables and fruit; canning raw food; cooking soups, stews and casseroles from scratch; baking muffins and cakes from a packaged mix; and baking muffins and cakes from scratch ingredients. Possible responses were “very limited/no skill”, “basic”, “good” or “very good”.

The FS2 also included a question about gardening for food, “when season permits, do you grow vegetables, herbs, or fruits at home or in a community garden?”, to which respondents could answer yes or no. Additionally, the FS2 asked if the respondent had ever adjusted a recipe to make it healthier, and if so, did they reduce the fat, sugar or salt content, add more vegetables or fruit, choose whole grain options, or make some other adjustment.

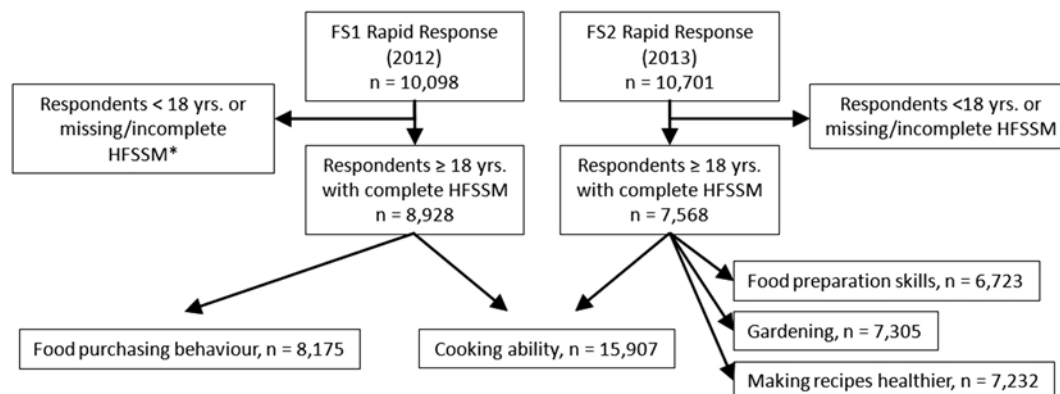
The analytic sample was restricted to respondents 18 years of age and older with complete data on the HFSSM. This yielded a pooled sample of 16,496 across the two Rapid Response Modules. Because the HFSSM was optional on CCHS in 2013 and Newfoundland and Labrador, Manitoba and British Columbia elected not to include it, respondents to FS2 from these provinces had to be omitted. Additionally, only those respondents with complete data for any question on food skills or behaviours were included in analyses of that specific question. The analytic sample consequently differed depending on the variable of interest, with samples ranging from 15,907 for the examination of self-rated cooking ability to 6,723 for the analysis of food preparation skills (Figure 1).

### Statistical analyses

All analyses were conducted in SAS 9.4, using SURVEY commands with bootstrap replication and bootstrap weights ( $n = 500$ ) that were provided by Statistics Canada. Results were considered statistically significant when  $p < 0.05$ .

Descriptive statistics were generated for the socio-demographic characteristics of the pooled sample of both modules, with total population percentages and weighted prevalence rates calculated by food insecurity status. Food insecurity was defined as any affirmative response on the HFSSM, recognizing the heightened vulnerability associated with even a single affirmative response on this scale.<sup>2</sup> Chi-square tests were used to test for differences in categorical variables by food insecurity status, and logistic regressions with contrast tests were performed to compare continuous variables.

To determine the association between household food insecurity and adults’ self-rated cooking abilities, food skills score, and reported use of a home or community garden for food, two logistic regression models were evaluated for each variable. In the baseline models, household food insecurity status was regressed on respondent’s age (included as a continuous variable, in five-year



**Figure 1.** Derivation of analytic samples. \* HFSSM = Household Food Security Survey Module

increments), sex, educational attainment, and household-level socio-demographic characteristics previously associated with household food insecurity in Canada. These included household structure, income adjusted for household size (by dividing household income by the square root of the number of household members), main source of household income, and home ownership. The baseline regression models were then run adding a variable for respondents' cooking ability, food preparation skills, or use of a garden for food to evaluate the potential contribution of these variables to household food insecurity status.

