

# Geographic Differences in Childhood Overweight, Physical Activity, Nutrition and Neighbourhood Facilities: Implications for Prevention

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## ABSTRACT

**Background:** Childhood overweight is a major public health concern. Whereas various studies have documented higher prevalence rates in rural areas compared to urban areas, little is known about what is causing these differences. We sought to identify the factors underlying the overweight differentials by examining physical activity and nutrition behaviours as well as neighbourhood characteristics of urban areas, towns and rural areas across Alberta.

**Methods:** In 2008, we surveyed 3,421 grade five students and their parents from 148 randomly selected schools. Students completed the Harvard Food Frequency Questionnaire, questions on physical activities, and had their height and weight measured. Parents completed questions on socio-economic background, child's lifestyle, and neighbourhood perception. We applied multilevel regression methods to quantify the geographic differentials in physical activity, nutrition and neighbourhood facilities.

**Results:** The prevalence of overweight was 28.5% among Albertan grade five students, with 6.7% being obese. Among students attending schools in towns and rural areas, the prevalence of overweight (obesity) was 29.8% (7.9%) and 30.6% (8.0%), respectively. Compared with students attending urban schools, those attending schools in towns and rural areas reported more physical activity despite perceiving less access to playgrounds/parks and recreational programs ( $p < 0.01$ ). These latter students further reported poorer diets and purchasing more energy-dense foods and snacks at their schools ( $p < 0.01$ ).

**Conclusion:** Our findings confirmed the existence of geographic differentials in overweight and its underlying causes. The study urges more promotion of healthy eating and active living, particularly in towns and rural areas to reduce geographic inequalities in health.

**Key words:** Childhood overweight; public health; nutrition; physical activity; geographic gradient; built environment

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

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The prevalence of overweight among children in Canada has increased dramatically from 15% in 1977/78 to 26% in 2004.<sup>1</sup> This increase portends future increases in incidence of diabetes, cardiovascular diseases, and other chronic diseases.<sup>2,3</sup> Documenting trends post 2004 and understanding the underlying factors are fundamental to public health.

Canadian studies have shown that rurally residing children and youth are more likely to be overweight than urban residents.<sup>4,6</sup> In North America, studies have revealed a higher overweight prevalence in rural populations: diet,<sup>7</sup> physical activity<sup>8</sup> and low socio-economic status<sup>9</sup> have been identified as potential reasons. Limited access to parks and recreational facilities in socio-economically disadvantaged areas hinders children from being physically active and puts them at increased risk of becoming overweight.<sup>7,10,11</sup> In addition, residents in neighbourhoods with poor access to healthy foods have more fat in their diet and are more likely to become overweight.<sup>7,12</sup>

The purpose of this present study is to investigate the urban-rural differences in childhood overweight and its underlying causes in Alberta.

## METHODS

### Survey

The 2008 and 2010 Raising Healthy Eating and Active Living Kids in Alberta (REAL Kids Alberta) surveys intend to evaluate the Alberta Health and Wellness initiative, the aim of which is to promote healthy body weights among children and youth. The present

study reports on the 2008 observations. The study employed a one-stage stratified random sampling design. The sampling frame included all elementary schools with the exception of private (4.7% of all Alberta children), francophone (0.6%), on-reserve federal (2.0%), charter (1.7%), and colony (0.8%) schools.<sup>13</sup> Schools were stratified into three geographies: 1) urban: Calgary and Edmonton; 2) towns: other municipalities with more than 40,000 residents; and 3) rural: municipalities with less than 40,000 residents. Schools were randomly selected within each of these strata to achieve a balanced number of students in each stratum. Of the 184 invited schools, 148 (80.4%) participated. These schools were attended by 5,594 grade five students, who received an envelope including a parent consent form and survey to take home. Of the 3,758 (67.2%) students who returned completed consent forms to school, 3,645 (97.0%) had received parental consent to participate. Of these stu-

