Awareness of Canada's Food Guide Among Canadian Youth

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ABSTRACT

Purpose: Canada's Food Guide (CFG) contains recommendations for healthy eating for Canadians. The objective was to examine the awareness of and learning about CFG by Canadian youth.
Methods: Cross-sectional online surveys were conducted with 3,674 youth aged 10–17 years in Canada in November/December 2019. Logistic binary regression models examined awareness of CFG, learning about CFG in school, and learning about healthy eating in schools in the past 12 months.
Results: Most participants reported hearing of CFG (84.5%), learning about CFG in school (86.6%), and learning about healthy eating in school (65.4%) in the past 12 months. Awareness of CFG was higher among females (OR: 1.61; 95% CI: 1.32–1.96), older youth (1.70; 1.39–2.07), and those in Atlantic Canada (OR: 1.77; 95% CI: 1.10, 2.84). Significantly fewer East/Southeast Asian, South Asian, Latino, and Middle Eastern participants reported hearing of CFG compared to white participants ($p < 0.05$ for all). Unstated/missing BMI (0.56; 0.45–0.71) and living in BC (OR: 0.61; 95% CI: 0.45, 0.82) were negatively associated with hearing about CFG. Similar results were observed in the models on learning about CFG and healthy eating in school.
Conclusions: This study indicates discrepancies in awareness of CFG among youth by sex, ethnicity, region, and BMI which may suggest differences in use of CFG and healthy eating behaviours.

Key words: Food guide, food-based dietary guidelines, Canada's food guide.

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RÉSUMÉ

Objectif. Le *Guide alimentaire canadien* (GAC) contient des recommandations relatives à la saine alimentation pour la population canadienne. L'objectif était d'évaluer si les jeunes Canadiens connaissent le GAC et ce qu'ils ont appris à son sujet.
Méthodes. Des enquêtes transversales ont été menées en ligne auprès de 3 674 jeunes âgés de 10 à 17 ans au Canada en novembre et décembre 2019. Des modèles de régression logistique binaire ont permis d'examiner la connaissance du GAC, les apprentissages liés au GAC à l'école et les apprentissages liés à la saine alimentation à l'école au cours des 12 mois précédents.
Résultats. La plupart des participants ont déclaré avoir entendu parler du GAC (84,5 %), avoir appris des choses sur le GAC à l'école (86,6 %) et avoir appris des choses sur la saine alimentation à l'école (65,4 %) au cours des 12 mois précédents. La connaissance du GAC était plus élevée chez les filles (RC : 1,61; IC à 95 % : 1,32-1,96), les jeunes plus âgés (1,70; 1,39-2,07) et ceux du Canada atlantique (RC : 1,77; IC à 95 % : 1,10-2,84). Un nombre significativement plus faible de participants d'Asie de l'Est/du Sud-Est, d'Asie du Sud, d'origine latine et du Moyen-Orient que de participants blancs ont déclaré avoir entendu parler du GAC ($p < 0,05$ pour tous). Les participants dont l'IMC était non déclaré/manquant (0,56; 0,45-0,71) et vivant en Colombie-Britannique (RC : 0,61; IC à 95 % : 0,45-0,82) étaient associés négativement à la connaissance du GAC. Des résultats similaires ont été observés dans les modèles sur les apprentissages liés au GAC et à la saine alimentation à l'école.
Conclusions. Cette étude révèle des divergences dans la connaissance du GAC chez les jeunes selon le sexe, l'origine ethnique, la région et l'IMC, ce qui pourrait suggérer des différences dans l'utilisation du GAC et l'adoption de comportements alimentaires sains.

Mots-clés : Guide alimentaire, recommandations alimentaires, Guide alimentaire canadien.

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BACKGROUND

National food-based dietary guidelines (FBDGs) contain recommendations on healthy eating and dietary patterns to promote health and reduce chronic disease, while responding to country-specific food systems, nutrition priorities, and public health policies [1].

Canada introduced their first FBDG in 1942 [2], with subsequent editions evolving over time. The previous version, Eating Well with Canada's Food Guide from 2007 emphasized age- and gender-specific guidance, including recommended servings for four food groups [2]. A new Canada's Food Guide (CFG) was released in January 2019, with an increased emphasis on food preparation and eating contexts [3]. It also has shifted away from recommended servings of food groups per day to a more holistic model of food proportions and qualitative guidance on healthy dietary behaviours.

