

Fast food intake in Canada: Differences among Canadians with diverse demographic, socio-economic and lifestyle characteristics

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ABSTRACT

OBJECTIVES: To estimate the contribution of fast food to daily energy intake, and compare intake among Canadians with varied demographic, socio-economic and lifestyle characteristics.

METHODS: Using the National Cancer Institute method, nationally representative estimates of mean usual daily caloric intake from fast food were derived from 24-hour dietary recall data from the Canadian Community Health Survey Cycle 2.2 ($n = 17,509$) among participants age ≥ 2 years. Mean daily intake and relative proportion of calories derived from fast food were compared among respondents with diverse demographic (age, sex, provincial and rural/urban residence), socio-economic (income, education, food security status) and health and lifestyle characteristics (physical activity, fruit/vegetable intake, vitamin/mineral supplement use, smoking, binge drinking, body mass index (BMI), self-rated health and dietary quality).

RESULTS: On average, Canadians reported consuming 146 kcal/day from fast food, contributing to 6.3% of usual energy intake. Intake was highest among male teenagers (248 kcal) and lowest among women ≥ 70 years of age (32 kcal). Fast food consumption was significantly higher among respondents who reported lower fruit and vegetable intake, poorer dietary quality, binge drinking, not taking vitamin/mineral supplements (adults only), and persons with higher BMI. Socio-economic status, physical activity, smoking and self-rated health were not significantly associated with fast food intake.

CONCLUSION: While average Canadian fast food consumption is lower than national US estimates, intake was associated with lower dietary quality and higher BMI. Findings suggest that research and intervention strategies should focus on dietary practices of children and adolescents, whose fast food intakes are among the highest in Canada.

KEY WORDS: Fast foods; food habits; health surveys

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

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Over the past 40 years, Canadians have substantially changed how and where they prepare, purchase and consume meals.^{1,2} Evidence from the United States suggests that fast food consumption in particular is rising rapidly, contributing to increased intake of calories, saturated fat, sodium and sugar-sweetened beverages.^{3,4} In 2007–2008, fast food contributed on average to 10%, 17% and 13% of daily caloric intake among US children, adolescents and adults respectively⁵ and has been associated with lower intake of nutritious foods, such as fruits, vegetables and milk, and of several essential micronutrients, including calcium, iron and vitamin C.^{3,4,6} As a result, fast food intake is thought to contribute to lower total dietary quality and higher body mass index (BMI),^{6–8} and has become a topic of growing public health interest on both sides of the border.

While more than one third of Canadians aged 14–30 years reported consuming fast food on the day prior to a national survey in 2004,⁹ no studies have examined the contribution of fast food to caloric intake or dietary quality at the population level in Canada. Canadian studies have documented meaningful geographic differences in the availability of fast food outlets relative to schools and diverse neighbourhoods;^{10–12} however, little is known about whether patterns of intake vary across geographic regions or among socio-demographically diverse groups.

Findings from the United States, where fast food intake has received more empirical attention, suggest that intake is more prevalent among men, adolescents and young adults, and varies among groups with differing ethnic identities, educational attainment and income.^{3,13,14} Intake may also cluster with health-related lifestyle characteristics including sedentary activities and substance use,^{15,16} but more nuanced understanding about fast food behaviours is needed to inform Canadian health promotion approaches aimed at improving dietary quality. This study therefore examines national levels of fast food intake, contributions to average daily caloric intake,

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and differences among Canadians with varied demographic, socio-economic and lifestyle characteristics.

METHODS

Data sources

Nationally-representative dietary data were drawn from the master files of the Canadian Community Health Survey (CCHS), cycle 2.2., which used a multistage strategy to sample respondents of all ages in private households in all provinces ($n = 35,107$, response rate = 76.5%).¹⁷ Respondents completed a 24-hour dietary recall applying the Automated Multiple-Pass Method¹⁸ and a second recall was obtained from a subsample ($n = 10,786$) 3–10 days later to take within-person variance into account when deriving usual intake distributions. All items consumed the previous day (from midnight to midnight) were described, including serving sizes and locations where items were prepared (e.g., home, fast food outlet, cafeteria, etc.).