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

**Table 1.** Characteristics of Grade Five Students and Their Parents in Alberta, Canada, in 2008

|   | Total | Location of School |       |       | p value* | Principal Components Analysis                                |                   |               |
|---|-------|--------------------|-------|-------|----------|--|-------------------|---------------|
|   |       | Urban              | Town  | Rural |          | Principal Component  | Strongest Factors | Loading Score |
| Weight status   |       |                    |       |       |          |  |                   |               |
| Overweight  | 28.5% | 26.4%              | 29.8% | 30.6% | 0.04     |  |                   |               |
| Obese   | 6.7%  | 5.3%               | 7.9%  | 8.0%  | 0.01     |  |                   |               |
| Gender  |       |                    |       |       |          |  |                   |               |
| Male  | 48.5% | 49.3%              | 45.6% | 48.8% | 0.30     |  |                   |               |
| Female  | 51.5% | 50.7%              | 54.4% | 51.2% |          |  |                   |               |
| Parental education  |       |                    |       |       |          |  |                   |               |
| Secondary graduation or less                                      | 26.5% | 24.0%              | 25.1% | 30.5% | <0.01    |  |                   |               |
| Postsecondary or college diploma                                  | 39.9% | 34.7%              | 45.5% | 43.9% |          |  |                   |               |
| University degree   | 33.6% | 41.3%              | 29.4% | 25.6% |          |  |                   |               |
| Household income  |       |                    |       |       |          |  |                   |               |
| ≤\$50,000   | 23.4% | 28.3%              | 18.0% | 19.6% | <0.01    |  |                   |               |
| \$50,001-\$75,000   | 17.4% | 17.6%              | 16.0% | 17.8% |          |  |                   |               |
| \$75,001-\$100,000  | 22.2% | 20.1%              | 24.4% | 23.9% |          |  |                   |               |
| >\$100,000  | 37.0% | 34.0%              | 41.6% | 38.7% |          |  |                   |               |
| Physical activity   |       |                    |       |       |          |  |                   |               |
| Out of school sports with a coach ≥4 times a week                 | 15.7% | 14.6%              | 18.1% | 16.1% | 0.16     |  |                   |               |
| Out of school sports without a coach ≥4 times a week              | 38.5% | 31.5%              | 42.2% | 45.7% | <0.01    |  |                   |               |
| Out of school sports with parent/guardian ≥4 times a week         | 8.11% | 7.0%               | 7.2%  | 9.9%  | 0.02     |  |                   |               |
| Screen time >2 hours a day  | 40.9% | 44.0%              | 40.6% | 37.5% | <0.01    |  |                   |               |
| Being physically active   | 26.7% | 23.7%              | 28.9% | 29.4% | <0.01    |  |                   |               |
| Nutritional habits and diet quality                               |       |                    |       |       |          | Nutritional habits   |                   |               |
| Family supper at the table ≥3 times a week (Q11)                  | 83.1% | 82.8%              | 83.6% | 83.4% | 0.85     | Component 1: Family supper not in front of TV                | Q11               | -0.53         |
| Family supper in front of TV ≥3 times a week (Q12)                | 18.6% | 19.2%              | 17.5% | 18.3% | 0.60     |  | Q12               | 0.57          |
| Eat convenient/ready made foods ≥once a week (Q5)                 | 43.6% | 41.7%              | 43.7% | 45.8% | 0.09     | Component 2: Eat convenient/ready made foods                 | Q5                | 0.51          |
| Eat fried food at home ≥once a week (Q7)                          | 54.6% | 55.4%              | 53.8% | 53.8% | 0.60     |  | Q7                | 0.56          |
| Eat fried food away from home ≥once a week (Q8)                   | 41.0% | 41.4%              | 39.5% | 41.2% | 0.68     |  | Q8                | 0.43          |
| Buy sandwiches/meals high in calories at school ≥once a week (Q9) | 12.7% | 9.0%               | 9.2%  | 18.9% | <0.01    | Component 3: Purchase high-calorie snacks and food at school | Q9                | 0.71          |
| Buy snacks high in calories at school ≥once a week (Q10)          | 8.7%  | 5.3%               | 7.4%  | 12.0% | <0.01    | Component 4: Eat fast food from restaurant†                  | Q10               | 0.69          |
| Eat fast food from restaurant ≥once a week (Q13)                  | 39.7% | 39.5%              | 41.8% | 39.1% | 0.50     | Component 4: Eat fast food from restaurant†                  | Q13               | 0.73          |
| Skip breakfast or lunch (Q1)                                      | 3.0%  | 2.8%               | 3.5%  | 3.2%  | 0.63     | Component 5: Skip meals                                      | Q1                | 0.90          |
| Having supper alone ≥once a week (Q6)                             | 19.5% | 19.2%              | 19.4% | 20.0% | 0.80     | Component 5: Skip meals                                      | Q6                | 0.49          |
| Meet guidelines for consumption of vegetables and fruits          | 26.0% | 29.2%              | 21.5% | 23.3% | <0.01    |  |                   |               |
| % Energy from fat   | 27.5  | 27.0               | 27.8  | 28.0  | <0.01    |  |                   |               |
| Mean Diet Quality Index (DQI) score                               | 61.0  | 61.8               | 60.1  | 60.3  | <0.01    |  |                   |               |
| Neighbourhood perception and facilities                           |       |                    |       |       |          | Neighbourhood perception and facilities                      |                   |               |
| Like my neighbourhood (Q1)  | 95.0% | 94.7%              | 94.3% | 95.7% | 0.31     | Component 1: satisfaction/services                           | Q1                | 0.55          |
| Access to sport/recreation programs (Q7)                          | 89.6% | 89.0%              | 92.1% | 89.4% | 0.10     |  | Q7                | 0.52          |
| Access to stores to purchase vegetables and fruits (Q8)           | 95.1% | 96.9%              | 97.1% | 92.0% | <0.01    |  | Q8                | 0.49          |
| Safe to play outside (Q2)   | 93.5% | 89.9%              | 94.9% | 97.5% | <0.01    | Component 2: safety  | Q2                | -0.31         |
| Unsafe for my child due to traffic (Q5)                           | 32.7% | 34.3%              | 33.4% | 30.2% | 0.07     |  | Q5                | 0.67          |
| Unsafe for my child due to crimes (Q6)                            | 21.6% | 30.4%              | 16.1% | 12.5% | <0.01    |  | Q6                | 0.62          |
| Existence of good playgrounds and parks (Q3)                      | 85.3% | 88.8%              | 86.9% | 79.9% | <0.01    | Component 3: sidewalks/parks                                 | Q3                | 0.51          |
| Existence of sidewalks on most of the streets (Q4)                | 83.9% | 96.1%              | 88.1% | 65.3% | <0.01    | Component 3: sidewalks/parks                                 | Q4                | 0.79          |

