Background & Significance

• Childhood obesity nearly tripled in the 1980s and 1990s. Estimates from the past decade seem to suggest that the trend may be stabilizing, yet the prevalence of overweight and obese youth still remains alarmingly high.

• In 2008, 31.7% of U.S. children aged 2 through 19 were overweight or obese.

• In Massachusetts, 25% of middle school students and 24% of high school students were overweight or obese in 2011.

• The American Academy of Pediatrics (AAP) and Institute of Medicine (IOM) have recommended that childhood BMI be routinely assessed and tracked.

• The IOM also advises that school-based BMI-measurement program should be assessed.

• We would like to thank school nurses in participating districts for collecting these data and the nurse leaders in those districts for coordinating data collection at the district level and the Centers for Disease Control and Prevention for their continued support for this project.

Methods

• Between 2009 and 2013, 948,826 BMI records were collected from 311 school districts. We analyzed 947,815 BMI records from 290 school districts that reported at least two years of data and at least 100 BMI records during the study period.

• The numbers of overweight or obese students and total numbers of screened students were aggregated by gender, grade, school district and report year.

• Prevalence rates and associated 95% confidence intervals were estimated based on Poisson distributions, overall and by school district, gender and grade.

• Rate ratios (RR) of reporting year, as a measure of temporal trend, were estimated using mixed effects Poisson regression models with and without adjustment for community median household income, percentage of male students, grade/ gender interaction, and race/ethnicity.

• Between 2009 and 2013, 948,826 BMI records were collected from 311 school districts. We analyzed 947,815 BMI records from 290 school districts that reported at least two years of data and at least 100 BMI records during the study period.

• The numbers of overweight or obese students and total numbers of screened students were aggregated by gender, grade, school district and report year.

• Prevalence rates and associated 95% confidence intervals were estimated based on Poisson distributions, overall and by school district, gender and grade.

• Rate ratios (RR) of reporting year, as a measure of temporal trend, were estimated using mixed effects Poisson regression models with and without adjustment for community median household income, percentage of male students, grade/ gender interaction, and race/ethnicity.

Results

• The statewide 5-year average prevalence rate of overweight and obesity was 32.4%.

• Rates for boys and girls differed (p<0.001) and were 33.9% and 30.8%, respectively.

• Rates for grades 1, 4, 7 and 10 varied significantly and were 28.5%, 34.6%, 34.3% and 31.9%, respectively.

• District level rates ranged from 9.7% to 69.1% (see figure on the top right).

• Between 2009 and 2013, 948,826 BMI records were collected from 311 school districts. We analyzed 947,815 BMI records from 290 school districts that reported at least two years of data and at least 100 BMI records during the study period.

• The numbers of overweight or obese students and total numbers of screened students were aggregated by gender, grade, school district and report year.

• Prevalence rates and associated 95% confidence intervals were estimated based on Poisson distributions, overall and by school district, gender and grade.

• Rate ratios (RR) of reporting year, as a measure of temporal trend, were estimated using mixed effects Poisson regression models with and without adjustment for community median household income, percentage of male students, grade/ gender interaction, and race/ethnicity.

Discussion and Conclusions

• Childhood overweight and obesity prevalence varied significantly among school districts, by median household income, district demographic composition, and by gender and grade.

• There was a significant, consistent downward trend in prevalence across the state, in both gender, and all grades.

• Next Steps:

  • These results need to be put in the context of other public health initiatives (e.g., Mass in Motion).

  • The impact of local Public Health policies should be assessed.

Acknowledgements

• We would like to thank school nurses in participating districts for collecting these data and the nurse leaders in those districts for coordinating data collection at the district level and the Centers for Disease Control and Prevention for their continued support for this project.

Table

<table>
<thead>
<tr>
<th>Group</th>
<th>Adjusted Rate Ratio (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statewide</td>
<td>0.976 (0.966, 0.986)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Boys</td>
<td>0.977 (0.967, 0.987)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Girls</td>
<td>0.974 (0.964, 0.984)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Grade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G1</td>
<td>0.981 (0.950, 0.972)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>G4</td>
<td>0.971 (0.961, 0.982)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>G7</td>
<td>0.980 (0.969, 0.991)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>G10</td>
<td>0.985 (0.975, 0.996)</td>
<td>0.009</td>
</tr>
<tr>
<td>Median household income</td>
<td>0.973 (0.959, 0.987)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>LR test for difference</td>
<td>0.950 (0.939, 0.961)</td>
<td>0.005</td>
</tr>
<tr>
<td>LR test for difference</td>
<td>0.971 (0.959, 0.987)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>LR test for difference</td>
<td>0.975 (0.965, 0.994)</td>
<td>0.005</td>
</tr>
</tbody>
</table>