Title: Trends in socioeconomic inequities in diet quality between 2004 and 2015 among a nationally representative sample of children in Canada[1-4]

Running title: Socioeconomic trends in inequities in diet quality

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[3]**Supplementary data:** Supplemental Table 1 and 2 are available from the "Supplementary data" link in the online posting of the article and from the same link in the online table of contents available on the Journal homepage.

[4]**Abbreviations**: CCHS: Canadian Community Health Survey; HEI: Healthy Eating Index; RII: Relative Index of Inequality; SEP: socioeconomic position; SII: Slope Index of Inequality; TEI: TEE: ratio of total energy intake to total energy expenditure.

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ABSTRACT

Background: Dietary inequities in childhood may shape dietary and health inequities across the lifecourse. Quantifying the magnitude and direction of trends in absolute and relative gaps and gradients in diet quality according to multiple indicators of socioeconomic position (SEP) can inform strategies to narrow these inequities.

Objective: We examined trends in absolute and relative gaps and gradients in diet quality between 2004 and 2015 according to three indicators of SEP among a nationally representative sample of children in Canada.

Methods: Data from children (2-17 years; n=18,670) who participated in the cross-sectional Canadian Community Health Survey-Nutrition in 2004 or 2015 were analyzed. SEP was based on total household income, household educational attainment and neighborhood deprivation. Dietary intake data from one interviewer-administered 24-hour dietary recall was used to derive a Healthy Eating Index-2015 (HEI-2015) score for each participant as a measure of diet quality. Inequities in diet quality were quantified using four indices: absolute and relative gaps (between highest and lowest SEP), and absolute (Slope Index of Inequality) and relative gradients (Relative Index of Inequality). Overall and age-stratified multivariable linear regression and generalized linear models examined trends in HEI-2015 scores between 2004 and 2015.

Results: Although mean HEI-2015 total scores improved from 52.3 to 57.3 (maximum 100 points; $p < 0.001$), absolute and relative gaps and gradients in diet quality remained mostly stable for all three SEP indicators. However, among children aged 6-11 years, absolute and relative gradients in diet quality according to household educational attainment and neighborhood deprivation widened.

Conclusions: The diet quality of children in Canada was poor and inequitably patterned in 2004 and 2015. Although mean diet quality improved between 2004 and 2015, absolute and relative gaps and

gradients in diet quality persisted, with some evidence of widening absolute and relative gradients among 6-11 year olds.

Key words: diet quality; dietary inequities; Healthy Eating Index; relative inequities; absolute inequities; children; nationally representative survey; Canada

INTRODUCTION

Children who live in socioeconomically disadvantaged households (1) and in deprived neighborhoods (2, 3), have poorer diet quality than their more advantaged counterparts. These inequities are not confined to children living in the most disadvantaged circumstances, but rather, children's diet quality declines with each step down the socioeconomic ladder (1). Dietary patterns tend to be established early in life and may persist throughout childhood (4-10) and into adulthood (11). Given that poor diet quality is one of the most important risk factors for chronic disease (12), dietary inequities that originate in childhood may shape health inequities across the lifecourse (13).

Despite the importance of reducing inequities in diet quality among children, very few studies have examined progress in this respect. Several studies have examined trends in children's intakes of isolated nutrients, foods or food groups (14-16). However, diet quality is a more relevant public health metric because it captures the whole food matrix and interactions among food constituents that may shape long-term health (17, 18). In the US, two studies examined trends in inequities in diet quality among nationally representative samples of children, finding that absolute inequities (i.e. differences in diet quality scores between socioeconomic groups) according to household income, educational attainment, food insecurity status and participation in federal nutrition programs remained largely stable between 1999 and 2016 (19, 20).

Although it is helpful to understand directional trends in dietary inequities on an absolute basis, the World Health Organization (21) and others (22-24) have outlined indices of inequities that can be used to more comprehensively and precisely quantify the magnitude and direction of trends in inequities according to multiple indicators of socioeconomic position (SEP). To our knowledge, these indices have not yet been used to quantify trends in inequities in diet quality among children. Indices of inequitable

gaps reflect simple differences in diet quality between those situated at the extreme ends of the socioeconomic continuum (21-24). Indices of inequitable *gradients* also capture differences in diet quality between the highest and lowest SEP groups, but they do so in a manner that accounts for the slope of the entire socioeconomic distribution, along with the size and rank of the groups that are being compared (21-24). Indices that capture gradients are important because they acknowledge that diet quality declines with each step down the socioeconomic ladder, and they capture trends in the middle of the socioeconomic distribution, which is where the majority of the population is situated (25).

These dietary gaps and gradients can be quantified on an absolute or a relative basis. The absolute metric is consistent with a materialist perspective that regards health inequities primarily as a consequence of structural inequities that constrain access to health promoting resources and that increase vulnerability to adverse environmental conditions (26). It therefore attaches greater importance to maximizing diet quality at a population level, rather than to ensuring its equitable distribution (27, 28). The relative metric, on the other hand, is more reflective of a psychosocial perspective that regards health inequities as a consequence of the stress generated by social comparisons in unequal societies (26). This perspective is more concerned with achieving parity in diet quality across the socioeconomic spectrum regardless of its absolute level (27, 28). Finally, given that SEP is a complex construct that is not fully captured by any single indicator, dietary inequities can also be quantified using multiple indicators of SEP (29). Such analyses can help to understand the most important axes of dietary stratification in particular contexts.

The use of several indices of inequities and SEP indicators within a single study can provide a more comprehensive and precise perspective of trends in inequities in diet quality to inform the types of inequities and populations to prioritize for intervention. Such analyses can also help to clarify important

dimensions along which diet quality is stratified and provide quantitative benchmarks for ongoing surveillance. Therefore, the purpose of this study was to examine trends in absolute and relative gaps and gradients in diet quality between 2004 and 2015 according to three indicators of SEP (household income, household educational attainment and neighborhood deprivation) among a nationally representative sample of children living in Canada, overall and according to age.

METHODS

Study design and participants

The 2004 and 2015 Canadian Community Health Survey (CCHS) - Nutrition were cross-sectional, nationally representative surveys of Canadians' dietary intake conducted by Statistics Canada. Details of both surveys are available elsewhere (30-33). As the studies were designed to be comparable, consistent methods were used in both years (31). Studies that use Statistics Canada data are exempt from ethical review as indicated in Article 2.2(a) of the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (34).

Stratified, area-based sampling procedures were used to sample private dwellings in all ten Canadian provinces, including rural and urban locations. The surveys covered 98% of the Canadian population. Residents of Canada's three northern territories, those living in institutions, on reserves and other Aboriginal settlements, and all members of the Canadian Armed Forces were excluded. Within each household, one individual was randomly selected to participate. Response rates were 77% and 62% in 2004 and 2015, respectively.