\*  $\chi^2$ -tests and t-test (% energy from fat, DQI) were used to assess geographic differences between regions. All estimates were weighted to account for design effect.

dents, 3,407 were present when evaluation assistants visited the school to conduct the survey, 6 students declined to participate, and 20 absent students completed and mailed their surveys, resulting in 3,421 participating students (61.2% of total student population in those schools). These students, in the classroom under the supervision of a project assistant, completed the Harvard Food Frequency Questionnaire (FFQ)<sup>14</sup> and a short survey on their physical activities.

### Assessments

Grade 5 students are primarily 10 or 11 years of age. The questionnaires they completed are posted on [www.REALKidsAlberta.ca](http://www.REALKidsAlberta.ca).

Standing height was measured to the nearest 0.1 cm without shoes using stadiometers and body weight to the nearest 0.1 kg on calibrated digital scales. Body mass index (BMI) was calculated by dividing weight (in kilograms) by height (in metres) squared. Overweight (including obesity) was defined using the BMI cut-off points for children and youth established by the International Obesity Task Force.<sup>15</sup>

Based on student responses to the FFQ and Canadian food table, we estimated 1) number of daily servings of vegetables and fruits; 2) percentage of energy from dietary fat intake; 3) diet quality index (DQI), which is a composite index that encompasses diet variety, adequacy, moderation and balance.<sup>5,16</sup>

Parent/guardian(s) and students responded to activity questions on: a) travel to and from school; b) time spent to get to and from school; c) frequency of child's activities outside of school hours; d) activities at morning and lunch recess in the past seven days; and e) frequency of involvement in sports and physical activities in the past seven days. These questions, totaling 29 items, were for the most part adopted from the Physical Activity Questionnaire for Children (PAQ-C) which has previously been validated and demonstrated high reliability.<sup>17</sup> The 29 items were the basis of a composite score ranging from 1 to 6. Participants with a score exceeding 3 were classified as 'physically active'.

We used questions from the 2006/2007 National Longitudinal Survey of Children and Youth (NLSCY) on activities for parental assessment of the number of hours ( $\leq 2$  hours/ $> 2$  hours) per day their child spent playing videos games, watching television or using the computer out of school hours.<sup>18</sup>

Students responded to 13 questions on nutrition behaviours (Table 1) from the FFQ and the student survey. These questions were reduced to five components (Table 1) using principal components analysis (PCA) (see Statistical analysis). Students' responses to "place of family supper" (Table 1, Q2 and Q3) and "eating fast food from restaurant" (Table 1, Q4) did not substantially contribute to any factor and are not included in Table 1.