Self-rated cooking ability was entered into the above-described logistic regression model as a six-level categorical variable, with the reference category set at the category with the highest frequency. To assess the effect of food preparation skills, respondents' appraisals of their food preparation skills across the eight domains assessed were first dichotomized, assigning a value of 0 to domains with a self-rating of "very limited/no skills" or "basic skills" and 1 to those rated as "good" or "very good". The assigned values were then added to create a summary score, ranging from 0 to 8, which was entered into the regression model.

To examine the relationship between respondents' food shopping behaviours and reported practices of adjusting recipes to make them healthier and household food insecurity status, each of these variables was regressed on household food insecurity status. Respondent's age, sex, educational attainment, and the household-level socio-demographic characteristics outlined above were then added to the regression models to determine the relationship between household food insecurity and these shopping and cooking behaviours, independent of individual and household socio-demographic influences.

**Sensitivity analyses**

To assess the sensitivity of our results to the threshold applied to classify respondents' food preparation skills, analyses of the relationship between household food insecurity status and food preparation skills were rerun with summative scores based on the application of lower and higher skill thresholds. Specifically, scores were constructed by dichotomizing responses at a lower skill level (i.e., "very limited/no skills" versus "basic, good, or very good skills") and at a higher skill level (i.e., "very limited/no skills, basic, good" versus "very good skills").

We also assessed the sensitivity of our analysis of self-rated cooking ability to the selection of the reference category by rerunning the multivariable logistic regression model with different categories on this six-item "scale" set as the reference value.

To assess the effect of classifying marginally food-insecure households as food-insecure on our findings, all of the aforementioned regression models were rerun assigning "marginal" food insecurity to the food-secure group and considering only moderately and severely food-insecure households as food-insecure.<sup>23</sup>

**RESULTS**

Examination of the socio-demographic characteristics for the pooled sample of adult respondents from the two Rapid Response Modules revealed significant differences in respondents' age, sex, education, household structure, income, main source of income, and housing tenure by household food insecurity status (Table 1).

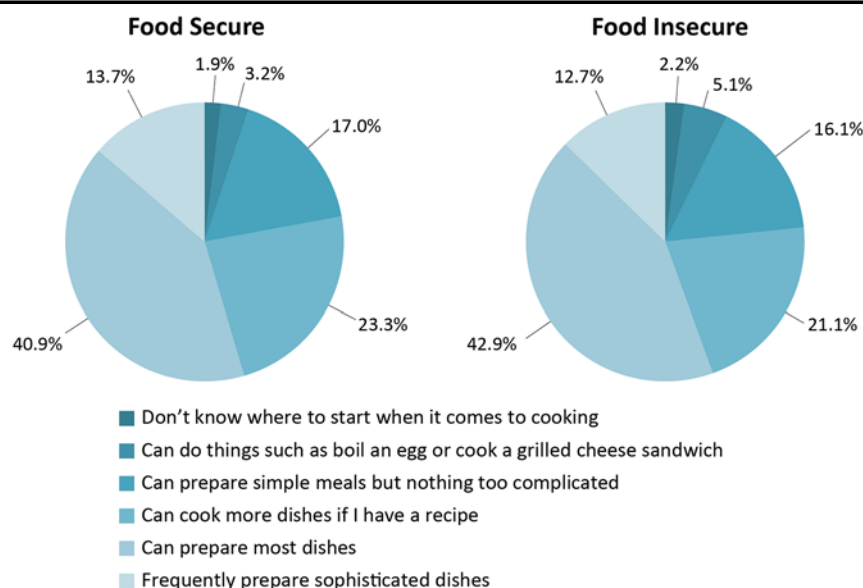
**Table 1.** Socio-demographic characteristics of respondents, by household food insecurity status\*