Participants provided information on sociodemographic variables and on a range of health practices and health conditions during an in-person interview, and reported all foods and beverages consumed the

day prior to the survey. Participants 12-17 years of age provided their own information, while those aged 6-11 years completed the survey with parental/guardian assistance. Parents/guardians completed the survey on behalf of 2-5 year old children. Following exclusion of < 1% of children whose food intake was deemed unreliable by Statistics Canada or who were pregnant/breastfeeding, the final analytic sample was 18,670 children aged 2-17 years (n=12,830 in 2004; n=5,840 in 2015).

Data collection

Indicators of socioeconomic position

Three indicators of SEP were available in the CCHS and were used in this study. Total gross household income from all sources in the previous 12 months and highest educational attainment at a household level were reported by the adult household member with the greatest knowledge of these variables. Total household income was imputed for 12.4% of children in 2004 and for 22.8% of children in 2015 (30, 35, 36). Statistics Canada uses a nearest neighbor donor approach to impute income based on family structure, residence (e.g. dwelling owned or rented, median tax value by postal code and household size), sociodemographic (e.g. education, main source of income, immigrant status) and health variables (e.g. general health) (35, 37). In addition, partial or full information on range of income was available for 18.8% of participants in 2015 and was included in the imputations (36). A simulation study confirmed that the imputation process preserved 89-94% of all income quintiles (35). Household income was subsequently classified into quintiles based on the ratio of total household income to the low-income cut-off corresponding to each child's household and community size in the year prior to each survey (38-40). Highest educational attainment at a household level was classified into five categories based on completion of: less than high school, high school, some post-secondary or trade/diploma/certificate, undergraduate degree, and graduate degree or higher.

Neighborhood deprivation was assessed using a Canadian area-based material and social deprivation index based on residential postal code (41). The material dimension captures the proportion of individuals ≥ 15 years of age without a high school diploma, the average personal income and the employment to population ratio; while the social dimension includes the proportion of persons who are separated, divorced or widowed, the proportion living alone and the proportion of single-parent families (42). The index has demonstrated acceptable validity (content, convergent and predictive), reliability (internal coherence) and responsiveness (sensitivity to differences and changes) (41, 43). We used the 2006 index because it fell in between the two survey years and is considered more reliable than the 2011 index (in 2011 completion of the Canadian long form census was voluntary) (44). Methods described by Gamache et al (45) were used to assign neighborhoods into quintiles of disadvantage, however we reverse scored the items so that quintile 1 and 5 corresponded to the most and least deprived neighborhoods, respectively.

Dietary intake

Participants completed a 24-hour dietary recall to report all foods and beverages consumed the previous day using a computer-assisted five-stage Automated Multiple Pass Method designed to improve accuracy of reporting (32, 46, 47). Food model booklets facilitated portion size estimation in both years.

Dietary intake data were coded and linked to the Canadian Nutrient File (2004: 2001b version; 2015: 2015 version), the Food and Nutrient Database for Dietary Studies (48) and the United States Department of Agriculture's Food Patterns Equivalents Database (49) to estimate intakes of nutrients, food groups and other dietary components required to calculate Healthy Eating Index-2015 (HEI-2015) scores (50). The HEI-2015 is a validated measure of overall diet quality consisting of nine adequacy

(total fruits, whole fruits, total vegetables, greens and beans, whole grains, dairy, total protein foods, seafood and plant proteins, fatty acids) and four moderation components (refined grains, sodium, added sugars, saturated fats) (51, 52). The HEI-2015 was a suitable choice as it is recommended for international use (53) and many aspects of dietary guidance have been harmonized between Canada and the US (e.g. Dietary Reference Intakes). The HEI is also among the most robust diet quality scores (54) because it has shown predictive validity (52), is associated with indicators of SEP (55) and chronic disease (52, 56-61), is updated to reflect evolving dietary guidance, and is density-based, and therefore not confounded by energy intake (53). Component scores are expressed as a proportion of energy intake to allow estimation of diet quality independent of diet quantity. Total scores can range from 0 to 100, with a higher score indicating greater adherence to the 2015-2020 Dietary Guidelines for Americans (range 0-100) (51, 62). HEI-2015 total and component scores were calculated from a single dietary recall using the National Cancer Institute simple HEI scoring algorithm (63, 64).

Data analysis

Indices of inequities

Dietary trends were assessed using procedures described by the World Health Organization (21). Absolute gaps were quantified by subtracting the mean HEI-2015 score of the lowest from that of the highest SEP group, while relative gaps were calculated by dividing the mean HEI-2015 score of the highest by that of the lowest SEP group. Gradients were calculated using the Slope Index of Inequality (SII) and the Relative Index of Inequality (RII). The SII and RII express the absolute (SII) or relative (RII) difference in HEI-2015 scores between the extremes of the socioeconomic continuum, while taking into account the slope of the entire distribution and the rank and size of the groups that are being compared (21, 24). For absolute gaps and gradients, values of 0 indicate equality between SEP groups (21). Positive values indicate that HEI-2015 scores are higher in advantaged groups and negative values

indicate that HEI-2015 scores are higher in disadvantaged groups. For relative gaps and gradients, values of 1 indicate equality between SEP groups. Values above 1 indicate that HEI-2015 scores are higher in advantaged groups and values below 1 indicate the reverse. Increases in any of the four indices indicate a widening of absolute/relative gaps or gradients.

Statistical analyses

Descriptive statistics (e.g. means and frequencies) were used to characterize the samples in 2004 and 2015. Within-year inequities were examined using linear regression. Trends in HEI-2015 total scores by SEP were assessed by treating survey year as a continuous variable in a survey-weighted linear regression model. Multivariable linear regression models examined trends in gaps, while generalized linear models (log-binomial regression) examined trends in gradients (SII: identity link function; RII: logarithmic link function) in HEI-2015 total and component scores, according to each of the three SEP indicators, between 2004 and 2015. A separate model was constructed for each of the three SEP indicators, with an interaction term for SEP x survey year to examine trends over time.

Trends were examined among all children and by age category (2-5 years, 6-11 years, 12-17 years) (65). These age categories align with mode of recall (i.e. proxy, proxy-assisted, self-report) and educational level (i.e. preschool, elementary, middle/high school). Age-stratified analyses were not conducted for HEI-2015 components as this would have entailed an extremely large number of statistical tests. Sex-stratified analyses were not conducted because preliminary analysis indicated only one statistically significant interaction with sex (not shown). Analyses in the full sample were adjusted for sex, age (continuous) and dietary recall day (weekend, weekday including Fridays), whereas age-stratified analyses were adjusted for sex and dietary recall day.

