Childhood Obesity: A Psychologist's View of the Way Forward

http://www.healthjockey.com/2010/04/07/world-health-day-childhood-obesity-is-more-serious-than-thought/

Suzanne Bennett Johnson
2012 APA President
sbjohnson@apa.org
Presentation Overview

- Epidemiology of childhood obesity
- Intergenerational escalation of childhood obesity
- Consequences of childhood obesity
- Factors underlying the childhood obesity epidemic: Lessons learned from the US
- Health provider response: Lessons learned from the US
- Thoughts on the way forward
Prevalence of obesity*, ages 20+, age standardized
Both sexes, 2008

Prevalence of obesity (%)

- <10
- 10–19.9
- 20–29.9
- ≥30
- Data not available
- Not applicable

* BMI ≥30kg/m²

The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.
Obesity: U.S. Leads the World

Adult Obesity

<table>
<thead>
<tr>
<th>Country</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>35%</td>
</tr>
<tr>
<td>Mexico</td>
<td>32%</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>30%</td>
</tr>
<tr>
<td>Australia</td>
<td>30%</td>
</tr>
<tr>
<td>Slovak Republic</td>
<td>28%</td>
</tr>
<tr>
<td>New Zealand</td>
<td>28%</td>
</tr>
<tr>
<td>Hungary</td>
<td>27%</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>26%</td>
</tr>
<tr>
<td>Portugal</td>
<td>25%</td>
</tr>
<tr>
<td>Iceland</td>
<td>24%</td>
</tr>
<tr>
<td>Spain</td>
<td>24%</td>
</tr>
<tr>
<td>Austria</td>
<td>23%</td>
</tr>
<tr>
<td>Netherlands</td>
<td>23%</td>
</tr>
<tr>
<td>Sweden</td>
<td>23%</td>
</tr>
<tr>
<td>Belgium</td>
<td>23%</td>
</tr>
<tr>
<td>Poland</td>
<td>23%</td>
</tr>
<tr>
<td>Norway</td>
<td>23%</td>
</tr>
<tr>
<td>Denmark</td>
<td>22%</td>
</tr>
<tr>
<td>France</td>
<td>22%</td>
</tr>
<tr>
<td>Switzerland</td>
<td>22%</td>
</tr>
<tr>
<td>Korea</td>
<td>21%</td>
</tr>
<tr>
<td>Japan</td>
<td>20%</td>
</tr>
</tbody>
</table>

Childhood Obesity

Prevalence of overweight and obesity in schoolchildren aged 10-16 years, as defined by body mass index, 2001-2002

<table>
<thead>
<tr>
<th>Country</th>
<th>% Overweight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lithuania</td>
<td>15-16%</td>
</tr>
<tr>
<td>Russia</td>
<td>14-15%</td>
</tr>
<tr>
<td>Netherlands</td>
<td>12-13%</td>
</tr>
<tr>
<td>Poland</td>
<td>12-13%</td>
</tr>
<tr>
<td>Switzerland</td>
<td>12-13%</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>12-13%</td>
</tr>
<tr>
<td>Israel</td>
<td>12-13%</td>
</tr>
<tr>
<td>Sweden</td>
<td>10-11%</td>
</tr>
<tr>
<td>Germany</td>
<td>10-11%</td>
</tr>
<tr>
<td>France</td>
<td>10-11%</td>
</tr>
<tr>
<td>Croatia</td>
<td>10-11%</td>
</tr>
<tr>
<td>Austria</td>
<td>10-11%</td>
</tr>
<tr>
<td>Hungary</td>
<td>10-11%</td>
</tr>
<tr>
<td>Ireland</td>
<td>10-11%</td>
</tr>
<tr>
<td>Ukraine</td>
<td>10-11%</td>
</tr>
<tr>
<td>Scotland</td>
<td>10-11%</td>
</tr>
<tr>
<td>Greece</td>
<td>10-11%</td>
</tr>
<tr>
<td>Italy</td>
<td>10-11%</td>
</tr>
<tr>
<td>England</td>
<td>10-11%</td>
</tr>
<tr>
<td>Spain</td>
<td>10-11%</td>
</tr>
<tr>
<td>Canada</td>
<td>10-11%</td>
</tr>
<tr>
<td>Wales</td>
<td>10-11%</td>
</tr>
<tr>
<td>United States</td>
<td>12-13%</td>
</tr>
<tr>
<td>Malta</td>
<td>12-13%</td>
</tr>
</tbody>
</table>