Neighbourhood perception was assessed based on parents' responses to eight questions (Table 1) from the Environmental Module of the International Physical Activity Questionnaire (IPAQ), the reliability and validity of which have been assessed.<sup>19</sup> These questions were reduced to three components (satisfaction/services, safety and sidewalks/parks) using PCA (see Statistical analysis).

### Statistical analysis

PCA with subsequent varimax rotation reduced the 13 questions on nutrition behaviours to five components (explaining 60% of the total variance) with an eigenvalue  $> 1$  (Table 1): 1) family supper

not in front of TV (Q11 and Q12); 2) eat convenient/ready made foods (Q5, Q7 and Q8); 3) purchase high calories meals at school (Q9 and Q10); 4) eat fast food from restaurant (Q13); and 5) skip meals (Q1 and Q6). PCA was also used for item reduction of the eight neighbourhood perception questions. Three components, explaining 64% of the total variance, with an eigenvalue  $> 1$  were identified (Table 1): 1) satisfaction/services (Q1, Q7 and Q8); 2) safety (Q2, Q5 and Q6); and 3) sidewalks/parks (Q3 and Q4).

Multilevel linear (% energy from dietary fat, DQI) and logistic (overweight, nutrition behaviours, physical activity, and neighbourhood outcomes) regression methods were used to examine geographic differences for the various outcomes while accommodating the hierarchical data structure whereby student observations cluster within schools. All analyses were weighted to account for the design effect. All estimates were adjusted for the confounding potential of students' gender, parental educational attainment and household income. Analyses pertaining to dietary outcomes were further adjusted for calorie intake, as is recommended for FFQ data.<sup>14</sup> Missing values for educational attainment and income were treated as separate covariate categories. Stata Version 10 (Stata Corp, TX, USA) was used. This study was approved by the Health Research Ethics Board of the University of Alberta.

### RESULTS

The prevalence of overweight was 28.5% among grade five students in 2008, with 6.7% of the students being obese (Table 1). Compared to their urban peers, students from towns and rural areas were more likely to be overweight and to have parents with lower educational attainment. Household income, however, was higher in towns and rural areas than in urban areas (Table 1).

Students attending schools in towns and rural areas were more likely to engage in more sports and have less screen time compared to students attending urban schools, as per parent report. These associations did not change after adjusting for child gender, educational attainment and income (Table 2).

Students of schools in towns and rural areas had a poorer diet as reflected in a lower consumption of vegetables and fruits, higher percentage of energy from fat and a lower DQI (Table 1). These students reportedly purchased high-calorie foods and snacks at school more often compared to their urban peers (Table 2).

Parents in urban areas perceived their neighbourhoods as less safe for their children to play outside (Table 1). In rural areas, access to sport/recreational activities was comparable to urban areas, but perceived access to stores in their neighbourhood to purchase vegetables and fruits was lower compared to parents in urban areas (Table 1). Parents residing in towns and rural areas were less likely to perceive their neighbourhood as having good sidewalks/parks compared to their urban counterparts (Table 2).

### DISCUSSION

The present study showed that students attending schools in towns and rural areas were more likely to be overweight, to have poorer diets, and to perceive their neighbourhoods as safe than their urban counterparts. These students, though, reportedly engaged more in sports despite less access to playgrounds/parks and recreational programs. These geographic differentials in physical activity, diet, and health behaviours suggest the need for distinct approaches to prevention of overweight and future chronic diseases.