Analyses included respondents aged ≥ 2 years, who were not pregnant or breastfeeding, with at least one valid 24-hr dietary recall with reported intake greater than zero calories. Since evidence suggests that some respondents likely under-reported total daily energy intake,¹⁹ 'implausible' dietary recalls were excluded to avoid potential underestimation from reporting bias.²⁰ The approach for identifying implausible respondents parallels a previous method for estimating daily energy requirements based on respondents' sex, age, BMI and physical activity levels and compares them with reported energy intake from 24-hr recalls¹⁹ used previously to examine national intake of fruits and vegetables.²¹ Consequently, about 40% of the recalls were dropped due to either under- or over-reporting and the final analytic sample included 17,509 'plausible respondents', of whom 3,628 completed a second dietary recall.

Variables of interest

Key outcomes were mean usual daily caloric intake measured in kilocalories (kcal), and mean usual proportion of daily caloric intake from foods/beverages purchased from a fast food outlet. Fast food outlets were conceptualized as limited service restaurants where customers order and pay before eating, based on standard industrial classifications.²² To operationalize this construct, foods likely purchased at fast food outlets were identified when an item's reported location of preparation was a fast food outlet or pizzeria, similar to approaches used in previous studies⁶; or if the item was coded as fast food in the Nutrition Survey System (NSS) database.¹⁷ The corresponding location of preparation of NSS-defined fast foods was a fast food outlet in 70% of cases, while other locations, such as school cafeterias or take-out facilities, were reported in the remaining instances. The resulting definition of fast food is therefore more inclusive than if it had been solely based on participant-reported locations of preparation.

Demographic, socio-economic, health and lifestyle variables were obtained from the CCHS General Health Component questionnaire. Demographic characteristics included sex, age groups, province and rural/urban residential location. Urban areas were defined as population concentration $\geq 1,000$ and population density ≥ 400 /per square kilometre based on the 1996

Census of Canada.²³ Age groupings were similar to Canada's Food Guide's age-based dietary recommendations, with a finer breakdown for adult groupings and no distinctions among children aged 2–8 years due to small sample sizes. Socio-economic characteristics included household income adequacy (a four-group classification based on household size and annual before-tax income), educational attainment (among respondents ≥ 25 yrs), and household food security status adapted from the U.S. Department of Agriculture module.²³

Health and lifestyle-related variables included physical activity and sedentary behaviours, fruit and vegetable intake, vitamin/mineral supplement use, smoking, binge drinking, BMI, self-rated health and dietary quality. Only younger (6–11 yrs) and older children (12–17 yrs) completed (two different) age-based instruments pertaining to physical and sedentary activities. Physical activity was categorized as active, moderate or inactive for respondents aged ≥ 12 yrs, and ≤ 12 versus >12 hrs/week for respondents aged 6–11. Sedentary activities such as reading, television or video game time were defined as <2 versus ≥ 2 hrs/day for younger children, whereas older children were coded into four categories based on hours of weekly sedentary time. BMI categories were based on the World Health Organization cut-offs for adults²⁴ and on the Cole et al. cut-offs for children.²⁵ Daily fruit and vegetable consumption (defined as <5 versus ≥ 5 times/day) was based on reported intake from the CCHS questionnaire. Vitamin/mineral supplement use was assessed separately for children/adolescents and adults due to varying patterns of use between age groups,²⁶ and frequency of binge drinking was defined as consuming ≥ 5 drinks on one occasion. Smoking and self-rated health were also examined.

Dietary quality was estimated using the Canadian adaptation of the Healthy Eating Index (HEI)-2005 which examines dietary intake relative to national recommendations in Canada's Food Guide.²⁷ The HEI is based on 11 criteria (maximum score = 100), with higher scores allocated for increased intake of fruits, vegetables, whole grains, total grain products, milk and alternatives, meat and alternatives and unsaturated fats, and lower intake of saturated fat, sodium and "other foods" that did not fit into any food group category.²⁷ HEI scores were calculated based on respondents' first 24-hr dietary recall and categorized by quartiles (Q = 22–48; Q2 = 49–57; Q3 = 58–66; and Q4 = 67–97).