Figure 1. Percentage of obese and overweight population by country.
U.S. Adolescent Obesity: Gender and Ethnicity

NHANES 2007-2008
Childhood and Adult Obesity are Linked: Percent of Obese Children Who Become Obese Adults by Age

Whitaker et al., NEJM, 1997
Childhood and Adult Obesity are Linked:
Percent of Obese Children by Parent Weight Status

Whitaker et al, Am J Clin Nutr 2010
Intergenerational Escalation of Obesity

Whitaker et al. NEJM 1997
Murrin et al. BMC Publich Health 2012
Health Consequences of Obesity in Childhood

Complications of Childhood Obesity

Psychosocial
- Poor self esteem
- Depression
- Quality of life

Neurological
- Pseudotumor cerebri
- Risk for stroke

Cardiovascular
- Dyslipidemia
- Hypertension
- Left ventricular hypertrophy
- Chronic inflammation
- Endothelial dysfunction
- Risk of coronary disease

Pulmonary
- Asthma
- Sleep apnea
- Exercise intolerance

Renal
- Glomerulosclerosis
- Proteinuria

Gastrointestinal
- Pancreatitis
- Steatohepatitis
- Liver fibrosis
- Gallstones
- Risk for cirrhosis
- Risk for colon cancer

Musculoskeletal
- Forearm fracture
- Blount’s disease
- Slipped capital femoral epiphysis
- Flat feet
- Risk for degenerative joint disease
Health Consequences of Obesity

- 65% of the world's population live in countries where overweight and obesity kills more people than underweight.
- Obesity is the fifth leading cause of death worldwide.
- Obesity account for:
  - 44% of the diabetes burden
  - 23% of the ischaemic heart disease burden
  - 7% - 41% of certain cancer burdens

http://www.who.int/mediacentre/factsheets/fs311/en/
Health Consequences of Obesity in the U.S.

- Obesity is the second leading cause of death and is expected to become the leading cause.
- Will result in a decreased life expectancy for the first time in a century.
- Is causing a diabetes epidemic.
  - 33% of boys & 39% of girls born in 2000 will develop diabetes in their lifetime.
  - 50% of African-American girls born in 2000 will develop diabetes in their lifetime.
- Is expected to bankrupt the U.S. health care system.

Mokdad et al, JAMA, 2004
Narayan et al, JAMA, 2003
Percent Above Normal Weight Individuals’ Annual US Health Care Costs by Obesity Status and Gender

- Overweight
- Moderate Obesity
- Severe Obesity
- Extreme Obesity

Men
Women

Andreyeva et al, Obesity Research, 2004
Severe Obesity in the U.S. is Escalating

Sturm Arch Int Med, 2003
The Obesity Epidemic:
Biologic Evolution or Environmental Revolution?
Rapid Socio-environmental Changes Created an Obesogenic Environment

Bouchard, Int J Obesity, 2007
The Obesogenic Environment: A Socio-Ecological Perspective

http://depts.washington.edu/waaction/plan/append/a.html
Factors Promoting Increased US Calorie Consumption: Increase in Working Mothers

**Figure 2**

*The new workforce*

Share of mothers who are breadwinners or co-breadwinners, 1967 to 2008

Source: See Table 1.

Notes: Breadwinner mothers include single mothers who work and married mothers who earn as much as or more than their husbands. Co-breadwinners include all breadwinners as well as wives who bring home at least 25 percent of the couple's earnings. The data only include families with a mother who is between the ages of 18 and 60 and who has children under age 18 living with her.
Factors Promoting Increased US Calorie Consumption: Rise of the Fast Food Industry

- Number of per capita fast food restaurants doubled between 1972 and 1997 in the U.S.
- % family’s food budget spent on dining out:
  - 1960’s: 21%
  - 2008: 42%
- 30% of US children eat fast food every day
- Per capita calories in the U.S.:
  - 1970: 3250 per day
  - 1997: 3800 per day

http://www.bls.gov/news.release/cesan.nr0.htm
Chou et al, J of Health Economics, 2004
Bowman et al, Pediatrics, 2003
Factors Promoting Increased US Calorie Consumption: Rise of the Soda Industry