In 2012, a national survey indicated that almost 80% of Canadians over 12 years of age were aware of CFG, while 9% reported using the 2007 guide in the past 6 months [4]; however, previous studies among youth have also shown low adherence to CFG recommendations in terms of dietary intake and food groups [5–7]. The current study examined awareness of and learning about CFG in school among youth, including sociodemographic, regional, and weight status differences.

METHODS

Study sample

Data were from the Canadian arm of the 2019 International Food Policy Study (IFPS) Youth Survey, an annual repeat

cross-sectional survey conducted in 6 countries. Data were collected via self-completed web-based surveys conducted in November and December 2019 with youth aged 10 to 17 years. Respondents were recruited through parents/guardians enrolled in the Nielsen Consumer Insights Global Panel and their partners' panels. Surveys were conducted in English or French. The child's parent/guardian received remuneration in accordance with their panel's usual incentive structure. The study was reviewed by and received ethics clearance through a University of Waterloo Research Ethics Committee (ORE# 41477). A full description of the study methods can be found in the IFPS Technical Report [8].

Measures

Respondents were asked "In the past 12 months, have you learned about healthy eating in school?", "Have you ever heard of Canada's Food Guide?", and "Have you ever learned about Canada's Food Guide in school?" ("Yes", "No", "Don't know", or "Refuse to answer"). If respondents answered "Yes" to having heard of CFG, they were asked "Which versions of the food guide have you learned about?", and were shown three images: the 2019 CFG, the 2007 CFG, and a modified version of Australia's "Healthy Eating Pyramid" (control), digitally altered to appear to be published in Canada instead of Australia. Respondents could select all images that applied: "None of the above", "Don't know", or "Refuse to answer". Self-reported demographic variables were also measured including sex, age, ethnicity, region, perceived income adequacy, and body mass index (BMI). BMI classification was calculated from self-reported height and weight based on World Health Organization standards for BMI-for-age for 5–19 year olds [9]. Respondents with missing data (refusals, don't know, implausible values) for BMI and perceived income adequacy collapsed were into one "unstated" category.

Statistical analysis

A total of 3,682 youth aged 10–17 years in Canada completed the survey. A sub-sample of 3,674 were included in the current analysis after excluding respondents who refused to answer any of the awareness or learning in school questions (n = 8). Estimates reported are weighted unless otherwise specified. Logistic binary regression models were conducted using SAS 9.4 (SAS Institute Inc., Cary, NC, USA 2013) for three outcomes—ever hearing of CFG, ever learning about CFG in school, and learning about healthy eating in school in the past 12 months. All models were adjusted for age, sex, ethnicity, region, income adequacy, and BMI.

RESULTS

Sample characteristics

Sample characteristics of the 3,674 participants included in the analysis are shown in Table 1. The sample had a mean age of 13.9 years old (SD: 2.30). Most participants (84.5%) reported hearing of CFG (Table 2). Overall, 86.6% of participants reported they had learned about CFG in school and 65.4% reported they learned about healthy eating in school in the past 12 months (Supplementary Table 1[1]). Among those who reported they had heard of CFG, 52.3% reported learning about the 2007 version, 30.0% reported learning about the

Table 1. Weighted sample characteristics, 2019 international food policy study youth (n = 3674).

Sociodemographic Characteristic	Percentage (n)
Sex	
Male	50.9 (1871)
Female	49.1 (1803)
Age	
10–13 years	50.6 (1859)
14–17 years	49.4 (1815)
Ethnicity	
White only	72.8 (2676)
East/Southeast Asian only	7.4 (272)
South Asian only	4.2 (155)
Black only	2.6 (96)
Indigenous only	2.1 (79)
Middle Eastern only	1.5 (55)
Latino only	1.4 (51)
Mixed/other/not stated/missing	8.0 (290)
Region	
Alberta	13.1 (483)
Atlantic Canada	6.0 (222)
British Columbia	12.4 (456)
Manitoba	3.7 (134)
Ontario	39.4 (1449)
Quebec	21.4 (785)
Saskatchewan	4.0 (145)
Perceived income adequacy	
Not enough money	3.0 (109)
Barely enough money	14.4 (531)
Enough money	61.0 (2240)
More than enough money	20.3 (747)
Unstated	1.3 (47)
BMI classification	
Severe thinness (z-score < -3)	1.4 (52)
Thinness ($-3 \leq z$-score < -2)	2.8 (103)
Normal ($-2 \leq z$-score ≤ 1)	49.8 (1830)
Overweight ($1 < z$-score ≤ 2)	15.3 (562)
Obesity (z-score > 2)	8.5 (312)
Missing/implausible value	22.2 (815)

Note: BMI, body mass index.