**Table 2.** Geographic Differences in Relation to Physical Activity, Nutrition and Neighbourhood Characteristics

|  | Urban<br>(reference) | Town                      |                         | Rural                     |                         |
|--|----------------------|---------------------------|-------------------------|---------------------------|-------------------------|
|  |                      | Unadjusted<br>OR (95% CI) | Adjusted<br>OR (95% CI) | Unadjusted<br>OR (95% CI) | Adjusted<br>OR (95% CI) |
| Out of school sports with a coach                        | 1.00                 | 1.30 (0.90, 1.88)         | 1.32 (0.94, 1.84)       | 1.16 (0.81, 1.65)         | 1.21 (0.88, 1.66)       |
| Out of school sports without a coach                     | 1.00                 | 1.60 (1.26, 2.04)         | 1.57 (1.24, 1.99)       | 1.94 (1.54, 2.44)         | 1.87 (1.47, 2.37)       |
| Out of school sports with parent/guardian                | 1.00                 | 1.01 (0.67, 1.54)         | 1.05 (0.70, 1.56)       | 1.44 (0.96, 2.16)         | 1.45 (0.99, 2.12)       |
| Screen time (TV, computer, video games)                  | 1.00                 | 0.85 (0.66, 1.09)         | 0.89 (0.59, 1.12)       | 0.72 (0.58, 0.90)         | 0.74 (0.60, 0.91)       |
| Being physically active                                  | 1.00                 | 1.19 (0.77, 1.84)         | 1.09 (0.66, 1.78)       | 1.44 (0.86, 2.41)         | 1.34 (0.78, 2.29)       |
| Family supper not in front of TV                         | 1.00                 | 0.83 (0.61, 1.13)         | 0.87 (0.66, 1.14)       | 0.82 (0.62, 1.08)         | 0.83 (0.65, 1.07)       |
| Eat convenient/ready made foods                          | 1.00                 | 0.90 (0.68, 1.18)         | 0.92 (0.71, 1.18)       | .95 (0.74, 1.21)          | 0.95 (0.76, 1.19)       |
| Purchase high-calorie foods and snacks at school         | 1.00                 | 1.67 (1.13, 2.48)         | 1.67 (1.14, 2.45)       | 2.14 (1.55, 2.96)         | 2.12 (1.57, 2.88)       |
| Eat fast food from restaurant                            | 1.00                 | 1.15 (0.90, 1.47)         | 1.08 (0.84, 1.39)       | 1.05 (0.83, 1.32)         | 0.97 (0.76, 1.25)       |
| Skip meals   | 1.00                 | 1.48 (0.82, 2.68)         | 1.59 (0.89, 2.86)       | 1.25 (0.73, 2.14)         | 1.29 (0.74, 2.24)       |
| Meet guidelines for consumption of vegetables and fruits | 1.00                 | 0.50 (0.35, 0.71)         | 0.70 (0.51, 0.94)       | 0.61 (0.45, 0.83)         | 0.67 (0.51, 0.88)       |
| %Energy from fat†  | 1.00                 | 0.75 (0.32, 1.17)         | 0.71 (0.28, 1.14)       | 1.00 (0.61, 1.39)         | 0.91 (0.51, 1.30)       |
| Diet Quality Index†                                      | 1.00                 | -1.71 (-2.62, -0.80)      | -1.02 (-1.92, -0.11)    | -1.45 (-2.19, -0.72)      | -1.20 (-1.90, -0.49)    |
| Neighbourhood satisfaction/services                      | 1.00                 | 1.62 (1.21, 2.16)         | 1.36 (0.98, 1.88)       | 1.71 (1.20, 2.26)         | 1.49 (1.08, 2.07)       |
| Neighbourhood safety                                     | 1.00                 | 1.39 (1.00, 1.92)         | 1.34 (0.98, 1.85)       | 2.52 (1.86, 3.42)         | 2.44 (1.82, 3.26)       |
| Neighbourhood sidewalks/parks                            | 1.00                 | 0.79 (0.61, 1.03)         | 0.75 (0.58, 0.98)       | 0.23 (0.15, 0.34)         | 0.22 (0.15, 0.33)       |

\* Odds ratio (OR) (95% confidence interval (CI) from logistic regression adjusted for child gender, household income and parental education.

† Linear regression coefficient ( $\beta$ ) (95% CI) adjusted for child gender, household income, parental education and calories intake. All estimates were weighted to account for design effect.

Compared with the 2004 estimate of 23.6% overweight in 9-13 year old Albertan children,<sup>1</sup> our 2008 observation of 28.5% in 10-11 year olds shows a dramatic increase. We observed a higher prevalence of overweight in less urbanized areas, which concurs with recent studies conducted among children in Canada<sup>4-6</sup> and in the US.<sup>20</sup> Moreover, childhood overweight prevalence is less likely to be observed in geographies with high educational attainment,<sup>21,22</sup> as we noticed in urban areas (data not shown). Education may provide parents with more knowledge of the role of nutrition in health, awareness of child weight as a health risk factor, and an understanding of feeding practices conducive to healthy weight.<sup>21</sup>

We found higher prevalence of overweight and percentage of being physically active among students attending schools in towns and rural areas compared to students in urban schools. These findings are congruent with some<sup>23,24</sup> but not all<sup>4</sup> recent research conducted among children. Although differences in the samples, measures of health behaviours and statistical methods could be incriminated, the interaction between physical activity and weight is complex. Excess weight may stem from excess caloric consumption, lower caloric expenditure, or both. These students engaged more often in sports despite reportedly limited access to playgrounds/parks and recreational facilities, which is not in line with previous studies.<sup>5,10,11</sup> This inconsistency could be explained by an over-reporting of "structured" activities as well as time spent in sport activities.<sup>25</sup> Studies using objective measures of physical activity (pedometers, accelerometers) are required to confirm this speculation.