Per Capita Consumption of High Fructose Corn Syrup (lbs)

- 1980: 0 lbs
- 1998: 800 lbs

Annual Per Capita Production of 8 oz Servings of Soft Drinks

- 1942: 70 servings
- 2000: 700 servings
Factors Promoting Increased US Calorie Consumption: Marketing Fast Food to Youth

CALORIES VIEWED DAILY IN FAST FOOD TV ADS

Source: The Nielsen Company (ad exposure data) and TV ad nutrition analysis

http://fastfoodmarketing.org/media/FastFoodFACTS_Report_Summary.pdf
Factors Promoting Increased Calorie Consumption: US Farm Subsidies

○ US farm subsidies result in mega farms producing so much corn and soybeans that pricing of high fructose corn syrup, hydrogenated fats from soybeans, and corn-based feed is kept artificially low, resulting in low prices for fast food, corn-fed beef and pork, and soda

○ No such subsidies exist for fresh fruits and vegetables which are produced in much lower quantities at higher cost to the public

Fields, Environmental Health Perspectives, 2004
Factors Associated with Decreased Physical Activity in the U.S.: Suburban Living

Relationship between Transport and Land Use

A commonly used study of 32 cities by Newman & Kenworthy in 1989 concluded that there was a strong link between urban development densities and petroleum consumption.

Urban Task Force Partnership: Toward an Urban Renaissance, 1999

US Dept of Transportation, 2008
Factors Associated with Decreased Physical Activity: US School Transportation

Percent of US Children Walking or Biking to School

- All Children
- Children living <1 mile of school

US School Transportation (1999): Percent of Children

- walk or bike
- bus
- car

CDC, 2005

American Psychological Association
Decreased Physical Activity in US Schools

Percent of US Schools Requiring Physical Education by Grade

Percent of US High School Students Participating in School Sports

Johnson et al, Am J of Preventive Medicine, 2007

American Psychological Association
Factors Associated with Decreased Physical Activity: US Policies

- US Department of Transportation spends most of its money on highways.
- Traffic concerns are one of the primary reasons parents do not allow their children to walk or bike to school.
- No Child Left Behind policy resulted in decreased access to physical education and recess as schools focus on high stakes testing.

http://unstats.un.org/unsd/pocketbook/Pocketbook%202006.pdf
http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5132a1.htm
http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5438a2.htm
http://www.bus.lsu.edu/mcmillin/seminars/anderson_accountability.pdf
Factors Associated with Decreased Physical Activity: Escalating Leisure Time Media Use in the U.S.

Hours Per Day Among 8-18 Year Olds

- White
- Black
- Hispanic

Rideout et al, 2010
US Health Providers Have Been Slow to Respond: Many Fail to Monitor Child BMI

% of obese children identified by provider in a well-child visit

Louthan et al 2005
O'Brien et al, 2004
Rosado et al, 2012
Many US Parents Fail to Recognize Their Child is Overweight

I feel my child is

about the right weight
overweight

Child BMI percentile: 85-94
Child BMI percentile: ≥ 95

Eckstien et al, Pediatrics, 2006
**Informing Parents of Their Child’s Overweight May Make a Difference**

<table>
<thead>
<tr>
<th>% of Parents Who Recalled their Child as</th>
<th>Overweight (BMI %: ≥ 95)</th>
<th>At-risk for Overweight (BMI %: 85-94)</th>
<th>Normal (BMI %: 5-84)</th>
<th>Underweight (BMI %: &lt;5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overweight</td>
<td>64.9</td>
<td>28.6</td>
<td>3.7</td>
<td>6.4</td>
</tr>
<tr>
<td>At-risk for Overweight</td>
<td>13.5</td>
<td>40.5</td>
<td>11.1</td>
<td>2.1</td>
</tr>
<tr>
<td>Normal</td>
<td>10.8</td>
<td>23.8</td>
<td>74.1</td>
<td>21.3</td>
</tr>
<tr>
<td>Underweight</td>
<td>2.7</td>
<td>0</td>
<td>7.4</td>
<td>68.1</td>
</tr>
<tr>
<td>Don’t know</td>
<td>8.1</td>
<td>7.1</td>
<td>3.7</td>
<td>2.1</td>
</tr>
</tbody>
</table>