Missing data were minimal (4% for neighborhood deprivation; < 1.2% for all other variables) and therefore list-wise deletion was used to handle missing data. Person-specific and bootstrap weights provided by Statistics Canada were used to account for stratification, clustering, and weighting of the complex survey sample, to adjust for non-response and to ensure accurate estimation of variance components. Analyses were conducted using Stata (version 15.0; Stata Corp, TX, US) and SAS (version 9.4; SAS Institute, North Carolina, US) with $p < 0.05$ considered a statistically significant finding.

Sensitivity analyses

In sensitivity analyses we additionally adjusted for racial/ethnic identity (White vs non-White). We considered adjusting for an indicator of misreporting, the ratio of total energy intake to total energy expenditure (TEI:TEE). However, the odds of misreporting (TEI < 70% or > 142% of TEE (66)) by SEP did not differ between the two surveys and therefore we did not include TEI:TEE in our models.

RESULTS

Descriptive results

Survey-weighted participant characteristics are presented in **Supplemental Table 1**. Mean HEI-2015 total scores increased significantly from 52.3 ± 0.16 in 2004 to 57.3 ± 0.26 in 2015 ($p < 0.001$). HEI-2015 total scores exhibited a marked socioeconomic patterning for all three SEP indicators in both years (**Figure 1**), with one exception (6-11 year olds according to neighborhood deprivation in 2004) (**Supplemental Table 2**). HEI-2015 total scores improved between 2004 and 2015 for all SEP groups with one exception (2-5 year olds living in households with low educational attainment).

Trends in dietary inequities between 2004 and 2015

A visual summary of trends in HEI-2015 total scores is provided in **Table 1.**

Absolute gaps in diet quality

Within-year: Among all children, there were significant positive absolute gaps (i.e. scores were highest in the highest SEP group) in HEI-2015 total scores in relation to household income and educational attainment in 2004 and 2015 (Table 2). However, there were no gaps according to neighborhood deprivation in either year. In age-stratified analyses, there were positive absolute gaps in HEI-2015 total scores among children aged 2-5 years according to all three SEP indicators in both years (Table 3). Among children aged 6-11 and 12-17 years there were positive absolute gaps in both years according to household educational attainment only.

Trends over time: Among all children and for all three age groups, absolute gaps in HEI-2015 total scores remained stable (i.e. did not change significantly) in relation to all SEP indicators between 2004 and 2015 (Table 2 and 3). Among all children, absolute gaps in HEI-2015 component scores widened for total protein foods (household income), seafood and plant proteins (household income and neighborhood deprivation) and sodium (neighborhood deprivation), and narrowed for added sugars (neighborhood deprivation) and saturated fats (household income).

Relative gaps in diet quality

Within-year: Among all children, there were significant positive relative gaps in HEI-2015 total scores in relation to household income and household educational attainment but not according to neighborhood deprivation in 2004 and 2015 (Table 4). In age-stratified analyses, there were positive relative gaps in HEI-2015 total scores for children aged 2-5 years according to all three SEP indicators in both years (Table 3). For children aged 6-11 and 12-17 years there were positive relative gaps in both years according to household educational attainment only.

Trends over time: Among all children and for all three age groups, relative gaps in HEI-2015 total scores remained stable in relation to all SEP indicators between 2004 and 2015 (Table 3 and 4). Among all children, relative gaps in HEI-2015 component scores widened for total protein foods (household income), seafood and plant proteins (household income) and sodium (neighborhood deprivation), and narrowed for saturated fats (household income) and added sugars (neighborhood deprivation).

Absolute gradients in diet quality

Within-year: Among all children, there were significant positive absolute gradients in HEI-2015 total scores in relation to all three SEP indicators in 2004 and 2015 (Table 5). In age-stratified analyses, positive absolute gradients in HEI-2015 total scores were observed for all age groups for all three SEP indicators in 2004 and 2015, with the exception of children aged 6-11 years (2004) and 12-17 years (2004 and 2015) according to household income, and among children aged 6-11 years (2004) according to neighborhood deprivation (Table 3).

Trends over time: Among all children, absolute gradients in HEI-2015 total scores remained stable in relation to all SEP indicators between 2004 and 2015, whereas absolute gradients in HEI-2015 component scores widened for total protein foods (household income) and seafood and plant proteins (household income and neighborhood deprivation) (Table 5). Among children aged 6-11 years, absolute gradients in HEI-2015 scores widened according to household educational attainment and neighborhood deprivation between 2004 and 2015, whereas all other gradients remained stable (Table 3).

Relative gradients in diet quality

Within-year: Among all children, there were significant positive relative gradients in HEI-2015 total scores in relation to all three SEP indicators in 2004 and 2015 (Table 6). There were also significant

positive absolute gradients in HEI-2015 total scores among all age groups for all three SEP indicators in 2004 and 2015, with the exception of children aged 6-11 years (2004) and 12-17 years (2004 and 2015) according to household income, and children aged 6-11 years according to neighborhood deprivation (2004) (Table 3).

Trends over time: Among all children, relative gradients in HEI-2015 total scores remained stable for all SEP indicators between 2004 and 2015, whereas relative gradients in HEI-2015 component scores widened for total protein foods (household income), seafood and plant proteins (household income and neighborhood deprivation) and sodium (neighborhood deprivation), and narrowed for whole grains (household educational attainment) (Table 6). Among children aged 6-11 years, relative gradients in HEI-2015 total scores widened according to household educational attainment and neighborhood deprivation, whereas all other gradients remained stable (Table 3).

Sensitivity analysis

Findings were unchanged when models were adjusted for racial/ethnic identity.

DISCUSSION

Despite some substantial improvements in health at a population level, little to no progress has been made in reducing health inequities in Canada over the past several decades, with evidence of widening in some cases (67-70). At least part of this failure may be attributable to inadequate attention to the early origins of health inequities during childhood, including suboptimal dietary patterns (13, 26, 71). This study addressed this knowledge gap by quantifying trends in inequities in diet quality among a nationally representative sample of children. We advanced prior analyses by quantifying the magnitude of trends in inequities using multiple indices that allowed us to differentiate between gaps and

gradients, and by expressing inequities on both an absolute and a relative basis. Our findings demonstrated that the diet quality of children in Canada was socioeconomically patterned in both 2004 and 2015. Although the mean diet quality of children improved between 2004 and 2015, absolute and relative gaps and gradients in diet quality did not diminish. Indeed, absolute and relative gradients in diet quality according to household educational attainment and neighborhood deprivation widened among 6-11 year old children.