Statistical analysis

Usual daily caloric intake from fast food was estimated using the National Cancer Institute (NCI) method, which aims to estimate long-term average daily intake using a mixed model composed of both a logistic and a linear part that jointly estimate the probability of consumption of foods on non-consumption days and the usual amount consumed on consumption days.²⁸ Within-person variance was taken into account using the second dietary recalls. To better predict both the probability and amount parts of the model, age, sex, BMI, ethnicity (French/British/Canadian, other), consumption day (weekend/weekday), frequency of fruit/vegetable intake, recall sequence (1st or 2nd recall) and household income were modelled as independent variables.

With only one or two dietary recalls, it is difficult to accurately estimate usual intakes for individuals.²⁹ However, differences in fast food intake between groups can be examined using standard pairwise techniques. Therefore, Student's *t*-tests compared mean usual fast-food intake of each variable category against reference categories, defined as either the lowest/first category for continuous and ordinal variables (e.g., income adequacy, BMI) or the group comprising the largest relative proportion of the sample (e.g., age groups, province). Multiple comparisons were handled using the Dunn-Šidák correction for significance (new $\alpha = 1 - (1 - \alpha)^{1/n}$ where *n* is the number of comparisons).³⁰ Missing data were handled with casewise deletion, except for income where a dummy variable was created to account for the 8% of respondents with missing data. Therefore, analytical sample sizes may vary from one variable to another depending on the number of missing cases.

Sensitivity analyses compared reported fast food-related caloric intake among plausible respondents to that of the full sample to estimate the degree of fast food under-reporting among

implausible energy reporters. SAS 9.3 (SAS Institute, Cary, NC) was used for all analyses and sampling weights adjusted for design effects. The 500 sets of bootstrap weights supplied by Statistics Canada were used to derive robust standard errors for the calculation of *t*-tests.

RESULTS

Table 1 shows that mean fast food intake contributed to 146 kcal/day and 6.3% of total daily energy intake at the national level. Among respondents who reported fast food intake on the first dietary recall, average daily fast food intake was 744 kcal and average energy intake was 206 calories higher than among those who did not consume any fast food. Figure 1 further illustrates how consumption varied widely across age-sex groups, from a peak of 9.3% of intake (248 kcal) among adolescent males to a low of 1.9% (32 kcal) among older females. While both absolute and relative fast food intake declined steadily across adult age groups, absolute intake was higher among males than females throughout the life-course (177 kcal vs. 111 kcal). However, the

Table 1. Sample characteristics and estimated mean daily intake of fast food in calories and proportion of total estimated daily energy intake accounted for by fast food among Canadians aged ≥2 years, by demographic and socio-economic characteristics from the Canadian Community Health Survey, Cycle 2.2, 2004