	All (n = 16,496)	Food secure (n = 14,825)	Food insecure (n = 1671)
Age (years)	47.1 ± 0.1	48.0 ± 0.1	39.9 ± 0.6
Sex (% Female)	50.8	50.0	56.5
Education (%)			
Completed	60.7	61.9	51.6
post-secondary			
<Post-secondary	39.2	38.0	48.4
graduation			
Household structure (%)			
Unattached living alone	15.1	14.3	21.3
With partner, no children	35.4	37.9	15.9
<18 years			
With partner, with	20.7	20.8	20.0
children <18 years			
Lone parent, with	2.8	2.0	8.1
children <18 years			
Other arrangements	26.0	24.9	34.7
Household income, adjusted CAD <sup>†</sup>	50,321 ± 625	53,549 ± 681	25,656 ± 619
Main source of household income (%)			
Wages, salaries, and self-employment	71.7	72.7	64.1
Pension or investment income <sup>‡</sup>	17.3	18.3	10.0
Social assistance	2.4	0.9	13.4
Other <sup>§</sup>	8.6	8.1	12.5
Housing tenure			
Own	73.7	78.2	39.3
Rent	26.3	21.8	60.7

\* Values are mean ± SEM or percentages.  
<sup>†</sup> Adjusted for family size by dividing by square root of household size.  
<sup>‡</sup> Includes pensions, Old Age Security, Guaranteed Income Supplement, dividends, and interest.  
<sup>§</sup> Includes Employment Insurance, Workers' Compensation, child tax benefits, child support, alimony, other income sources, and those who reported no source of income.  
 CAD = Canadian dollars. All characteristics in table are significantly different by household food insecurity status. Chi-square test for categorical and logistic regression with contrasts for continuous variables.

Adults' self-rated cooking ability did not differ significantly by food insecurity status (chi-square test, *p* > 0.05) (Figure 2). The odds of household food insecurity were positively associated with being unattached, a lone parent, or in some "other" household structure (versus living with a partner and no children), relying on social assistance (versus employment), and renting rather than owning one's dwelling, and inversely associated with respondents' age, income, and reliance on pensions or investment income (Table 2, column 2). However, there was no significant association between household food insecurity and respondent's self-rated cooking ability. Sensitivity analyses using a different level of cooking ability as the reference category yielded similarly non-significant results (data not shown).

Irrespective of food insecurity status, most adults reported having "good" or "very good" food preparation skills across all but one of the dimensions assessed. The proportion rating their skills as "good" or "very good" ranged from 66.2% for baking muffins from scratch to 94.7% for using a kitchen knife safely, but only 37.0% of adults rated their ability to can raw ingredients as "good" or "very good". Although 91.1% of adults in food-insecure households rated their knife skills as "good" or "very good" and 88.2% rated their ability to peel, chop and slice produce as "good" or "very good", higher proportions were observed among adults in food-secure households (95.2% and 93.7% respectively; chi-square tests, *p* < 0.05). Among



**Figure 2.** Self-rated cooking ability of respondents, by household food insecurity status (N = 15,907)

**Table 2.** Odds of household food insecurity in relation to socio-demographic covariates and i) self-rated cooking ability, ii) food preparation skill score, or iii) gardening\*

	Self-rated cooking ability (n = 15,907)	Food preparation skills score (n = 6723)	Gardens for food (n = 7305)
	OR (95% CI)	OR (95% CI)	OR (95% CI)
Age (per 5 years)	0.93 (0.90–0.96)	0.92 (0.87–0.97)	0.92 (0.87–0.96)
Sex			
Male	1.00	1.00	1.00
Female	1.17 (0.95–1.44)	1.31 (0.98–1.74)	1.27 (0.97–1.65)
Education			
Completed post-secondary	1.00	1.00	1.00
No post-secondary	0.99 (0.82–1.21)	1.18 (0.88–1.57)	1.19 (0.90–1.58)
Household structure			
Unattached living alone	1.50 (1.15–1.95)	1.39 (0.92–2.11)	1.30 (0.86–1.97)
With partner, no children <18 years	1.00	1.00	1.00
With partner, with children <18 years	1.34 (0.96–1.85)	0.97 (0.61–1.54)	0.94 (0.59–1.48)
Lone parent, with children <18 years	1.97 (1.15–3.36)	2.03 (0.85–4.86)	2.21 (0.97–5.04)
Other arrangements	1.51 (1.06–2.17)	1.16 (0.68–2.00)	1.14 (0.67–1.94)
Household income, adjusted (per \$1000 CAD)	0.96 (0.96–0.97)	0.96 (0.95–0.97)	0.96 (0.95–0.97)
Main source of household income			
Employment	1.00	1.00	1.00
Pension or investment income	0.56 (0.39–0.79)	0.53 (0.30–0.93)	0.52 (0.30–0.91)
Social assistance	3.04 (2.02–4.57)	2.08 (1.12–3.85)	2.20 (1.20–4.04)
Other	0.79 (0.58–1.09)	0.57 (0.34–0.96)	0.57 (0.35–0.95)
Housing tenure			
Own	1.00	1.00	1.00
Rent	2.47 (2.03–3.02)	2.19 (1.60–3.00)	2.09 (1.53–2.87)
Self-rated cooking ability			
Don't know where to start when it comes to cooking	0.71 (0.31–1.62)		
Can do things such as boil an egg or cook a grilled cheese sandwich but nothing more advanced	1.31 (0.82–2.08)		
Can prepare simple meals but nothing too complicated	0.92 (0.69–1.24)		
Can cook most dishes if I have a recipe	0.83 (0.63–1.09)		
Can prepare most dishes	1.00		
Frequently prepare sophisticated dishes	0.98 (0.72–1.34)		
Food preparation skills score (range 0–8)		0.97 (0.90–1.06)	
Gardens for food			
No			1.00
Yes			0.83 (0.63–1.11)