The mean overall 5-point improvement in children's diet quality that occurred between 2004 and 2015 is consistent with prior evidence in Canada (72) and the US (19, 20), and is likely to be clinically meaningful (73). Nevertheless, in both years, children's diet quality remained poor, it declined with age and it was inequitably patterned on both an absolute and a relative basis. It is concerning that the diet quality of children, and of young children in particular, was consistently suboptimal and patterned by their socioeconomic circumstances. These findings accord with findings in other high-income countries (19, 20, 74) and portend future negative health outcomes occasioned by latent, cumulative and/or pathway effects, particularly among children experiencing the most disadvantage (13, 75).

All of the gaps and gradients in children's diet quality that were present in 2004 persisted through to 2015, consistent with findings among children living in the US between 1999 and 2016 (19, 20). However, among 6-11 year olds, absolute and relative gradients widened according to household educational attainment and neighborhood deprivation. The degree of widening in absolute gradients of ~4.5 points approaches what may be a health-relevant threshold (73), although the clinical significance of a 0.08 widening in relative gradients is more difficult to ascertain. Cautious interpretation is advised, however, because although these trends were statistically significant, there were overlapping confidence intervals between years and multiple tests were conducted. Nevertheless, the fact that there

was some evidence that dietary gradients had widened, whereas dietary gaps did not, points to the importance of using indices that capture trends across the full socioeconomic spectrum and that account for the size and rank of the various SEP groups. These findings suggest that interventions should focus on improving diet quality across the socioeconomic spectrum, rather than simply targeting the most disadvantaged. Indeed, given that the majority of the population is situated in the middle of the socioeconomic spectrum, interventions that focus here may yield the greatest public health gains (76).

It is not clear why gradients in diet quality widened among 6-11 year olds, but not among younger children and adolescents. Notably, Canada lacks a national school meal program and associated subsidies to ensure that all children have access to healthful school meals (77). Moreover, most children in Canada bring a home-prepared lunch to school (78). This may have increased the sensitivity of elementary school-aged children's dietary patterns to any negative trends in the availability of household and neighborhood-level resources. Although adolescents would also benefit from subsidized school meals, they may be less sensitive to change in household and neighborhood resources given their greater independence and ability to initiate coping strategies (79) and conformance to the dietary norms of their peer groups (80). It is possible that the stability of trends among 2-5 year olds may reflect caregivers' greater control over their dietary patterns, the consistency of meals received in childcare settings, and/or attempts to shield younger children from any negative changes in socioeconomic conditions (81, 82).

Our findings also shed some light on factors that shape socioeconomic inequities in diet quality. SEP is a complex construct that can be characterized using multiple indicators that reflect distinct, yet overlapping axes of stratification (83). In the current study, children's diet quality was most consistently patterned according to household educational attainment, and educational gradients widened among 6-

11 year olds. In a prior analysis, we found that the diet quality of Canadian adults was also strongly patterned by educational attainment – whether assessed at the individual or household level - and that educational inequities in diet quality widened between 2004 and 2015 among adult males (84). Other studies have also found parental educational attainment to be a key determinant of children's diet quality (7-9, 74, 85).

The importance of parental educational attainment in structuring children's diet quality suggests that inequities in diet quality are not simply a consequence of the material disadvantages imposed by poverty, but may also relate to differences in knowledge, employment conditions, social supports and social networks, among others, that are better captured by educational attainment (83, 86, 87). For instance, more highly educated parents may be embedded within more health promoting social networks, have more fulfilling jobs over which they have greater control, experience lower levels of psychosocial stress and possess more health-related knowledge (83, 87-89), all of which can support healthier dietary patterns for themselves and their children. Educational attainment is also a relatively stable indicator of SEP, and therefore trends for this indicator may more strongly reflect the cumulative impacts of social disadvantage accrued over multiple years. Widening inequities according to educational attainment may also reflect the impacts of educational expansion, whereby the same educational attainment does not confer the same SEP at different points in time due to upward shifts in the proportion with post-secondary education (87, 90, 91). Socioeconomic gaps and gradients in diet quality across quintiles of household income and neighborhood deprivation were also evident, albeit less consistently so, and there was evidence of widening gradients according to neighborhood deprivation among 6-11 year olds.

With respect to HEI-2015 components, we observed trends toward widening (i.e. total protein foods, seafood and plant proteins, sodium) and narrowing (i.e. whole grains, saturated fats, added sugars) absolute and relative gaps and gradients among children, with the most consistent evidence for widening inequities in total protein foods, seafood and plant proteins, and sodium. Notably, there was no evidence of widening inequities in the intake of fruits and vegetables, a positive finding given their importance for health (12).

Strengths and limitations

The current study represents the most comprehensive analysis of trends in socioeconomic inequities in diet quality among a nationally representative sample of children internationally. This suite of measurements allowed us to gain insight into dimensions along which diet quality is stratified to better understand key leverage points and populations to prioritize for intervention. Nevertheless our analyses are subject to several limitations, as underreporting was higher in 2015 compared to 2004 (66), and therefore caution is advised in interpreting the increase in HEI-2015 scores at a population level and within socioeconomic strata. The odds of misreporting by SEP did not change over time however, and therefore our estimates of trends should remain unbiased. In addition, although the surveys were designed to be comparable, Statistics Canada estimates that updates to the food database and food model booklets may have contributed to lower energy intakes of up to 20kcal/day and 35kcal/day in 2015, respectively (92). While a single dietary recall is a recommended approach for describing mean scores at a population level, one recall does not fully capture usual patterns of consumption (63). We were also limited to using the National Cancer Institute simple scoring algorithm as it was not possible to calculate the SII or RII using other methods. However, Liu et al (20) found that trends in inequities in HEI-2015 scores generated using the simple, population ratio and Markov chain Monte Carlo methods did not differ materially. Finally, the CCHS captures 98% of the Canadian population, however it does not

capture individuals living on Indigenous reserves or in Canada's three territories. Dietary trends may differ in these regions due to their very high rates of food insecurity (93).

Policy implications

Study findings demonstrate a lack of progress in reducing dietary inequities among children over more than a decade in Canada. SEP is regarded as a fundamental cause of health-related inequities because it embodies access to a flexible array of social and economic resources that can be deployed to support positive health-related practices (94). Therefore, although food and nutrition-specific policies may improve diet quality at a population-level (e.g. nutrition labels, food reformulation), such policies will have limited effectiveness in reducing dietary inequities because they do not address their root socioeconomic causes (95, 96). Our findings highlight the importance of addressing absolute and relative dietary inequities across the socioeconomic spectrum. Proportionate universal policies, whereby benefits are universal, but are allocated at a scale and intensity proportionate to need, may offer a way forward in addressing absolute and relative gradients simultaneously (97-99).