	Percent distribution	Mean usual fast food intake in kcal (95% CI)	<i>t</i> -test [‡]	% of usual energy intake from fast food (95% CI)	<i>t</i> -test [‡]
Overall	Total (<i>n</i> = 17,509)	146 (122–169)		6.3 (5.3–7.3)	
Sex	Total (<i>n</i> = 17,509)				
Male	51.3	177 (130–225)	<i>p</i> < 0.001	6.9 (5.1–8.5)	<i>ns</i>
Female (ref.)	48.7	111 (91–131)		5.6 (4.5–6.6)	
Age group, years	Total (<i>n</i> = 17,509)				
2–8	6.1	192 (157–227)	<i>p</i> < 0.01	8.2 (6.8–9.7)	<i>p</i> < 0.01
9–13	6.8	202 (171–232)	<i>p</i> < 0.001	8.4 (7.1–9.7)	<i>p</i> < 0.001
14–18	7.1	210 (171–249)	<i>p</i> < 0.001	8.8 (7.1–10.4)	<i>p</i> < 0.001
19–34	22.1	193 (154–233)	<i>p</i> < 0.01	7.9 (6.4–9.4)	<i>p</i> < 0.05
35–50 (ref.)	27.5	140 (115–166)		6.0 (4.9–7.1)	
51–69	21.1	88 (66–110)	<i>p</i> < 0.001	4.0 (3.0–4.9)	<i>p</i> < 0.01
≥70	9.3	46 (32–59)	<i>p</i> < 0.001	2.3 (1.6–2.9)	<i>p</i> < 0.001
Province	Total (<i>n</i> = 17,509)				
Newfoundland and Labrador	1.8	164 (139–189)	<i>ns</i>	6.9 (6.0–7.8)	<i>ns</i>
Prince Edward Island	0.5	159 (122–196)	<i>ns</i>	6.8 (5.3–8.3)	<i>ns</i>
Nova Scotia	3.3	152 (126–177)	<i>ns</i>	6.5 (5.4–7.6)	<i>ns</i>
New Brunswick	2.5	150 (85–216)	<i>ns</i>	6.4 (3.9–9.0)	<i>ns</i>
Quebec	27.6	128 (108–150)	<i>ns</i>	5.5 (4.7–6.4)	<i>ns</i>
Ontario (ref.)	35.3	149 (124–175)		6.5 (5.4–7.6)	
Manitoba	3.1	159 (114–204)	<i>ns</i>	6.9 (4.9–8.9)	<i>ns</i>
Saskatchewan	3.1	158 (129–187)	<i>ns</i>	6.8 (5.5–8.1)	<i>ns</i>
Alberta	8.8	159 (127–192)	<i>ns</i>	6.8 (5.5–8.2)	<i>ns</i>
British Columbia	13.9	143 (114–172)	<i>ns</i>	6.3 (5.0–7.5)	<i>ns</i>
Place of residence	Total (<i>n</i> = 17,509)				
Urban (ref.)	81.5	148 (125–171)		6.4 (5.4–7.4)	
Rural	18.5	143 (118–168)	<i>ns</i>	6.1 (5.2–7.0)	<i>ns</i>
Household income adequacy	Total (<i>n</i> = 17,509)				
Low income (ref.)	8.3	127 (84–169)		6.6 (5.4–7.7)	
Lower middle income	19.9	131 (106–156)	<i>ns</i>	5.7 (3.8–7.5)	<i>ns</i>
Upper middle income	32.2	150 (118–181)	<i>ns</i>	5.6 (4.5–6.7)	<i>ns</i>
Upper income	31.5	152 (128–175)	<i>ns</i>	6.3 (5.0–7.6)	<i>ns</i>
Missing income	8.2	151 (129–173)	<i>ns</i>	6.7 (5.7–7.7)	<i>ns</i>
Education*	(<i>n</i> = 9855)				
Up to and including high school (ref.)	36.9	110 (84–137)		4.9 (3.8–6.1)	
Trades/certificate/some post-secondary	40.1	130 (101–160)	<i>ns</i>	5.6 (4.4–6.9)	<i>ns</i>
University degree	23.0	122 (99–144)	<i>ns</i>	5.3 (4.4–6.2)	<i>ns</i>
Household food security status [†]	(<i>n</i> = 17,422)				
Food secure (ref.)	93.6	143 (119–167)		6.2 (5.2–7.2)	
Food insecure without hunger	4.5	165 (118–213)	<i>ns</i>	7.2 (5.1–9.2)	<i>ns</i>
Food insecure with hunger	1.9	177 (118–238)	<i>ns</i>	7.6 (5.2–9.9)	<i>ns</i>

CI = Confidence Interval; *ns* = non-significant.

*Education variable defined only for persons age 25 years and older without missing education data.

[†]*N* = 17,422 owing to missing data on food security module.

[‡]The Dunn-Šidák correction was used to adjust for multiple comparisons; all *p*-values are two-tailed.