[1]Supplementary data are available with the article at https://doi.org/10.1139/cjdpr-2022-019.

Table 2. Logistic Regression of awareness and learning about Canada's food guide and healthy eating in schools (n = 3674).

Sociodemographic characteristic	Ever heard of Canada's Food Guide			Ever learned about Canada's Food Guide in school			Learned about healthy eating in school in past 12 months		
	% Yes	OR (95% CI)	*p*	% Yes	OR (95% CI)	*p*	% Yes	OR (95% CI)	*p*
Sex									
Male	81.5	Ref		69.4	Ref		63.6	Ref	
Female	87.7	1.61 (1.32, 1.96)	**<0.0001**	77.1	1.47 (1.26, 1.72)	**<0.0001**	67.4	1.19 (1.03, 1.38)	**0.0200**
Age									
10–13 years	80.7	Ref		71.3	Ref		73.0	Ref	
14–17 years	88.4	1.70 (1.39, 2.07)	**<0.0001**	75.1	1.12 (0.95, 1.31)	0.1649	57.7	0.45 (0.39, 0.52)	**<0.0001**
Ethnicity									
White only	86.8	Ref		74.8	Ref		64.3	Ref	
Middle Eastern only	63.5	0.26 (0.14, 0.51)	**<0.0001**	56.9	0.40 (0.22, 0.74)	**0.0033**	71.5	1.16 (0.63, 2.15)	0.6308
Latino only	65.2	0.29 (0.15, 0.56)	**0.0002**	58.4	0.47 (0.26, 0.87)	**0.0156**	66.6	1.08 (0.58, 2.01)	0.8043
South Asian only	71.8	0.37 (0.24, 0.55)	**<0.0001**	65.0	0.53 (0.36, 0.77)	**0.0009**	79.3	1.72 (1.09, 2.70)	**0.0187**
East/Southeast Asian only	72.1	0.41 (0.30, 0.56)	**<0.0001**	63.5	0.54 (0.40, 0.71)	**<0.0001**	59.9	0.67 (0.51, 0.90)	**0.0068**
Black only	85.5	0.94 (0.51, 1.74)	0.8554	74.2	0.93 (0.56, 1.54)	0.7701	73.1	1.33 (0.80, 2.20)	0.2746
Mixed/other/not stated	87.2	1.15 (0.78, 1.71)	0.4736	75.5	1.03 (0.76, 1.40)	0.8236	69.0	1.06 (0.80, 1.41)	0.6802
Indigenous	91.4	1.55 (0.69, 3.45)	0.2854	78.0	1.08 (0.61, 1.91)	0.7823	67.5	0.91 (0.54, 1.52)	0.7116
Region									
Ontario	84.2	Ref		75.8	Ref		70.3	Ref	
British Columbia	78.6	0.61 (0.45, 0.82)	**0.0013**	67.9	0.62 (0.48, 0.81)	**0.0004**	70.3	0.81 (0.62, 1.05)	0.1063
Quebec	84.5	0.89 (0.69, 1.14)	0.3440	67.1	0.58 (0.48, 0.71)	**<0.0001**	78.0	0.38 (0.31, 0.45)	**<0.0001**
Saskatchewan	85.6	0.94 (0.55, 1.58)	0.8021	78.4	1.06 (0.66, 1.68)	0.8135	72.3	1.69 (1.05, 2.71)	**0.0304**
Alberta	86.6	1.12 (0.81, 1.55)	0.4806	76.5	0.97 (0.74, 1.26)	0.8076	71.0	1.01 (0.78, 1.30)	0.9450
Manitoba	87.3	1.18 (0.68, 2.05)	0.5560	74.1	0.86 (0.54, 1.36)	0.5263	48.0	1.07 (0.69, 1.66)	0.7638
Atlantic Canada	92.4	1.77 (1.10, 2.84)	**0.0178**	77.4	0.91 (0.67, 1.24)	0.5611	70.4	1.09 (0.82, 1.45)	0.5557
Perceived income adequacy									
Not enough money	83.5	Ref		66.5	Ref		64.8	Ref	
Barely enough money	85.0	1.00 (0.53, 1.86)	0.9874	74.1	1.39 (0.87, 2.23)	0.1659	64.9	1.07 (0.67, 1.70)	0.7769
Enough money	83.7	0.98 (0.55, 1.75)	0.9518	72.4	1.33 (0.86, 2.05)	0.1961	65.0	1.11 (0.72, 1.71)	0.6276
More than enough money	88.1	1.44 (0.78, 2.67)	0.2475	77.1	1.70 (1.08, 2.70)	**0.0228**	67.4	1.21 (0.77, 1.90)	0.4085
Unstated	67.3	0.45 (0.19, 1.07)	0.0701	55.3	0.67 (0.31, 1.44)	0.3033	61.7	0.88 (0.39, 2.03)	0.7734