CONCLUSIONS

This study provided novel and nationally representative evidence pertaining to inequities in diet quality in Canada and their trends over time according to three indicators of SEP. Our findings demonstrate that the diet quality of children in Canada was poor and inequitably patterned on both an absolute and a relative basis in both 2004 and 2015. Although the mean diet quality of children improved between 2004 and 2015, absolute and relative gaps and gradients in diet quality persisted, with some evidence of widening absolute and relative gradients among 6-11 year olds. Our comprehensive quantitative estimates of these inequities can help to inform the types of inequities and populations to prioritize for intervention, while also helping to understand dimensions along which diet quality is stratified in Canada and providing benchmarks to evaluate future progress. Ultimately, study findings highlight the broader

457 structural realities that underlie children's patterns of consumption, and the importance of intervening
458 early to improve the diet quality of children across the socioeconomic spectrum.
459

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461 DLO, SN, CV, SIK, LMM, LM designed the research; SN, CV analyzed the data; DLO wrote the paper; DLO
462 had primary responsibility for final content. All authors read and approved the final manuscript.
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Table 1 Summary of trends in Healthy Eating Index-2015 total scores between 2004 and 2015 by socioeconomic position among children who participated in the Canadian Community Health Survey – Nutrition in 2004 or 2015[1]

	Absolute gaps	Relative gaps	Absolute gradients	Relative gradients
Overall				
Household income	↔	↔	↔	↔
Household educational attainment	↔	↔	↔	↔
Neighborhood deprivation	↔	↔	↔	↔
2-5 years				
Household income	↔	↔	↔	↔
Household educational attainment	↔	↔	↔	↔
Neighborhood deprivation	↔	↔	↔	↔
6-11 years				
Household income	↔	↔	↔	↔
Household educational attainment	↔	↔	↑	↑
Neighborhood deprivation	↔	↔	↑	↑
12-17 years				
Household income	↔	↔	↔	↔
Household educational attainment	↔	↔	↔	↔
Neighborhood deprivation	↔	↔	↔	↔

[1]↔ indicates stable trends; ↑ indicates widening inequities

Table 2 Trends in absolute gaps in Healthy Eating Index-2015 scores by socioeconomic position among children who participated in the Canadian Community Health Survey – Nutrition in 2004 (weighted n=6,157,000) or 2015 (weighted n=6,115,000)[1]

	Mean (95% CI)								
	Household income			Household educational attainment			Neighborhood deprivation		
Healthy Eating Index-2015 scores	2004	2015	P-value for time trend	2004	2015	P-value for time trend	2004	2015	P-value for time trend
Total	1.23 (0.03, 2.43)*	1.70 (0.07, 3.34)*	0.635	6.60 (4.87, 8.34)**	7.16 (4.50, 9.82)**	0.735	0.93 (-0.26, 2.13)	1.43 (-0.20, 3.08)	0.627
Total fruits	0.24 (0.05, 0.43)*	0.15 (-0.10, 0.41)	0.593	0.68 (0.34, 1.02)**	0.84 (0.37, 1.31)**	0.594	0.12 (-0.06, 0.32)	0.06 (-0.22, 0.35)	0.717
Whole fruits	0.11 (-0.10, 0.34)	0.28 (0.01, 0.57)*	0.348	0.85 (0.47, 1.23)**	0.92 (0.39, 1.46)*	0.840	0.16 (-0.06, 0.40)	0.44 (0.14, 0.75)*	0.153
Total vegetables	0.16 (0.01, 0.31)*	0.24 (0.03, 0.46)*	0.533	0.43 (0.22, 0.65)**	0.82 (0.41, 1.23)**	0.113	0.13 (-0.03, 0.29)	-0.04 (-0.28, 0.19)	0.233
Greens and beans	0.07 (-0.08, 0.23)	0.15 (-0.08, 0.40)*	0.575	0.82 (0.60, 1.04)**	1.04 (0.67, 1.41)**	0.314	0.24 (0.07, 0.41)*	0.20 (-0.05, 0.46)	0.794
Whole grains	0.40 (0.12, 0.68)*	0.60 (0.11, 1.09)*	0.484	0.83 (0.39, 1.26)**	1.15 (0.31, 1.98)*	0.496	0.39 (0.09, 0.68)*	0.70 (0.15, 1.24)*	0.336
Dairy	0.61 (0.28, 0.94)**	0.47 (0.06, 0.89)*	0.618	1.38 (0.86, 1.91)**	1.30 (0.38, 2.22)*	0.874	0.65 (0.31, 0.99)**	0.51 (0.06, 0.97)*	0.646
Total protein foods	-0.21 (-0.37, -0.04)*	0.16 (-0.03, 0.37)	**0.006**	0.34 (0.07, 0.62)*	0.31 (-0.08, 0.72)	0.897	0.09 (-0.09, 0.28)	0.13 (-0.09, 0.36)	0.778
Seafood and plant proteins	-0.08 (-0.25, 0.09)	0.39 (0.11, 0.67)*	**0.005**	0.45 (0.15, 0.75)*	0.96 (0.49, 1.42)**	0.072	0.14 (-0.05, 0.33)	0.53 (0.23, 0.83)**	**0.035**
Fatty acids	-0.29 (-0.63, 0.05)	-0.41 (-0.87, 0.04)	0.670	-0.70 (-01.22, -0.18)*	-1.45 (-2.44, -0.45)*	0.178	-0.50 (-0.84, -0.16)*	0.87 (0.75, 0.99)**	0.936
Refined grains	0.53 (0.28, 0.79)**	0.47 (0.04, 0.90)*	0.804	0.37 (-0.08, 0.84)	-0.46 (-1.38, 0.44)	0.102	0.05 (-0.24, 0.35)	-0.02 (-0.47, 0.42)	0.789
Sodium	-0.05 (-0.40, 0.29)	0.23 (-0.19, 0.66)	0.305	0.19 (-0.33, 0.72)	0.79 (-0.11, 1.70)	0.263	-0.35 (-0.72, 0.01)	0.35 (-0.12, 0.84)	**0.020**
Added sugars	0.05 (-0.20, 0.31)	-0.11 (-0.48, 0.24)	0.451	1.34 (0.91, 1.77)**	1.53 (0.61, 2.41)*	0.717	0.23 (-0.04, 0.50)	-0.31 (-0.76, 0.14)	**0.045**
Saturated fats	-0.32 (-0.64, -0.01)*	-0.95 (-1.39, -0.52)**	**0.022**	-0.43 (-0.88, 0.02)	-0.61 (-1.37, 0.13)	0.669	-0.44 (-0.79, -0.08)*	-0.66 (-1.13, -0.19)*	0.457

[1]Data are weighted to be nationally representative and are adjusted for age, sex and dietary recall day. Weighted sample sizes are rounded in accordance with Statistics Canada's confidentiality policies. Within year inequities were calculated using linear regression. Time trends in inequities were examined using multivariable linear regression.
*p<0.05 for within year inequities, **p<0.001 for within year inequities.