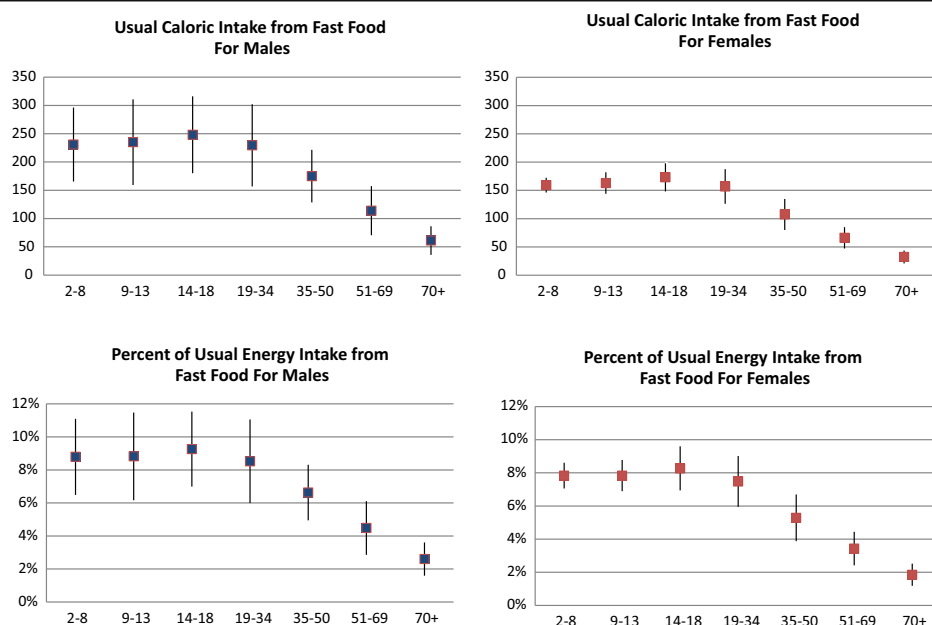


Figure 1. Estimated mean daily caloric intake from fast food in kcal and proportion of total estimated daily caloric intake accounted for by fast food by age groups with 95% confidence intervals for male and female participants from the Canadian Community Health Survey, Cycle 2.2, 2004

contribution of fast food to daily energy intake was not significantly different between males and females. Moreover, Table 1 shows that although residents in Newfoundland and Labrador (164 kcal) had the highest and Quebecers (128 kcal) had the lowest intake, neither provincial location nor living in an urban area was significantly associated with intake.

Socio-economic characteristics, including income adequacy, education and food security status, were not significant predictors of fast food consumption. However, intake was significantly associated with several health and lifestyle factors (Table 2). Children and adolescents (age 2–17 yrs) classified as obese (263 kcal) or overweight (220 kcal) had significantly higher mean usual fast food intakes than normal/underweight respondents (179 kcal). Results were similar for adults, where higher intake was reported by those with higher BMI. However, respondents with higher BMI also reported higher total daily caloric intake, and overall the proportion of intake did not vary significantly between obese respondents and those with BMI < 25 kg/m². Further, overweight adults reported a small but significantly lower proportion of fast food intake compared to normal/underweight adults (4.8% versus 6.0%).

Individuals who consumed fruits and vegetables at least five times/day had significantly lower fast food intake than those who did not (101 kcal vs. 171 kcal). Higher intake was also associated with significantly lower dietary quality scores assessed from 24-hr dietary recalls. Compared to respondents with HEI scores in the lowest quartile, persons scoring in highest or second highest quartiles consumed significantly less fast food both in absolute and relative terms.

Vitamin/mineral supplement use was significantly associated with lower fast food intake among adults (111 kcal vs. 149 kcal) but not among children or adolescents. Respondents who reported binge drinking (compared to those who reported never

binge drinking) consumed significantly more fast food, regardless of binge drinking frequency. However, level of physical activity, sedentary activities, smoking status and perceived health status were not significantly associated with intake.

Sensitivity analyses found that when the full sample of respondents aged ≥ 2 yrs was used to estimate usual daily fast food intake, average intake for the population was 128 kcal. This is approximately 18 calories lower, and statistically significant ($p < 0.05$), compared to the estimate derived from the sample of plausible respondents. However, the contribution of fast food to usual daily energy intake did not significantly differ between the full sample and the subsample of plausible respondents, likely because both intakes were similarly under-reported by implausible respondents.

DISCUSSION

Findings revealed that 6.3%, or approximately 1 in every 16 calories consumed by Canadians, is derived from fast food. This is the first Canadian study to estimate usual fast food intake using nationally representative dietary data, making it impossible to gauge changes over time in Canada. Still, the magnitude of intake is not surprising given previous estimates that one in four Canadians consumed food prepared in a fast food outlet on the day prior to CCHS 2.2. data collection.⁹ Moreover, Statistics Canada estimated that during the 6 years preceding the CCHS 2.2., Canadian spending on foods purchased from restaurants, including fast food outlets, increased by 27%² and totaled \$37 billion in 2004.³¹ Canada currently houses approximately 35,000 fast food outlets, and both the number of outlets and national sales are forecast by industry analysts to rise further in the near future.³¹

Overall, Canadians reported consuming less fast food than Americans did (per US national estimates), where fast food

Table 2. Estimated mean daily intake of fast food in calories and proportion of total estimated daily energy intake accounted for by fast food among Canadians aged ≥2 years, by key lifestyle characteristics from the Canadian Community Health Survey, Cycle 2.2, 2004