\* Each model adjusted for socio-demographic variables and one of the following: self-rated cooking ability, food preparations skills score, or gardens for food.

the sample responding to the food preparation skills questions, the odds of food insecurity was significantly associated with several individual and household-level socio-demographic characteristics,

but not with the respondent's food preparation skills score (Table 2, column 3). Basing this food skills score on a lower or higher level of skill did not alter the findings (data not shown).

**Table 3.** Prevalence and odds of specific food purchasing behaviours and recipe adjustment behaviours in relation to household food insecurity status

	All	Food-secure Yes (%)	Food-insecure	Odds of respondent in food-insecure household reporting behaviour <sup>§</sup>	
				Unadjusted	Adjusted <sup>  </sup>
				OR (95% CI)	
Specific food purchasing behaviours*					
Had a budget on how much can spend	47.5	42.7	83.6 <sup>¶</sup>	6.83 (4.80–9.72)	3.99 (2.76–5.78)
Used a written grocery list	74.0	74.5	70.0	0.80 (0.62–1.04)	0.97 (0.74–1.28)
Planned meals before going to the store	61.4	61.5	61.2	0.99 (0.78–1.27)	1.01 (0.76–1.33)
Used recommendations from Canada’s Food Guide	31.4	31.8	27.2	0.84 (0.66–1.07)	1.10 (0.83–1.44)
Selected foods based on food nutrition labels	64.3	65.5	55.5**	0.66 (0.51–0.85)	0.76 (0.58–1.002)
Recipe adjustment behaviours <sup>†</sup>					
Adjusted a recipe to make it healthier	64.7	65.0	62.0	0.88 (0.68–1.13)	1.03 (0.78–1.37)
Specific adjustments made <sup>‡</sup>					
Reduced fat content	51.1	50.5	55.6	1.22 (0.90–1.66)	1.48 (1.05–2.08)
Reduced salt content	42.0	42.0	42.4	1.02 (0.74–1.41)	1.09 (0.75–1.60)
Reduced sugar content	46.1	46.4	43.6	0.89 (0.65–1.22)	1.00 (0.71–1.40)
Added more vegetables or fruit	48.1	47.8	50.2	1.10 (0.78–1.55)	0.94 (0.65–1.36)
Chose whole grain options	32.6	32.6	32.3	0.99 (0.69–1.41)	1.05 (0.70–1.56)
Other	13.1	12.7	15.7	1.28 (0.88–1.86)	1.28 (0.83–1.97)

\* Based on respondents with non-missing values for all listed questions on food purchasing behaviours and who did not identify themselves as “never shopping for groceries”, *n* = 8175 (*n* = 7326 food-secure and *n* = 849 food-insecure).

† Based on respondents with non-missing values for all listed questions on recipe adjustment, analytic *n* = 7232 (*n* = 6468 food-secure and *n* = 764 food-insecure).

‡ Based on respondents who answered “yes” to adjusting a recipe to make it healthier.

§ Versus respondents in food-secure households.

|| Models adjusted for age, sex, education, household structure, adjusted household income, main source of household income, and housing tenure.