We observed that students in towns and rural areas consume less vegetables and fruits, more dietary fat and have a lower diet quality. Huot et al.<sup>26</sup> revealed in 2004 that rural diets were more likely to be poor, high in fat and sugar and low in vegetables and fruits. The home environment determines nutrition behaviours and diet intakes.<sup>27</sup> Indeed, this study and previous findings<sup>27,28</sup> demonstrated that children who ate meals while watching television on a daily basis had lower quality diet than children who did so less frequently. Lower diet quality among students from towns and rural

areas compared to their urban peers was also consistent with poor neighbourhood access to healthy foods, as previously reported for other Canadian jurisdictions.<sup>5</sup> In accordance with studies that describe the importance of the school food environment,<sup>5,29</sup> the present study revealed a poorer school food environment in towns and rural areas along with higher overweight prevalence rates.

Strengths of the present study included its large sample, measured heights and weights and its response rate, which is considered very high for school-based research. Although similar results between objective and self-reported physical activity have been reported,<sup>30</sup> this research could benefit from use of objective measures such as pedometers. The cross-sectional design necessitates caution with respect to interpretations on directionality and causality. Parent proxy reports of child's health behaviours may have introduced additional measurement error. This is, however, less likely as we had used validated and reliable questionnaires.

In conclusion, we observed a prevalence of childhood overweight in Alberta that exceeds previous population-based data,<sup>1</sup> as well as geographic differences in overweight, health behaviours and neighbourhood characteristics. These findings suggest the contribution of poor nutrition to the higher childhood overweight rates in towns and rural geographies, and demand more research to reveal the magnitude of the contribution. The present findings call for strengthening of preventive initiatives aimed at enhancing healthy eating and active living. These initiatives should acknowledge the distinct needs of students in urban settings, towns and rural geographies.

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## RÉSUMÉ

**Contexte :** Le surpoids dans l'enfance est un grave problème de santé publique. Diverses études font état de taux de prévalence plus élevés en milieu rural qu'en milieu urbain, mais on en sait peu sur les causes de ces écarts. Nous avons voulu cerner les facteurs sous-jacents des écarts dans le surpoids en examinant les comportements d'activité physique et de nutrition et les caractéristiques du quartier dans les zones urbaines, les petites villes et les milieux ruraux de l'Alberta.

**Méthode :** En 2008, nous avons sondé 3 421 élèves de 5<sup>e</sup> année dans 148 écoles sélectionnées au hasard, ainsi que leurs parents. Les élèves ont rempli le questionnaire Harvard sur la fréquence de consommation des produits alimentaires et répondu à des questions sur leur activité physique, et nous avons mesuré leur taille et leur poids. Les parents ont répondu à des questions sur leur milieu socioéconomique, le mode de vie de leur enfant et leur perception du quartier. Nous avons appliqué des méthodes de régression multiniveaux pour chiffrer les écarts géographiques dans l'activité physique, la nutrition et les équipements du quartier.

**Résultats :** La prévalence du surpoids était de 28,5 % chez les élèves de 5<sup>e</sup> année de l'Alberta; de ce chiffre, 6,7 % étaient obèses. Parmi les élèves qui fréquentaient l'école dans une petite ville ou en milieu rural, la prévalence du surpoids (de l'obésité) était de 29,8 % (7,9 %) et de 30,6 % (8 %), respectivement. Comparés aux élèves en zone urbaine, ils ont déclaré faire plus d'activité physique, malgré leur impression d'avoir accès à moins de terrains de jeu/de parcs et de programmes récréatifs ( $p < 0,01$ ). Ces élèves des petites villes et des milieux ruraux ont aussi déclaré avoir une moins bonne alimentation et acheter davantage d'aliments et de collations riches en calories à l'école ( $p < 0,01$ ).

**Conclusion :** Nos constatations confirment l'existence d'écarts géographiques dans le surpoids et ses causes sous-jacentes. L'étude plaide en faveur d'une promotion accrue de la saine alimentation et de la vie active, surtout dans les petites villes et en milieu rural, pour réduire les inégalités en santé d'origine géographique.

**Mots clés :** surpoids dans l'enfance; santé publique; nutrition; exercice physique; gradient géographique; milieu bâti