(*continued*)

Table 2. (Continued).

Sociodemographic characteristic	Ever heard of Canada's Food Guide			Ever learned about Canada's Food Guide in school			Learned about healthy eating in school in past 12 months		
	% Yes	OR (95% CI)	*p*	% Yes	OR (95% CI)	*p*	% Yes	OR (95% CI)	*p*
BMI classification									
Normal	87.4	Ref		76.2	Ref		66.0	Ref	
Severe thinness	84.7	0.93 (0.41, 2.12)	0.8627	77.1	1.04 (0.51, 2.11)	0.9128	75.8	1.10 (0.54, 2.25)	0.7997
Thinness	88.2	1.23 (0.64, 2.36)	0.5281	79.3	1.24 (0.73, 2.09)	0.4219	61.2	0.71 (0.46, 1.10)	0.1285
Overweight	85.0	0.95 (0.71, 1.27)	0.7300	74.4	0.98 (0.78, 1.23)	0.8587	71.0	1.15 (0.92, 1.43)	0.2202
Obese	84.0	0.88 (0.62, 1.25)	0.4776	71.9	0.85 (0.65, 1.13)	0.2653	65.7	0.83 (0.63, 1.10)	0.1898
Unstated	77.5	0.56 (0.45, 0.71)	**<0.0001**	65.0	0.62 (0.51, 0.75)	**<0.0001**	60.0	0.66 (0.55, 0.80)	**<0.0001**

Note: Bold text indicates $p < 0.05$, which is considered strong evidence of correlation. BMI, body mass index.

2019 version, and 16.3% reported learning about the "Healthy Eating Pyramid" ("bogus" control), which would not have been used in Canadian schools (Supplementary Table 2[1]). More than two-thirds (68.2%) of participants only reported learning about the 2007 and/or 2019 versions of CFG, indicating that they chose "valid" options.

Females and youth aged 14–17 years were significantly more likely to report hearing of CFG (Table 2), when compared to males and youth aged 10–13. Significantly fewer participants who identified as East/Southeast Asian only, South Asian only, Latino only, or Middle Eastern only reported hearing of CFG, compared to those who identified as white only. Participants with a missing/implausible BMI value were significantly less likely to report hearing of CFG when compared to those with a normal BMI. Similar relationships were observed for learning about the CFG and healthy eating in schools. In reference to participants in Ontario, those in Atlantic Canada were more likely to hear of CFG, and those in British Columbia were less likely to hear about CFG or learn about it in school.

DISCUSSION

Most youth surveyed have heard of CFG, and report learning about CFG and healthy eating in school. Previous studies have found similar differences in CFG awareness where female sex and Caucasian ethnicity were associated with slightly greater awareness of CFG [10, 11]. Approximately half of youth surveyed identified that they had learned about the 2007 CFG, while one-third reported learning about the 2019 version. Less familiarity with the 2019 version may be due to its recency, as it was released in January 2019, only 10–11 months before the survey was conducted. Future research should examine how knowledge and use of the 2019 CFG change over time, including how the shift from detailed guidelines on food groups and servings to a greater focus on healthy dietary patterns, which may aid youth in understanding and applying broader healthy eating principles.