¶ *p* < 0.001 by chi-square test.

\*\* *p* < 0.01 by chi-square test.

Only 29.4% of adults in food-insecure households reported using a home or community garden for food, compared with 43.5% of those in food-secure households (chi-square test, *p* < 0.05). The odds of food insecurity was not significantly associated with the use of gardens for food when this variable was included in a logistic regression model along with individual- and household-level socio-demographic characteristics (Table 2, column 4).

Almost two thirds of adults reported adjusting a recipe to make it healthier, and this proportion did not differ significantly by food insecurity status (Table 3). The nature of the recipe adjustments reported was also similar between adults in food-secure and food-insecure households, but after adjustment for socio-demographic characteristics, those in food-insecure households had higher odds of reporting having adjusted recipes to reduce their fat content (Table 3).

Shopping with a budget was much more common among adults in food-insecure households than among those who were food-secure (Table 3). After adjustment for socio-demographic characteristics, adults in food-insecure households had almost four times the odds of shopping with a budget (Table 3). There were no differences by food insecurity status in the proportions of adults reporting planning meals prior to going shopping, using a written grocery list, or using Canada’s Food Guide when shopping (Table 3). The use of nutrition labels to select foods was more common among food-secure than among food-insecure shoppers (65.5% vs. 55.5%, chi-square test, *p* = 0.0011), but this difference lost significance when individual and household characteristics were taken into account (Table 3).

When the analyses summarized in Tables 2 and 3 were rerun including marginally food-insecure households with the food-secure group, the relationships between household food insecurity

and respondents’ self-rated cooking ability, food skills score, and gardening activities remained non-significant, but a stronger association was observed between household food insecurity and the adjustment of recipes to reduce their fat content (Adjusted Odds Ratio: 1.78, 95% CI: 1.18–2.69). The reclassification of marginally food-insecure households as food-secure also yielded a somewhat stronger association between the household food insecurity and shopping with a budget (AOR: 4.71, 95% CI: 2.83–7.85), and a significant negative association between household food insecurity and the use of nutrition labels persisted even after adjustment for covariates (AOR: 0.71, 95% CI: 0.51–0.97).

## DISCUSSION

Our findings suggest that adults in food-insecure households do not differ significantly from other Canadians with respect to their self-rated food preparation skills or cooking ability. In addition, they are no less likely to report adjusting recipes to make them healthier, and in fact, they appear slightly more likely to make adjustments to reduce fat. Moreover, their food preparation skills and cooking abilities are not significantly related to their odds of household food insecurity. Rather, the results of our multivariable analysis suggest that the likelihood of Canadian households being food-insecure is a function of their income, housing tenure, main source of income (i.e., a variable reflective of income security, assets, access to credit, and other benefits), and household composition.

Our findings confirm the centrality of financial hardships to household food insecurity that has been identified in qualitative research with vulnerable households.<sup>24</sup> The reported food shopping behaviours of adults in food-insecure households are consistent with other studies that have documented the care with

which families make food purchasing decisions when faced with extreme resource constraints.<sup>12–16,25</sup> Consistent with our observation of less nutrition label use among adults in food-insecure households, accounts of the priorities that food-insecure parents apply to their food purchasing decisions suggest that price and family food preferences take precedence over nutrition considerations when resources are scarce.<sup>13,14,25</sup>

The discrepancy between our results and US program evaluation data showing that improving adults' food skills can reduce their food insecurity (see for example refs. 18–20) may simply reflect differences in the scope of these research endeavours. Our study provides insight into associations at a population level whereas the education programs assessed have been targeted to particularly high-risk groups who are not necessarily representative of the larger population of food-insecure households.

Given that most people in food-insecure households in Canada reside in urban areas and in rental accommodations,<sup>1</sup> it is not surprising that they were less likely to engage in gardening for food. Our failure to find any indication that gardening was protective against household food insecurity is consistent with studies documenting the relatively low yield of home and community gardens in Canada.<sup>26</sup> It is important to acknowledge, however, that the measure of gardening included in this survey did not include an assessment of the scale of the activity or differentiate between home gardening and participation in community gardening projects.