Table 3 Trends in Healthy Eating Index-2015 total scores by socioeconomic position and age category among children who participated in the Canadian Community Health Survey – Nutrition in 2004 (weighted n=6,157,000) or 2015 (weighted n=6,115,000)[1]

	Mean (95% CI)											
	Absolute gaps			Relative gaps			Absolute gradients: Slope Index of Inequality			Relative gradients: Relative Index of Inequality		
Age category	2004	2015	P-value for time trend	2004	2015	P-value for time trend	2004	2015	P-value for time trend	2004	2015	P-value for time trend
Household income												
2-5 years	2.29 (0.42, 4.16)*	4.74 (1.73, 7.76)*	0.164	1.04 (1.00, 1.07)*	1.07 (1.02, 1.13)**	0.248	3.65 (1.60, 5.70)**	5.86 (1.99, 9.73)*	0.293	1.06 (1.02, 1.10)**	1.10 (1.03, 1.17)*	0.374
6-11 years	0.74 (-1.20, 2.69)	1.27 (-1.49, 4.05)	0.759	1.01 (0.97, 1.05)	1.02 (0.97, 1.07)	0.782	0.71 (-1.49, 2.92)	3.50 (0.42, 6.57)*	0.196	1.01 (0.97, 1.05)	1.06 (1.00, 1.12)*	0.218
12-17 years	1.70 (-0.33, 3.74)	1.33 (-0.87, 3.55)	0.806	1.03 (0.99, 1.07)	1.02 (0.98, 1.06)	0.741	2.02 (-0.15, 4.19)	2.46 (-0.09, 5.03)	0.811	1.04 (0.99, 1.08)	1.04 (0.99, 1.09)	0.880
Household educational attainment												
2-5 years	7.62 (4.51, 10.7)**	5.36 (0.89, 9.82)*	0.420	1.15 (1.08, 1.22)**	1.09 (1.01, 1.17)**	0.276	8.46 (6.36, 10.57)**	8.50 (4.95, 12.05)**	0.962	1.16 (1.12, 1.21)**	1.14 (1.08, 1.21)**	0.699
6-11 years	6.54 (3.49, 9.58)**	7.98 (3.52, 12.45)**	0.591	1.12 (1.06, 1.19)**	1.15 (1.05, 1.24)**	0.693	6.12 (3.79, 8.46)**	10.77 (8.02, 13.51)**	**0.014**	1.12 (1.07, 1.17)**	1.20 (1.15, 1.26)**	**0.036**
12-17 years	6.37 (3.96, 8.78)**	5.44 (1.48, 9.41)*	0.694	1.13 (1.08, 1.19)**	1.10 (1.02, 1.18)**	0.570	6.19 (4.29, 8.08)**	4.93 (2.09, 7.78)*	0.472	1.12 (1.08, 1.17)**	1.09 (1.03, 1.14)*	0.305
Neighborhood deprivation												
2-5 years	2.35 (0.19, 4.50)*	5.19 (1.99, 8.39)*	0.135	1.04 (1.00, 1.08)*	1.08 (1.03, 1.14)**	0.183	3.21 (1.14, 5.28)*	5.31 (2.19, 8.43)*	0.234	1.06 (1.02, 1.10)*	1.08 (1.03, 1.14)*	0.343
6-11 years	-0.24 (-2.29, 1.80)	0.04 (-2.80, 2.90)	0.869	0.99 (0.95, 1.03)	1.00 (0.95, 1.05)	0.865	-0.60 (-2.76, 1.55)	3.61 (0.75, 6.46)*	**0.022**	0.98 (0.94, 1.03)	1.06 (1.01, 1.12)*	**0.025**
12-17 years	1.61 (-0.36, 3.59)	1.51 (-1.29, 4.32)	0.954	1.03 (0.99, 1.07)	1.02 (0.97, 1.07)	0.883	2.95 (0.89, 5.01)*	3.18 (0.25, 6.11)*	0.972	1.05 (1.01, 1.10)*	1.06 (1.00, 1.11)*	0.951

[1]Data are weighted to be nationally representative and are adjusted for sex and dietary recall day. Weighted sample sizes are rounded in accordance with Statistics Canada's confidentiality policies. Within year inequities were calculated using linear regression. Time trends in inequities were examined using multivariable linear regression (gaps) and generalized linear models (gradients).

*p<0.05 for within year inequities, **p<0.001 for within year inequities.

Table 4 Trends in relative gaps in Healthy Eating Index-2015 scores by socioeconomic position among children who participated in the Canadian Community Health Survey – Nutrition in 2004 (weighted n=6,157,000) or 2015 (weighted n=6,115,000)[1]

