Area-level social fragmentation is associated with less walking for exercise: Cross-sectional findings from the Quebec Adipose and Lifestyle Investigation in Youth (QUALITY) Study

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Rationale

- Features of the social and physical environment influence physical activity
- Built-environment and physical activity
- Social Fragmentation (SF)
  - Emile Durkheim
  - Instability
  - Found associations between SF and suicide and mental health (Curtis, Fagg et al.)
  - Physical activity (Pabayo et al, 2011)
Research Question & Hypothesis

• What is the relationship between SF and walking for exercise?

• Among mothers and fathers of children

• Hypothesis:
  • SF is associated with a decreased likelihood of walking for exercise
Data Source

- Quebec Adipose and Lifestyle Investigation in Youth (QUALITY) Study
- Prospective cohort of 630 Caucasian families with children at risk for obesity
- Eligibility:
  - Child was aged 8-10 years
  - Both biological parents were available for the study
  - At least one parent was obese
- Families were recruited through schools in the Greater Montreal or Quebec City metropolitan areas between 2005 and 2008.
Data Collection

- Determinants of obesity and cardiometabolic risk factors:
  - Biological
  - Genetic
  - Behavioral
  - Psychological
  - Environmental

- Each participant was matched by postal code to Canada Census variables for their Census tract of residence
Area Social Fragmentation

- Congdon, 1996 UK

- A summary score was calculated using three Canada census variables

- Three items; proportion of residents:
  - Single-parent families
  - Residents moving out of the census
  - Homeowners within the neighborhood (reverse coded)

- Higher the score, the higher the social fragmentation
Outcome: Walking for exercise

- “In the past 2 weeks how many times have you walked (whether for recreation or exercise or to get to or from places) for at least 10 min continuously?”

- Walking for exercise was dichotomized into any or none.
Covariates

- Household income
- Body Mass Index
- Age
- Social Cohesion
- Perceived Safety
- Crime in the Neighborhood
- Facilities in the Neighborhood for physical activity
- Few Sidewalks
- Area level Economic deprivation
- Population density
Analysis

- Log-binomial multiple regression models
- Controlled for covariates
- Stratified analysis for mothers and fathers
- Mothers and fathers not living with their child were excluded
Results
## Participant Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Mothers (n=588) %</th>
<th>Fathers (n=538) %</th>
</tr>
</thead>
<tbody>
<tr>
<td>High social cohesion</td>
<td>25.2</td>
<td>23.6</td>
</tr>
<tr>
<td>Crime in the neighborhood</td>
<td>10.4</td>
<td>9.5</td>
</tr>
<tr>
<td>High traffic in the neighborhood</td>
<td>26.9</td>
<td>26.8</td>
</tr>
<tr>
<td>Few Facilities in the neighborhood</td>
<td>17.4</td>
<td>17.1</td>
</tr>
<tr>
<td>Few sidewalks</td>
<td>56.3</td>
<td>56.9</td>
</tr>
<tr>
<td>Age (years)</td>
<td>40.1(4.9)</td>
<td>42.4(5.7)</td>
</tr>
<tr>
<td>Body Mass Index (kg/m²)</td>
<td>29.4(6.5)</td>
<td>30.7(5.4)</td>
</tr>
<tr>
<td>Household Income (CAD)</td>
<td>42867 (18389)</td>
<td>44731 (17762)</td>
</tr>
</tbody>
</table>
Relative Risk for the association between social fragmentation and likelihood of walking for exercise among mothers participating in the QUALITY study

Trend p<0.05

Relative Risk

Social Fragmentation (quartile)

1
2
3
4

0.9(0.8,1.0)
0.8(0.7,1.0)
0.8(0.7,0.9)
Results

• Compared to mothers in the first quartile of SF, those in the second, third, and fourth quartile of SF were less likely to walk for exercise

• Decreasing trend was significant (0<0.05)

• SF was not significantly associated with walking among fathers
Discussion

- Higher levels of SF was associated with decreased likelihood of walking for exercise only among mothers.

- Consistent with other studies that indicate neighborhood level variables may affect physical activity differently between men and women.

- Walking can be easily incorporated into daily routines.

- Programs that increase the stability of residential areas are needed.

- May be especially important among at-risk populations.
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