The questions used to assess food preparation skills and cooking abilities in this survey have been used elsewhere,<sup>27–29</sup> but more research is needed to assess the validity, reliability and scalar properties of these questions. In the absence of standardized, validated coding schemes, we experimented with the application of different thresholds and reference categories, but none of these variations revealed significant differences in food preparation skills or self-rated cooking ability by household food insecurity status.

We were also limited by our inability to determine the role of the respondent vis-à-vis household food preparation. The questions about shopping behaviours were only administered to respondents who self-identified as bearing some responsibility for grocery shopping, but no analogous restrictions were applied to the assessment of food preparation and cooking abilities. Given the higher proportions of unattached individuals and lone parents in food-insecure households, our sample was more likely to have included adults with primary responsibility for meal preparations in food-insecure as compared to food-secure households. Nonetheless, insofar as the inclusion of adults without primary responsibility for meal preparation was a source of error in our analyses, it could be expected to bias results of our results towards the null.

Our failure to detect an association between food skills and household food insecurity does not negate the importance of current initiatives to improve Canadians' meal preparation practices as a means to address population health nutrition concerns such as high sodium intakes, which have been linked to the excess consumption of highly processed foods.<sup>30</sup> Such intervention strategies are supported by the observed positive association between food skill and fruit and vegetable consumption in Canada.<sup>22</sup> However, our results raise serious questions about the appropriateness of recommendations by the Conference Board of Canada<sup>10</sup> and others<sup>8,11</sup> that programs to improve food skills are part of the solution to food insecurity in this country.

Given the persistently high prevalence of household food insecurity in Canada and the gravity of the adverse health outcomes associated with this problem, it is important that efforts to address food insecurity be grounded in evidence. Our examination of the relation between household food insecurity and adults' food skills, assessed across multiple domains in a large, population-based survey, provides absolutely no indication of a skills deficit among food-insecure households. Directing public funds into food skills programs as a means to improve household food security is only defensible in clearly targeted programs where needs assessments confirm the potential for benefits. Provincial and federal government actions to address food insecurity should be informed by the growing body of evidence demonstrating the sensitivity of this problem to policy interventions that improve the material circumstances of at-risk groups.<sup>3–7</sup>

