Are We Making Progress on Childhood Obesity?

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%
Changes in the Prevalence of Severe Obesity* in 2-19 yo Youth

* Severe obesity: BMI ≥120% of 95th Percentile
Obesity Prevalence in 2-4 yo WIC Participants 2000 - 2014

Pan L et al. MMWR 2016; 65:1256
### Changes in Obesity Prevalence among 2 - 4 yo – WIC 2010-2014

<table>
<thead>
<tr>
<th>Group</th>
<th>2010</th>
<th>2014</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Hispanic Blacks</td>
<td>12.7%</td>
<td>11.9%</td>
<td>- 0.8%</td>
</tr>
<tr>
<td>Non-Hispanic Whites</td>
<td>12.8%</td>
<td>12.2%</td>
<td>- 0.6%</td>
</tr>
<tr>
<td>Hispanics</td>
<td>19.3%</td>
<td>17.3%</td>
<td>- 2.0%</td>
</tr>
<tr>
<td>Asian/Pacific Islanders</td>
<td>12.5%</td>
<td>11.1%</td>
<td>- 1.4%</td>
</tr>
<tr>
<td>AI/AN</td>
<td>20.9%</td>
<td>18.0%</td>
<td>- 2.9%</td>
</tr>
</tbody>
</table>

Pan L et al. MMWR 2016; 65:1256
Impact of Changes in Calories Available from the 2009 Revised WIC Food Package for 2 - 4 yo*

Substitution of 16 qts 1% milk for 24 qts whole milk = 7488 kcal/m

Decreases in orange juice from 228 fl oz to 128 fl oz/m = 1400 kcal/m

Total decrease 8888 kcal/month = 297 kcal/d

*www.fns.usda.gov/wic/final-rule-revisions-wic-food-packages
States and Communities Reporting Decreases in the Prevalence of Childhood Obesity

- El Paso, TX
- Anchorage, AK
- Chula Vista, CA
- Kearney, NE
- DuPage County, IL
- Somerville, MA
- Cambridge, MA
- Portland, ME
- New York City
- Philadelphia, PA
- Vance, NC
- Granville, NC
- Fitchburg, MA
- West Virginia (WV)
- New York City
- El Paso, TX
- Anchorage, AK
- Chula Vista, CA
- San Diego, CA
Healthy Communities Study

10 year retrospective study of 130 communities selected for efforts around child obesity

- Oversampled communities with >30% African Americans or Hispanics
- Calculated intensity scores for nutrition and physical activity
- BMI collected for pediatric offices for kindergarten – 8th grade
Effects of Community Programs and Policies on Childhood Obesity

Significant relationships seen in families with incomes ≥ $50k but not in communities with high % African Americans or Hispanics, nor in African American or Hispanic children regardless of their community

Strauss WJ et al. Pediatric Obesity 2018; doi:10.1111/ijpo.12266
Nova Food Classification

• Group 1: unprocessed - fruits and vegetables, milk, nuts, yogurt with no added sugar
• Group 2: Group 1 with additives, like salt, sugar or oil
• Group 3: processed foods with additives in Group 2 plus smoking, curing, canning, freezing
• Group 4: ultra-processed foods made predominantly from industrial substances with little or no whole foods, such as sugary drinks, packaged soups, noodles or snacks, cookies
**Dinner**

Beef tender roast (Tyson)

Couscous (Near East) with fresh squeezed lemon juice, garlic and olive oil

Green beans, from frozen (Monarch)

Side salad with green leaf lettuce, cucumber and tomatoes

Vinaigrette (red wine vinegar, honey (Monarch), olive oil

Salt and Pepper (Monarch)

Black bean hummus (black beans cooked from dried, garlic, sweet pepper, olive oil, fresh squeezed lemon juice, ground cumin (Monarch), chili powder (Giant)) and baby carrots
Dinner