Johnson et al. J of School Health, 2009
Informing Parents of Their Child’s Overweight May Make a Difference

Percent of Parents Expressing Concern or Dietary and Exercise Changes by Child Weight Status

- Parental Concern
- Changed Child's Diet
- Changed Child's Exercise

Overweight vs Normal Weight

Johnson et al, J of School Health, 2009
Informing Parents of Their Child’s Overweight May Make a Difference

<table>
<thead>
<tr>
<th>Predictors of Parent Intent to Take Action</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child age</td>
<td>0.014</td>
</tr>
<tr>
<td>Older the child, more likely the parent was to take action</td>
<td></td>
</tr>
<tr>
<td>Child weight</td>
<td>0.001</td>
</tr>
<tr>
<td>When the child was overweight or obese, the parent was more likely to take action</td>
<td></td>
</tr>
<tr>
<td>Parent concern</td>
<td>0.001</td>
</tr>
<tr>
<td>Parents concerned about the child’s weight are more likely to take action</td>
<td></td>
</tr>
<tr>
<td>Provider discussed child’s weight</td>
<td>0.010</td>
</tr>
<tr>
<td>Parents who reported the provider discussed the child’s weight were more likely to take action</td>
<td></td>
</tr>
</tbody>
</table>

Rosado et al, AJ PV in press.
Childhood Obesity Can Be Prevented & Treated

- 2011 Cochrane Review found “strong evidence to support beneficial effects of child obesity prevention programmes on BMI, particularly for programmes targeted to children six to 12 years”
- Particularly promising are interventions that:
  - increase physical activity and improve quality of food at school
  - target environments and cultural practices to increase healthier food consumption and daily physical activity
  - support parents to increase activity, decrease screen time, and eat healthier foods

American Academy of Pediatrics Recommendations

- Prevention (all patients): promote breastfeeding, family meals, limited screen time, regular physical activity, yearly BMI monitoring

- Prevention Plus (children with BMI percentiles of 85-94): 5 fruits/vegetable servings, 0 sugary drinks, ≤ 2 hours of screen time, ≥ 1 hr physical activity, healthy breakfast, home food preparation and limited eating out
American Academy of Pediatrics Recommendations

- Structured Weight Management (children with BMI percentiles of 95-98 or children for whom Prevention Plus has not been effective): more frequent follow-up, written diet/exercise plans

- Comprehensive Multidisciplinary Intervention (if 3-6 months of Structured Weight Management has been ineffective): team based intervention including dietary and behavioral specialists.
Thoughts on the Way Forward: Individual and Family Level Challenges

- The “normalization” of obesity
- The intergenerational escalation of obesity
- Development of food and physical activity preferences begins in childhood
- The promoting healthy weight – obesity stigmatization conundrum
- The agency - personal responsibility – person blaming conundrum
Thoughts on the Way Forward: Cultural and Community Level Challenges

- Cultural norms and beliefs about weight (e.g., overweight babies are “healthier”; larger women are more beautiful; weight is a sign of prosperity)
- Food and sharing of food may be an important coping response particularly in high stress populations and environments
Thoughts on the Way Forward: Health Care Level Challenges

- Prevention is key – promote healthy eating and physical activity from birth
- Regularly monitor child’s BMI
- Communicate with parents about an overweight child in ways that promote provider-parent partnership and healthy behavior change
- Avoid child & parent blaming – acknowledge that this is a systems problem
- Serve as a role-model and community leader – the obesity epidemic will not be solved solely in the confines of the health provider’s office
Thoughts on the Way Forward: Policy Challenges

- Promote healthy food, not just food safety
- Address transportation within the larger health context, not just transportation safety
- Promote physical activity as a health issue, not just “recreation” or an “amenity”
- Promote healthy work and school environments
- Consider the health consequences of zoning regulations, government taxes and subsidies
- Obesogenic environments are huge money-makers; the US fast food, soda, auto, leisure time media industries will oppose any policies that reduce their profits and are expanding worldwide
This presentation is available at www.apa.org/president