## REFERENCES

1. Tarasuk V, Mitchell A, Dachner N. *Household Food Insecurity in Canada, 2012*. Toronto, ON: Research to Identify Policy Options to Reduce Food Insecurity (PROOF), 2014.
2. Tarasuk V, Cheng J, de Oliveira C, Dachner N, Gundersen C, Kurdyak P. Association between household food insecurity and annual health care costs. *Can Medl Assoc J* 2015;187(14):E429–36. PMID: 26261199. doi: 10.1503/cmaj.150234.
3. Emery JH, Fleisch V, McIntyre L. How a guaranteed annual income could put food banks out of business. *SPP Res Papers* 2013;6(37):1–20.
4. Ionescu-Itu R, Glymour MM, Kaufman JS. A difference-in-differences approach to estimate the effect of income-supplementation on food insecurity. *Prev Med* 2015;70:108–16. PMID: 25475685. doi: 10.1016/j.ypmed.2014.11.017.
5. McIntyre L, Pow J, Emery J. A path analysis of recurrently food-insecure Canadians discerns employment, income, and negative health effects. *J Pov* 2015;19:71–87. doi: 10.1080/10875549.2014.979462.
6. Loopstra R, Dachner N, Tarasuk V. An exploration of the unprecedented decline in the prevalence of household food insecurity in Newfoundland and Labrador, 2007–2012. *Can Public Policy* 2015;41(3):191–206. doi: 10.3138/cpp.2014-080.
7. Loopstra R, Tarasuk V. Severity of household food insecurity is sensitive to change in household income and employment status among low-income families. *J Nutr* 2013;143:1316–23. PMID: 23761648. doi: 10.3945/jn.113.175414.
8. Chenhall C. *Improving Cooking and Food Preparation Skills: A Profile of Promising Practices in Canada and Abroad*. Healthy Living Issue Group, Pan-Canadian Public Health Network, 2010. Available at: <http://www.hc-sc.gc.ca/fn-an/nutrition/child-enfant/cfps-acc-profil-apercu-eng.php> (Accessed March 9, 2016).
9. Hamelin AM, Mercier C, Bedard A. Discrepancies in households and other stakeholders viewpoints on the food security experience: A gap to address. *Health Educ Res* 2010;25(3):401–12. PMID: 19564176. doi: 10.1093/her/cyp033.
10. Howard A, Edge J. *Enough for All: Household Food Security in Canada*. Ottawa, ON: Conference Board of Canada, 2013.
11. Pepin-Filion D, Tranchant C, Forgues E, Carrier N, LeBlanc C, LeBlanc J. *Food Security and Insecurity in New Brunswick: Portrait, Challenges, and Perspectives*. Moncton, NB: Canadian Institute for Research on Linguistic Minorities, 2016.
12. Desjardins E. *"Making Something Out of Nothing": Food Literacy among Youth, Young Pregnant Women and Young Parents Who Are at Risk for Poor Health*. Public Health Ontario, Locally Driven Collaborative Projects (LDCCP), 2013. Available at: [http://foodsecurecanada.org/sites/default/files/report\\_ldccp\\_foodskills\\_dec2013\\_final5\\_.pdf](http://foodsecurecanada.org/sites/default/files/report_ldccp_foodskills_dec2013_final5_.pdf) (Accessed August 2, 2016).
13. Dachner N, Ricciuto L, Kirkpatrick S, Tarasuk V. Food purchasing and food insecurity among low-income families in Toronto. *Can J Diet Pract Res* 2010;71(3):e50–e56. PMID: 20825694. doi: 10.3148/71.3.2010.127.
14. Engler-Stringer R. Food selection and preparation practices in a group of young low-income women in Montreal. *Appetite* 2011;56:118–21. PMID: 21145934. doi: 10.1016/j.appet.2010.12.004.
15. Hamelin AM, Mercier C, Bedard A. Perceptions of needs and responses in food security: Divergence between households and stakeholders. *Public Health Nutr* 2008;11(12):1389–96. PMID: 18761760. doi: 10.1017/S1368980008003406.
16. Williams PL, Macaulay R, Anderson BJ, Barro K, Gillis DE, Johnson CP, et al. "I would have never thought that I would be in such a predicament": Voices from women experiencing food insecurity in Nova Scotia, Canada. *J Hunger Environ Nutr* 2012;7:253–70. doi: 10.1080/19320248.2012.704740.

17. Engler-Stringer R, Berenbaum S. Exploring food security with collective kitchens participants in three Canadian cities. *Qual Health Res* 2007;17(1):75–84. PMID: 17170245. doi: 10.1177/1049732306296451.
18. Eicher-Miller H, Mason A, Abbott A, McCabe G, Boushey C. The effect of food stamp nutrition education on the food insecurity of low-income women participants. *J Nutr Educ Behav* 2009;41:161–68. PMID: 19411049. doi: 10.1016/j.jneb.2008.06.004.
19. Flynn M, Reinert S, Schiff A. A six-week cooking program of plant-based recipes improves food security, body weight, and food purchases for food pantry clients. *J Hunger Environ Nutr* 2013;8(1):73–84. doi: 10.1080/19320248.2012.758066.
20. Kaiser L, Chaidez V, Algert S, Horowitz M, Martin A, Mendoza C, et al. Food resource management education with SNAP participation improves food security. *J Nutr Educ Behav* 2015;47(4):374–78.e1. PMID: 25843204. doi: 10.1016/j.jneb.2015.01.012.
21. Statistics Canada. *Canadian Community Health Survey – Annual Component (CCHS)*, 2012. Available at: <http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SurvId=50653&InstalD=135927&SDDS=3226> (Accessed February 3, 2014).
22. Health Canada. *A Look at Food Skills in Canada*. 2015. Available at: [http://publications.gc.ca/collections/collection\\_2016/sc-hc/H164-188-2015-eng.pdf](http://publications.gc.ca/collections/collection_2016/sc-hc/H164-188-2015-eng.pdf) (Accessed January 21, 2016).
23. Health Canada. *Canadian Community Health Survey, Cycle 2.2, Nutrition (2004) – Income-Related Household Food Security in Canada*. Ottawa, ON: Office of Nutrition Policy and Promotion, Health Products and Food Branch, Health Canada, 2007.
24. Hamelin AM, Mercier C, Bedard A. Needs for food security from the standpoint of Canadian households participating and not participating in community food programmes. *Int J Consum Stud* 2011;35:58–68. doi: 10.1111/j.1470-6431.2010.00927.x.
25. Engler-Stringer R. The domestic foodscapes of young low-income women in Montreal: cooking practices in the context of an increasingly processed food supply. *Health Educ Behav* 2010;37(2):211–26. PMID: 19690290. doi: 10.1177/1090198109339453.
26. CoDyre M, Fraser E, Landman K. How does your garden grow? An empirical evaluation of the costs and potential of urban gardening. *Urban Forestry & Urban Greening* 2015;14:72–79. doi: 10.1016/j.ufug.2014.11.001.
27. Gaines A, Robb C, Knol L, Sickler S. Examining the role of financial factors, resources and skills in predicting food security status among college students. *Int J Consum Stud* 2014;38:374–84. doi: 10.1111/ijcs.12110.
28. Region of Waterloo Public Health. *Food Skills of Waterloo Region Adults*. Waterloo, ON: Region of Waterloo Public Health, 2010.
29. Slater J, Mudryj A. Self-perceived eating habits and food skills of Canadians. *J Nutr Educ Behav* 2016;48(7):486–95.e1. PMID: 27373863. doi: 10.1016/j.jneb.2016.04.397.
30. Moubarac J, Bortoletto Martins A, Claro R, Levy R, Cannon G, Monteiro C. Consumption of ultra-processed foods and likely impact on human health. Evidence from Canada. *Public Health Nutr* 2013;16(12):2240–48. PMID: 23171687. doi: 10.1017/S1368980012005009.