	Percent* distribution	Mean usual fast food intake in kcal (95% CI)	t-test‡	% of usual energy intake from fast food (95% CI)	t-test‡
Physical activity (age 6–11)	(n = 1451)				
0–12 hrs/week (ref.)	43.1	202 (171–232)		8.7 (7.5–9.9)	
>12 hrs/week	56.9	197 (153–240)	ns	8.2 (6.5–9.9)	ns
Physical activity (age 12 and older)	(n = 14,343)				
Active (ref.)	19.0	149 (145–153)		6.3 (6.1–6.5)	
Moderate	24.9	141 (115–167)	ns	6.1 (5.0–7.1)	ns
Inactive	56.1	140 (113–167)	ns	6.1 (4.9–7.3)	ns
Sedentary activities (age 6–11)	(n = 1451)				
<2 hours/day (ref.)	40.4	193 (165–222)		8.4 (6.7–10.2)	
≥2 hrs/day	59.6	207 (164–250)	ns	8.1 (7.0–9.2)	ns
Sedentary activities (age 12–17)	(n = 2855)				
<10 hrs/week (ref.)	14.1	200 (169–231)		8.7 (7.5–9.9)	
10–19 hrs/week	27.8	206 (171–242)	ns	8.3 (6.9–9.8)	ns
20–29 hrs/week	34.7	205 (167–243)	ns	8.7 (6.9–10.4)	ns
≥30 hrs/week	23.5	216 (176–257)	ns	8.3 (6.8–9.8)	ns
BMI cut-offs (age 2–17)	(n = 5848)				
Normal/underweight (ref.)	62.5	179 (155–202)		8.7 (7.3–10.2)	
Overweight	24.5	220 (178–262)	p < 0.05	7.3 (6.3–8.3)	ns
Obese	13.0	263 (191–335)	p < 0.01	8.6 (6.9–10.3)	ns
BMI cut-offs (age ≥18)	(n = 10,780)				
Normal/underweight (ref.)	46.0	113 (95–130)		6.0 (4.7–7.3)	
Overweight	34.7	131 (105–157)	ns	4.8 (4.0–5.5)	p < 0.05
Obese	19.4	174 (124–223)	p < 0.01	5.2 (4.3–6.2)	ns
Fruit and vegetable consumption	(n = 17,509)				
<5 times/day (ref.)	65.3	171 (140–204)		7.4 (6.0–8.7)	
≥5 times/day	34.7	101 (82–120)	p < 0.001	4.4 (3.7–5.2)	p < 0.001
Vitamin and mineral supplement use (age ≥18)	(n = 11,485)				
No (ref.)	66.5	149 (120–177)		6.3 (5.1–7.4)	
Yes	33.5	111 (89–133)	p < 0.01	5.0 (4.0–6.0)	p < 0.05
Vitamin and mineral supplement use (age 2–17)	(n = 6023)				
No (ref.)	58.2	206 (174–238)		8.7 (7.3–10.0)	
Yes	41.8	199 (168–231)	ns	8.4 (7.1–9.7)	ns
Frequency of binge drinking (age ≥12)	(n = 14,330)				
Never (ref.)	64.3	123 (106–139)		5.5 (4.8–6.3)	
Less than once/month	17.6	162 (132–193)	p < 0.01	6.8 (5.6–7.9)	p < 0.05
1 to 3 times/month	11.2	185 (146–224)	p < 0.001	7.4 (5.9–8.9)	p < 0.001
At least once/week	6.9	190 (138–243)	p < 0.001	7.4 (5.4–9.4)	p < 0.001
Current smoking status (age ≥12)	(n = 14,337)				
Non-smoker (ref.)	77.3	134 (112–157)		5.9 (4.9–6.8)	
Occasional smoker	4.3	159 (108–209)	ns	6.7 (4.9–8.6)	ns
Daily smoker	18.4	153 (111–197)	ns	6.5 (4.7–8.4)	ns
Self-rated health (age ≥12)	(n = 14,340)				
Excellent/very good (ref.)	58.9	139 (114–164)		6.0 (5.0–7.0)	
Good	30.0	142 (114–170)	ns	6.1 (4.9–7.3)	ns
Fair/poor	11.1	134 (116–153)	ns	5.9 (5.1–6.7)	ns
Healthy Eating Index	(n = 14,615)				
1 st quartile (ref.)	24.5	169 (142–197)		7.2 (6.0–8.3)	
2 nd quartile	24.4	142 (116–168)	ns	6.1 (4.9–7.4)	ns
3 rd quartile	23.8	132 (112–152)	p < 0.01	5.8 (5.0–6.7)	p < 0.01
4 th quartile	27.3	113 (94–131)	p < 0.001	5.1 (4.3–6.0)	p < 0.001

CI = Confidence Interval; ns = non-significant.