	Mean (95% CI)								
	Household income			Household educational attainment			Neighborhood deprivation		
Healthy Eating Index-2015 scores	2004	2015	P-value for time trend	2004	2015	P-value for time trend	2004	2015	P-value for time trend
Total	1.02 (1.00, 1.04)*	1.03 (1.00, 1.05)*	0.723	1.13 (1.09, 1.17)**	1.13 (1.08, 1.19)**	0.960	1.01 (0.99, 1.04)	1.02 (0.99, 1.05)	0.695
Total fruits	1.07 (1.01, 1.14)*	1.04 (0.96, 1.12)	0.550	1.24 (1.10, 1.38)**	1.29 (1.08, 1.50)**	0.678	1.04 (0.97, 1.10)	1.01 (0.93, 1.10)	0.685
Whole fruits	1.04 (0.95, 1.12)	1.09 (0.99, 1.18)	0.446	1.37 (1.16, 1.58)**	1.33 (1.08, 1.59)**	0.824	1.06 (0.97, 1.15)	1.14 (1.04, 1.25)**	0.233
Total vegetables	1.07 (1.00, 1.14)**	1.11 (1.01, 1.21)**	0.543	1.21 (1.09, 1.33)**	1.48 (1.14, 1.82)**	0.152	1.06 (0.98, 1.13)	0.97 (0.87, 1.08)	0.224
Greens and beans	1.09 (0.87, 1.30)	1.15 (0.89, 1.42)	0.710	3.46 (2.22, 4.70)**	3.44 (1.07, 5.82)*	0.991	1.38 (1.09, 1.68)**	1.23 (0.91, 1.56)	0.514
Whole grains	1.28 (1.06, 1.50)**	1.18 (1.02, 1.34)**	0.471	1.66 (1.15, 2.17)**	1.43 (1.01, 1.86)**	0.489	1.26 (1.04, 1.48)**	1.21 (1.03, 1.39)**	0.729
Dairy	1.09 (1.04, 1.15)**	1.07 (1.00, 1.13)*	0.517	1.25 (1.14, 1.37)**	1.22 (1.03, 1.40)**	0.738	1.10 (1.04, 1.16)**	1.07 (1.00, 1.14)*	0.516
Total protein foods	0.90 (0.83, 0.97)*	1.05 (0.98, 1.11)	**0.004**	1.18 (1.02, 1.33)**	1.10 (0.96, 1.23)	0.435	1.04 (0.95, 1.13)	1.04 (0.97, 1.11)	0.979
Seafood and plant proteins	0.92 (0.78, 1.07)	1.26 (1.05, 1.46)**	**0.009**	1.46 (1.07, 1.86)**	2.00 (1.13, 2.88)**	0.267	1.12 (0.94, 1.31)	1.37 (1.13, 1.61)**	0.124
Fatty acids	0.91 (0.82, 1.01)	0.89 (0.77, 1.00)*	0.726	0.82 (0.71, 0.94)**	0.71 (0.56, 0.86)**	0.218	0.86 (0.77, 0.95)**	0.87 (0.75, 0.99)**	0.892
Refined grains	1.06 (1.03, 1.09)**	1.06 (1.00, 1.12)*	0.933	1.04 (0.98, 1.10)	0.94 (0.83, 1.05)	0.091	1.00 (0.97, 1.04)	0.99 (0.93, 1.05)	0.793
Sodium	0.99 (0.93, 1.04)	1.03 (0.96, 1.10)	0.309	1.02 (0.94, 1.11)	1.13 (0.96, 1.31)	0.281	0.94 (0.88, 0.99)*	1.05 (0.97, 1.13)	**0.021**
Added sugars	1.00 (0.97, 1.04)	0.98 (0.93, 1.03)	0.450	1.19 (1.12, 1.26)**	1.23 (1.06, 1.41)**	0.632	1.03 (0.99, 1.06)	0.95 (0.89, 1.01)	**0.044**
Saturated fats	0.94 (0.89, 0.99)*	0.85 (0.78, 0.91)**	**0.021**	0.93 (0.86, 1.00)*	0.90 (0.80, 1.01)	0.695	0.92 (0.87, 0.98)**	0.89 (0.82, 0.96)**	0.462

[1]Data are weighted to be nationally representative and are adjusted for age, sex and dietary recall day. Weighted sample sizes are rounded in accordance with Statistics Canada's confidentiality policies. Within year inequities were calculated using linear regression. Time trends in inequities were examined using multivariable linear regression.
*p<0.05 for within year inequities, **p<0.001 for within year inequities.

Table 5 Trends in absolute gradients in Healthy Eating Index-2015 scores by socioeconomic position among children who participated in the Canadian Community Health Survey – Nutrition in 2004 (weighted n=6,157,000) or 2015 (weighted n=6,115,000)[1]

	Mean (95% CI)								
	Household income			Household educational attainment			Neighborhood deprivation		
Healthy Eating Index-2015 scores	2004	2015	P-value for time trend	2004	2015	P-value for time trend	2004	2015	P-value for time trend
Total	1.92 (0.69, 3.16)*	3.76 (1.88, 5.63)**	0.123	6.71 (5.48, 7.94)**	8.01 (6.17, 9.86)**	0.267	1.71 (0.45, 2.97)*	3.90 (2.15, 5.66)**	0.073
Total fruits	0.36 (0.16, 0.55)**	0.41 (0.11, 0.70)*	0.844	0.61 (0.39, 0.83)**	0.63 (0.34, 0.93)**	0.978	0.27 (0.05, 0.48)*	0.32 (0.01, 0.62)*	0.880
Whole fruits	0.30 (0.08, 0.52)*	0.67 (0.35, 0.99)**	0.072	0.88 (0.64, 1.12)**	0.87 (0.55, 1.20)**	0.890	0.34 (0.09, 0.58)*	0.73 (0.38, 1.07)**	0.101
Total vegetables	0.18 (0.02, 0.35)*	0.30 (0.06, 0.54)*	0.499	0.43 (0.26, 0.60)**	0.66 (0.40, 0.92)**	0.154	0.10 (-0.06, 0.28)	0.04 (-0.23, 0.32)	0.577
Greens and beans	0.04 (-0.13, 0.21)	0.22 (-0.07, 0.52)	0.295	0.72 (0.53, 0.92)**	0.84 (0.54, 1.14)**	0.552	0.26 (0.09, 0.44)*	0.31 (0.02, 0.60)*	0.710
Whole grains	0.59 (0.30, 0.88)**	1.09 (0.51, 1.68)**	0.138	1.00 (0.68, 1.32)**	1.28 (0.74, 1.82)**	0.428	0.56 (0.24, 0.88)*	1.11 (0.55, 1.66)**	0.113
Dairy	0.90 (0.56, 1.24)**	0.90 (0.45, 1.35)**	0.999	0.73 (0.36, 1.09)**	0.54 (0.03, 1.04)*	0.592	0.89 (0.50, 1.28)**	0.55 (0.03, 1.08)*	0.330
Total protein foods	-0.23 (-0.41, -0.05)*	0.08 (-0.16, 0.32)	**0.040**	0.35 (0.14, 0.55)*	0.52 (0.27, 0.77)**	0.349	0.01 (-0.17, 0.21)	0.23 (-0.02, 0.49)	0.178
Seafood and plant proteins	-0.03 (-0.23, 0.15)	0.53 (0.21, 0.85)*	**0.003**	0.63 (0.42, 0.84)**	0.90 (0.58, 1.21)**	0.175	0.10 (-0.10, 0.31)	0.67 (0.35, 0.99)**	**0.004**
Fatty acids	-0.45 (-0.81, -0.09)*	-0.45 (-0.96, 0.04)	0.915	-0.10 (-0.48, 0.26)	-0.20 (-0.74, 0.33)	0.827	-0.58 (-0.96, -0.20)*	-0.27 (-0.80, 0.26)	0.443
Refined grains	0.66 (0.40, 0.92)**	0.69 (0.18, 0.20)*	0.921	0.21 (-0.12, 0.54)	0.08 (-0.46, 0.63)	0.700	0.24 (-0.06, 0.56)	0.08 (-0.43, 0.59)	0.572
Sodium	-0.13 (-0.49, 0.22)	0.47 (-0.03, 0.97)	0.060	0.42 (0.04, 0.80)*	0.74 (0.22, 1.26)*	0.318	-0.26 (-0.66, 0.12)	0.41 (-0.10, 0.92)	0.050
Added sugars	0.19 (-0.08, 0.47)	-0.18 (-0.59, 0.22)	0.121	1.04 (0.74, 1.35)**	1.00 (0.56, 1.45)**	0.819	0.15 (-0.15, 0.46)	0.08 (-0.41, 0.58)	0.769
Saturated fats	-0.46 (-0.78, -0.13)*	-0.99 (-1.49, -0.50)**	0.061	-0.24 (-0.63, 0.14)	0.10 (-0.41, 0.62)	0.266	-0.41 (-0.79, -0.03)*	-0.39 (-0.91, 0.13)	0.949