Steak (Tyson) and Cheddar and Monterey Jack Cheese (Glenview Farms) burrito (Pasado Tortilla) with canned black beans (Pasado)
Sour cream (Glenview Farms)
Salsa (del Pasado)
Tortilla chips (Tostitos)
Diet Lemonade (Crystal Light) with NutriSource fiber
Ultra-processed Foods and Energy Intake

Hall K, et al. 2019; Cell Metab https://doi.org/10.1016/j.cmet.2019.05.008
Ultra-processed Foods and Body Composition Changes

Hall K, et al. 2019; Cell Metab https://doi.org/10.1016/j.cmet.2019.05.008
Additional Support for the Effects of Ultra-processed Foods on the Pandemic

• Consistent with food patterns related to weight gain and loss
• Consistent with what we know about satiety
• Helps explain the disparities related to obesity
• Consistent with the evolution of the pandemic
The Challenge: How do we make unprocessed or minimally processed foods as available and inexpensive as ultra-processed foods?
Sources of Added Sugar in the American Diet – NHANES 2005-2006

<table>
<thead>
<tr>
<th>Rank</th>
<th>Food group</th>
<th>All persons</th>
<th>2-18 yo</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Soda/energy/sports drinks</td>
<td>36%</td>
<td>32%</td>
</tr>
<tr>
<td>2</td>
<td>Grain-based desserts</td>
<td>13%</td>
<td>11%</td>
</tr>
<tr>
<td>3</td>
<td>Fruit drinks</td>
<td>11%</td>
<td>15%</td>
</tr>
</tbody>
</table>

Mean intake added sugars (tsp) 21 23

Hu F. Obesity Reviews 2013; doi: 10.1111/obr.12040
Consumption of Sugary Drinks – FITS 2008 and 2016

Mean Caloric Intake from Sugary Drinks in Highest Quartile of 12-19 yo Consumers

NHANES 2005-2008
**Effect of Sugary Drink Intake in Infancy on Obesity at 6 yo; IFPS II (2005-2007) Followup**

<table>
<thead>
<tr>
<th>Infancy</th>
<th>Obesity Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>• No SDs</td>
<td>8.6%</td>
</tr>
<tr>
<td>• Any SDs</td>
<td>17.0%</td>
</tr>
</tbody>
</table>

**Age at SD introduction**

<table>
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<th>Obesity Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>• No SDs</td>
<td>8.6%</td>
</tr>
<tr>
<td>• &gt; 6 mo</td>
<td>15.6%</td>
</tr>
<tr>
<td>• ≤ 6 mo</td>
<td>20.4%</td>
</tr>
</tbody>
</table>

Sugary drinks defined as juice drinks, soda, sweet tea, Kool Aid

Sugary Drink and Water Intake
NHANES 2011-2016

Rosinger AY et al. JAMA Pediatrics 2019; online 4/22/2019
Effects of the SD Tax In Mexico

Colchero MA et al. BMJ 2015; doi: 10.1136/BMJ.h6704
The Global Syndemic of Obesity, Undernutrition, and Climate Change: Systems and Drivers

Swinburn B et al. Lancet 2019; 393:791
Interactions of Obesity, Stunting and Climate Change

Land Use, Urban Design, Transport

Climate Change

Undernutrition

Obesity

Diabetes

Food Systems

Climate Change

Undernutrition

Obesity

Diabetes

Climate Change
Promising Developments that Contribute to the Mitigation of Climate Change

- Meatless Mondays (or meat only on Mondays?)
- Production of beef alternatives – the Impossible Whopper, Beyond Meat
- 5% annual growth of sales of sustainably produced products
- Growth of “better for you” products
- Corporate implementation of sustainable practices
- C40 and ACCC cities
Diet and Transport Changes for Climate Change Are a Stealth Intervention for Obesity Prevention

- Increased consumption of plant-based foods
- Reduced beef consumption
- Increase physical and public transport

Lancet 2019; 393:791