*Some sample sizes are reduced owing to missing data.

‡The Dunn-Sidak correction was used to adjust for multiple comparisons; all p-values are two-tailed.

contributed to 10% of caloric intake among children (2–11 yrs), 17% among adolescents (12–19 yrs) and 13% among adults (20–64 yrs) in 2007–2008.⁵ This study cannot address the cultural, economic or fast food price differences that explain the apparent lower proportion of fast food intake in Canada. However, Canadian young people, especially younger adult and adolescent males, reported notably higher intakes than the national average. These age- and sex-based findings are consistent with previous estimates that one third of teenagers and 39% of young men consumed food prepared at a fast food outlet on the day prior to the CCHS 2.2 interview.¹ Moreover, recent findings suggest that over 50% of students in grades 5–8 and 70% in grades 9–12 from Ontario, Quebec and Prince Edward Island

report consuming food from a fast food outlet weekly.³² The current findings further highlight that the ratio of young children’s fast food intake to energy intake is comparable with that of older adolescents. Even the youngest age group of boys examined (ages 2–8) consumed 231 calories and 8.8% of usual caloric intake from fast food, suggesting that regular fast food consumption begins at very early ages.

Age and sex were the only socio-demographic variables examined that were significantly associated with fast food intake, suggesting that in Canada, neither socio-economic status nor urban/rural residential location nor provincial context are consistent predictors of fast food intake. While some international evidence suggests that fast food consumption

varies with level of educational attainment and income (albeit in inconsistent directions),^{3,6} recent national findings from the US⁵ and these Canadian results do not support claims of a clear socio-economic gradient in the patterning of fast food intake. Findings therefore counter public discourse about healthy eating that sometimes portrays marginalized and lower income groups as more likely to make unhealthy food choices, such as frequently purchasing fast food.³³

Current findings suggest however that fast food intake is associated with health-related lifestyle factors. For example, Canadians reporting higher fruit and vegetable consumption and vitamin/mineral supplement use (among adults) had lower usual fast food intake. Results are consistent with previous studies reporting that people aiming to adopt a healthy lifestyle may also avoid eating large quantities of fast food.⁷ There is further evidence (at least among children in the US) that fast food consumers are more likely to consume a 'Western' style dietary pattern, with lower nutritional quality when choosing foods both inside and outside of restaurants.³⁴ Moreover, binge drinkers had higher fast food intakes than those who reported never having ≥ 5 drinks on a single occasion. Binge drinking may reflect a pattern of risk behaviours associated with fast food consumption, particularly among youth.³⁵ However, associations between fast food and health practices did not extend to smoking, sedentary activities or physical activity.

Findings are consistent with previous studies outside Canada showing that higher fast food intake is associated with lower dietary quality and increased BMI.^{6,7} Given that fast food intake is associated with increased caloric intake, it is likely that frequent consumption contributes to weight gain over time. However, due to the cross-sectional nature of this survey, it was not possible to disentangle whether fast food itself increases BMI or whether individuals with higher BMI were more likely to consume fast foods. Nonetheless, fast food consumption was significantly associated with lower diet quality, and individuals who scored below the national median on the Healthy Eating Index also had significantly higher usual fast food intake than those with the highest quality HEI scores.