[1]Data are weighted to be nationally representative and are adjusted for age, sex and dietary recall day. Weighted sample sizes are rounded in accordance with Statistics Canada's confidentiality policies. Within year inequities were calculated using linear regression. Time trends in inequities were examined using generalized linear models.
*p<0.05 for within year inequities, **p<0.001 for within year inequities.

Table 6 Trends in relative gradients in Healthy Eating Index-2015 scores by socioeconomic position among children who participated in the Canadian Community Health Survey – Nutrition in 2004 (weighted n=6,157,000) or 2015 (weighted n=6,115,000)[1]

	Mean (95% CI)								
	Household income			Household educational attainment			Neighborhood deprivation		
Healthy Eating Index-2015 scores	2004	2015	P-value for time trend	2004	2015	P-value for time trend	2004	2015	P-value for time trend
Total	1.03 (1.01, 1.06)*	1.06 (1.03, 1.10)**	0.159	1.13 (1.11, 1.16)**	1.15 (1.11, 1.18)**	0.572	1.03 (1.00, 1.05)*	1.07 (1.03, 1.10)**	0.097
Total fruits	1.12 (1.05, 1.18)**	1.12 (1.03, 1.22)*	0.985	1.20 (1.12, 1.28)**	1.19 (1.10, 1.30)**	0.883	1.09 (1.02, 1.16)*	1.09 (1.00, 1.19)*	1.000
Whole fruits	1.13 (1.04, 1.22)*	1.22 (1.11, 1.34)**	0.181	1.35 (1.24, 1.47)**	1.31 (1.19, 1.44)**	0.580	1.13 (1.04, 1.23)*	1.23 (1.12, 1.36)**	0.204
Total vegetables	1.09 (1.01, 1.18)*	1.14 (1.02, 1.27)*	0.583	1.23 (1.13, 1.33)**	1.32 (1.18, 1.48)**	0.284	1.05 (0.97, 1.13)	1.02 (0.90, 1.15)	0.625
Greens and beans	1.40 (1.18, 1.67)**	1.26 (0.93, 1.71)	0.438	2.86 (2.45, 3.34)**	2.26 (1.65, 3.10)**	0.338	1.68 (1.43, 1.97)**	1.36 (1.04, 1.79)*	0.789
Whole grains	1.42 (1.19, 1.70)**	1.38 (1.17, 1.61)**	0.879	1.82 (1.51, 2.19)**	1.41 (1.22, 1.64)**	**0.034**	1.43 (1.18, 1.73)**	1.38 (1.19, 1.62)**	0.910
Dairy	1.14 (1.08, 1.20)**	1.13 (1.06, 1.20)*	0.793	1.11 (1.05, 1.17)**	1.08 (1.01, 1.16)*	0.633	1.14 (1.07, 1.21)**	1.08 (1.00, 1.16)*	0.299
Total protein foods	0.89 (0.82, 0.97)*	1.02 (0.95, 1.10)	**0.016**	1.18 (1.07, 1.30)*	1.16 (1.08, 1.25)**	0.784	1.00 (0.91, 1.10)	1.07 (0.9, 1.16)	0.293
Seafood and plant proteins	0.96 (0.81, 1.14)	1.38 (1.13, 1.68)*	**0.007**	1.74 (1.45, 2.10)**	1.68 (1.39, 2.03)**	0.781	1.08 (0.90, 1.30)	1.50 (1.23, 1.84)**	**0.020**
Fatty acids	0.87 (0.79, 0.97)*	0.86 (0.75, 0.99)*	0.819	0.97 (0.86, 1.08)	0.93 (0.80, 1.08)	0.730	0.85 (0.77, 0.95)*	0.92 (0.80, 1.06)	0.507
Refined grains	1.08 (1.04, 1.11)**	1.09 (1.02, 1.16)*	0.772	1.02 (0.98, 1.06)	1.01 (0.94, 1.08)	0.731	1.03 (0.99, 1.06)	1.01 (0.94, 1.08)	0.602
Sodium	0.97 (0.92, 1.03)	1.07 (0.99, 1.16)	0.053	1.06 (1.00, 1.13)*	1.12 (1.03, 1.21)*	0.337	0.95 (0.90, 1.01)	1.07 (0.98, 1.16)	**0.041**
Added sugars	1.02 (0.98, 1.06)	0.97 (0.92, 1.03)	0.143	1.14 (1.10, 1.19)**	1.14 (1.07, 1.21)**	0.877	1.01 (0.97, 1.06)	1.00 (0.94, 1.07)	0.769
Saturated fats	0.92 (0.87, 0.97)*	0.84 (0.77, 0.91)**	0.058	0.96 (0.90, 1.02)	1.01 (0.92, 1.10)	0.302	0.93 (0.87, 0.99)	0.93 (0.85, 1.01)	0.898

[1]Data are weighted to be nationally representative and are adjusted for age, sex and dietary recall day. Weighted sample sizes are rounded in accordance with Statistics Canada's confidentiality policies. Within year inequities were calculated using linear regression. Time trends in inequities were examined using generalized linear models.

*p<0.05 for within year inequities, **p<0.001 for within year inequities.

FIGURE LEGEND

Figure 1 Trends in Healthy Eating Index-2015 total scores by household income (A), household educational attainment (B) and neighborhood deprivation (C) among children who participated in the Canadian Community Health Survey - Nutrition in 2004 (weighted n=6,157,000) or 2015 (weighted n=6,115,000)[1]

[1]Data are weighted to be nationally representative and are adjusted for age, sex and dietary recall day.
HEI: Healthy Eating Index