ADDRESSING DISPARITIES IN PEDIATRIC OBESITY: SUMMER IS ONE OF THE MOST INEQUITABLE TIMES OF YEAR

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WHY?
Understanding differences between summer vs. school obesogenic behaviors of children: the structured days hypothesis

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Abstract

Background: Although the scientific community has acknowledged modest improvements can be made to weight status and obesogenic behaviors (i.e., physical activity, sedentary/screen time, diet, and sleep) during the school year, studies suggest improvements are eroded as elementary-aged children are released to summer vacation. Emerging evidence shows children return to school after summer vacation displaying accelerated weight gain compared to the weight gain observed during the school year. Understanding how summer days differ from when children are in school is, therefore, essential.

Discussion: There is limited evidence on the etiology of accelerated weight gain during summer, with few studies comparing obesogenic behaviors on the same children during school and summer. For many children, summer days may be analogous to weekend days throughout the school year. Weekend days are often limited in consistent and formal structure, and thus differ from school days where segmented, pre-planned, restrictive, and compulsory components exist that shape obesogenic behaviors. The authors hypothesize that obesogenic behaviors are beneficially regulated when children are exposed to a structured day (i.e., school weekdays) compared to what commonly occurs during summer. This is referred to as the ‘Structured Days Hypothesis’ (SDH). To illustrate how the SDH operates, this study examines empirical data that compares weekend day (less structured) versus weekday structured obesogenic behaviors in U.S. elementary school-aged children. From 196 studies, 115 (i.e., 59%) demonstrate elementary-aged children’s obesogenic behaviors are more unfavorable during weekend days compared to weekdays.

Conclusion: In light of the SDH, consistent evidence demonstrates the structured environment of weekdays may help to protect children by regulating obesogenic behaviors, most likely through compulsory physical activity opportunities, restricting caloric intake, reducing screen time occasions, and regulating sleep schedules. Summer is emerging as the critical period when childhood obesity prevention efforts need to be focused. The SDH can help researchers understand the drivers of obesogenic behaviors during summer and lead to innovative intervention development.

Keywords: Children, Obesity, School, Summer
Time filled with positive behaviors cannot be filled with negative behaviors.
Health Gap Hypothesis

Percentage of Children Overweight and/or Obese over Time

DASHED LINE: Children from Low-Income Households
SOLID LINE: Children from High-Income Households

Health Gap

Summer
F = Fall
SP = Spring
1st
2nd
3rd
4th
5th

Health Gap Hypothesis

Summer Weight Gain and Fitness Loss: Causes and Potential Solutions

Abstract: Over the past decades, public health professionals have worked to address the obesity epidemic across all ages. However, the field’s efforts have not been enough to reduce obesity rates. Numerous factors, including lifestyle choices, economic status, and environmental factors, have contributed to the increase in obesity. Therefore, it is crucial to identify and implement strategies to combat obesity. This study aimed to investigate the relationship between summer weight gain and physical fitness. The results indicate that children who gain weight during the summer are more likely to have lower physical fitness levels.

Recently, summer has been identified as a period of excess weight gain and reduced physical fitness in children. This increase in weight gain can have significant long-term effects on health, including an increased risk of developing chronic diseases such as type 2 diabetes, cardiovascular disease, and certain types of cancer.

Keywords: Summer, weight gain, physical fitness, childhood obesity, prevention, intervention
EVIDENCE
NEXT STEP?
Identify the **dose-response relationship** between the amount of summer programming and accelerated summer BMI gain.
The Daily Diary will ask the following about Aliye's day:

The **places** Aliye went and the **time** they were there

**Screen time** (TV, video games) at home

When **meals** and **snacks** were eaten

And the types of **foods** and **beverages** Aliye consumed
## Sample

### Demographics of participating schools

<table>
<thead>
<tr>
<th>School</th>
<th>Students (K-4th Grade)</th>
<th>% Female</th>
<th>% non-Hispanic White</th>
<th>% non-Hispanic Black</th>
<th>% Other Race</th>
<th>% Families in Poverty</th>
</tr>
</thead>
<tbody>
<tr>
<td>School 1</td>
<td>612</td>
<td>44.8</td>
<td>23.7</td>
<td>56.3</td>
<td>20.1</td>
<td>100</td>
</tr>
<tr>
<td>School 2</td>
<td>419</td>
<td>52.9</td>
<td>19.3</td>
<td>48.7</td>
<td>31.9</td>
<td>100</td>
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<tr>
<td>School 3</td>
<td>310</td>
<td>51.9</td>
<td>21.6</td>
<td>62.9</td>
<td>15.5</td>
<td>99.0</td>
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<tr>
<td>School 4</td>
<td>447</td>
<td>49.2</td>
<td>19.2</td>
<td>60.5</td>
<td>20.3</td>
<td>93.0</td>
</tr>
</tbody>
</table>
SETTING
(YMCA Summer Camp)

• Indoor and Outdoor Physical Activity
• Enrichment and Academics

• Breakfast, Lunch, and Snacks:
  • Summer Food Service Program
  • Fruits, Vegetables, Whole Grain
  • No Sugar-Sweetened Milk/Beverages
Conclusions
• Children’s BMI gain accelerates during summer vacation
  • Unhealthy changes in obesogenic behaviors during breaks from school
  • Racial/Ethnic minority and low-income at high-risk

• Provide children with access to structured programming

• More work is needed
  • Limited experimental data, determine optimal dose of structure during summer
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&

QUESTIONS?