A notable strength of this study was the use of a large nationally representative survey which included detailed dietary data for all age groups and is novel in the Canadian context. Estimates were also substantially improved by applying the NCI method to 24-hr dietary recall data to examine usual food intake from more than one day of reported intake because this method incorporates covariates and jointly estimates both the amount consumed and the probability of eating irregularly consumed foods. Estimates were also improved by excluding 'implausible respondents' to adjust for potential under-reporting of total energy and fast food intake. Still, a larger number of dietary recalls would likely have increased the estimated proportion of fast food consumers and better reflected people's day-to-day variation in fast food intake.³⁶

While there is no universal definition of fast food, we applied the best possible operational definition available from this dataset to reflect standard industrial classifications of limited service establishments where customers order and pay before eating.²² This operational definition, however, paid closer

attention to the reported location of preparation than to the nutritional composition of foods. This definition therefore implied that, for example, a cup of coffee or salad purchased from a limited service outlet was counted as fast food, while homemade deep-fried onion rings were not. We attempted to improve this definition by considering both location of preparation and the NSS list of fast foods, but inclusion of the latter made little impact on usual intake estimates. We also lacked detailed information about the specific locations where foods were purchased, and future research is needed to buttress current understandings of how consumption is shaped by local food environment exposures surrounding Canadian schools, workplaces and homes.

Overall, this study confirms that fast food outlets play a notable role in feeding the Canadian population and particularly so for children, teenagers and young adults. Moreover, age and sex appear to be more strongly associated with fast food consumption than either socio-economic background or level of physical activity. Consequently, research and intervention strategies should focus on dietary practices of children and adolescents, whose fast food intakes are among the highest in Canada. Given recent evidence that full service restaurants in Canada also commonly supply meals with alarmingly high levels of calories, saturated fat and sodium,^{37,38} clearer evidence is needed regarding the collective implications of wider food environment exposures on dietary practices. Such insight is needed to inform recent debates about the potential efficacy of population-level approaches, including menu labelling, zoning and regulatory restrictions to reduce availability of fast food outlets, and other proposed health promotion approaches for improving nutritional outcomes.

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RÉSUMÉ

OBJECTIFS : Estimer la contribution des produits de restauration rapide à l'apport énergétique quotidien des Canadiens et examiner comment varie la consommation de ce type d'aliments en fonction des habitudes de vie et de certaines caractéristiques démographiques et socioéconomiques.

MÉTHODES : Des estimés représentatifs à l'échelle nationale de l'apport calorique moyen provenant d'aliments de restauration rapide ont été dérivés à l'aide des données du cycle 2.2 de l'Enquête sur la santé dans les collectivités canadiennes pour un sous-échantillon de répondants âgés de deux ans et plus ($n = 17\ 509$). La méthodologie employée est celle du *National Cancer Institute*. Les apports quotidiens moyens et la proportion relative de calories issues d'aliments de restauration rapide ont été comparés en fonction des caractéristiques démographiques (âge, sexe, province et lieu de résidence rural/urbain), socioéconomiques (revenu, éducation, sécurité alimentaire) et des habitudes de vie (niveau d'activité physique, consommation de fruits et légumes, prise de suppléments de vitamines et de minéraux, tabagisme, consommation excessive d'alcool, indice de masse corporelle (IMC), perception de son état de santé et qualité des habitudes alimentaires).

RÉSULTATS : En moyenne, les Canadiens consommaient au moment de l'enquête 146 kcal de produits de restauration rapide par jour, ce qui représente 6,3% de l'apport énergétique quotidien habituel. Les adolescents de sexe masculin étaient caractérisés par les apports les plus élevés (248 kcal/jour) alors que les apports les plus faibles se retrouvaient chez les femmes de 70 ans ou plus (32 kcal/jour). La consommation de produits de restauration rapide était significativement supérieure chez les répondants ayant déclaré une plus faible consommation de fruits et légumes de même que des habitudes alimentaires de moindre qualité, qui ne prenaient pas de suppléments de vitamines ou de minéraux (adultes seulement) et dont l'IMC était plus élevé. Le statut socioéconomique, le niveau d'activité physique, le tabagisme et la perception de son état de santé n'étaient pas associés à la consommation d'aliments de restauration rapide.

CONCLUSION : Bien que la consommation moyenne de produits de restauration rapide au Canada soit inférieure aux estimations qui existent pour les États-Unis, elle apparaît liée à des habitudes alimentaires de moindre qualité et à un IMC plus élevé. Les résultats suggèrent que la recherche et les stratégies d'intervention devraient se concentrer sur les enfants et les adolescents, dont les apports habituels figurent parmi les plus élevés au Canada.

MOTS CLÉS : restauration rapide; habitudes alimentaires; enquêtes sur la santé