It should be noted that almost one-fifth of Canadian youth indicated they had learned about the 'Healthy Eating Pyramid' which was a bogus (control) food guide, which suggests a high level of 'false positives' in recognition of food guide versions.

Limitations

This study is subject to limitations common to survey research. Respondents were recruited using nonprobability-based sampling; therefore, the findings do not necessarily provide nationally representative estimates. However, post-stratification weights were applied and the sample sociodemographic profile is similar to the national Canadian profile [8].

RELEVANCE TO PRACTICE

Awareness of CFG was generally high among youth, yet notable regional and sociodemographic differences remain. To close these gaps, disseminating and tailoring CFG

messaging specifically to males, minority ethnic groups, and regions with less reported awareness may be beneficial.

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Conflicts of Interest: No conflicts to declare.

References

1. FAO/WHO. Food-based dietary guidelines [Internet]. Food and agriculture organization of the United Nations. [cited 2021 Feb 3]. Available from: http://www.fao.org/nutrition/education/food-dietary-guidelines/background/en/
2. Government of Canada. History of Canada's food guides from 1942 to 2007 [Internet]. 2007 [cited 2021 Feb 22]. Available from: https://www.canada.ca/en/health-canada/services/canada-food-guide/about/history-food-guide.html
3. Government of Canada. Canada's food guide [Internet]. 2019 [cited 2021 Feb 22]. Available from: https://food-guide.canada.ca/en/
4. Slater JJ, Mudryj AN. Are we really "eating well with Canada's food guide"? BMC Public Health [Internet]. 2018 [cited 2021 Feb 4];18(1). doi: 10.1186/s12889-018-5540-4
5. St. John M, Durant M, Campagna PD, Rehman LA, Thompson AM, Wadsworth LA, et al. Overweight Nova Scotia children and youth: The roles of household income and adherence to Canada's food guide to health eating. Can J Public Heal. 2008;99(4):301–306. doi: 10.1007/BF03403760.
6. Kolahdooz F, Nader F, Daemi M, Jang SL, Johnston N, Sharma S. Adherence to Canada's Food Guide recommendations among Alberta's multi-ethnic youths is a major concern: findings from the WHY ACT NOW project. J Hum Nutr Diet [Internet]. 2018 Oct 1 [cited 2021 Feb 4];31(5):658–669. Available from: https://pubmed.ncbi.nlm.nih.gov/29799655/ PMID: 29799655. doi: 10.1111/jhn.12565.
7. Rossiter MD, Evers SE, Pender AC. Adolescents' diets do not comply with 2007 Canada's food guide recommendations. Appetite [Internet]. 2012 [cited 2021 Apr 20];59:668–672. Available from: doi: 10.1016/j.appet.2012.07.018 PMID: 22863950.
8. Hammond D, White C, Rynard V, Vanderlee L. International food policy study: technical report - 2019 Youth Survey [Internet]. Waterloo; 2021 Mar [cited 2021 May 3]. Available from: http://foodpolicystudy.com/methods
9. De Onis M, Onyango AW, Borghi E, Siyam A, Nishida C, Siekmann J. Development of a WHO growth reference for school-aged children and adolescents. Bull World Health Organ [Internet]. 2007 [cited 2021 May 17];85(9):660–667. Available from: http://www.who. PMID: 18026621. doi: 10.2471/BLT.07.043497.
10. Vanderlee L, McCrory C, Hammond D. Awareness and knowledge of recommendations from Canada's food guide. Can J Diet Pract Res [Internet]. 2015 Sep 1 [cited 2021 May 19];76(3):146–149. Available from: https://dcjournal.ca/doi/10.3148/cjdpr-2015-014 PMID: 26280795. doi: 10.3148/cjdpr-2015-014.
11. Mathe N, Van Der Meer L, Agborsangaya CB, Murray T, Storey K, Johnson JA, et al. Prompted awareness and use of Eating Well with Canada's Food Guide: a population-based study. J Hum Nutr Diet. 2015;28:64–71. PMID: 24580728. doi: 10.1111/jhn.12222.