Received: May 19, 2016

Accepted: August 19, 2016

## RÉSUMÉ

**OBJECTIFS :** Déterminer la mesure dans laquelle les habiletés des adultes canadiens à préparer des aliments, à cuisiner et à utiliser des jardins privés ou communautaires sont liées au statut d’insécurité alimentaire du ménage; et comparer les habitudes de cuisine et d’achat de produits d’épicerie des adultes de ménages aux prises ou non avec l’insécurité alimentaire.

**MÉTHODE :** Nos données proviennent de deux « modules réponse rapide » annexés à l’Enquête sur la santé dans les collectivités canadiennes en 2012 et en 2013. L’échantillon d’analyse comptait 16 496 répondants de 18 ans et plus. Nous avons mené des analyses de régression logistique multivariées pour déterminer l’association entre l’insécurité alimentaire et les habiletés à cuisiner, la note d’habileté à préparer des repas, l’utilisation de jardins, les habitudes d’achat de produits d’épicerie et les habitudes de cuisine autodéclarées par les adultes, tout en tenant compte des caractéristiques sociodémographiques.

**RÉSULTATS :** Les adultes des ménages aux prises avec l’insécurité alimentaire n’étaient pas sensiblement différents des autres en ce qui a trait à leur habileté à préparer des repas ou à cuisiner, et ni l’une ni l’autre de ces variables ne prédisait la probabilité d’insécurité alimentaire du ménage lorsque les caractéristiques sociodémographiques étaient prises en compte. Les adultes des ménages aux prises avec l’insécurité alimentaire étaient moins susceptibles de jardiner pour s’alimenter, mais le jardinage n’était pas lié à la probabilité d’insécurité alimentaire. Magasiner avec un budget était plus courant chez les adultes des ménages aux prises avec l’insécurité alimentaire, mais aucune autre différence n’a été observée dans les habitudes de magasinage lorsque les caractéristiques sociodémographiques étaient prises en compte. Les adultes des ménages aux prises avec l’insécurité alimentaire étaient aussi susceptibles que les autres d’adapter des recettes pour les rendre plus saines, mais ils avaient une probabilité plus élevée d’adapter des recettes pour réduire leur teneur en matières grasses.

**CONCLUSION :** Nos constatations indiquent que l’insécurité alimentaire des ménages au Canada n’est pas un problème de compétences alimentaires insuffisantes.

**MOTS CLÉS :** Canada; insécurité alimentaire; jardinage; cuisine