The Influence of Race, Ethnicity and Culture on Obesity Prevention for Children

SERA-19 2008 Conference

Teresia O’Connor, MD, MPH
Assistant Professor of Pediatrics
ARS/USDA Children’s Nutrition Research Center
Baylor College of Medicine
Childhood Obesity: A Growing Problem

- Nearly 2 out of every 3 Americans are overweight or obese
- Over the past 25 years the number of overweight children has tripled in the US
- Children who are overweight are at high risk of becoming overweight adults
Weight Status

• Body Mass Index (BMI)
  – BMI = Weight (kg)/Height (m)$^2$
  – BMI = Weight (lb)/Height (in)$^2 \times 703$

• CDC BMI calculator

• Children
  – CDC BMI percentile charts
  – BMI z-scores
CDC BMI growth chart (boy)
### Child Obesity Terminology

<table>
<thead>
<tr>
<th>OLD terminology (CDC/AAP)</th>
<th>NEW terminology (AMA Expert Panel…)</th>
<th>BMI %tile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>Underweight</td>
<td>&lt;5%</td>
</tr>
<tr>
<td>Healthy weight</td>
<td>Healthy weight</td>
<td>5 - &lt;85%</td>
</tr>
<tr>
<td>At risk for overweight</td>
<td>Overweight</td>
<td>85 - &lt;95%</td>
</tr>
<tr>
<td>Overweight</td>
<td>Obese</td>
<td>≥ 95%</td>
</tr>
</tbody>
</table>

*Pediatrics 2007. 120(S4)S164-S192*
Childhood Obesity: A Growing Problem

Data from NHANES
Race/ethnic differences

- Mexican American and Non-Hispanic black children tend to have higher risk of overweight or obesity than Non-Hispanic white children
- Children at greatest risk
  - Mexican American boys
  - Non-Hispanic black girls

Ogden et al, 2008 JAMA 299)20)2401-2405
Regional Prevalence of Childhood Obesity

- National Survey of Children’s Health
  - 10-17 year olds
  - Obesity (BMI ≥ 95%)
- US: 14.83%*
- Texas: 19.11%*
- South-Central regions of the US have the highest prevalence of obesity

* weighted, unadjusted prevalence

Singh et al. Journal of Community Health 2008 33(2) 90-102
# Regional Prevalence of Childhood Obesity

<table>
<thead>
<tr>
<th>Geographic Region</th>
<th>Adjusted prevalence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>New England</td>
<td>15.49</td>
</tr>
<tr>
<td>Mid Atlantic</td>
<td>14.37</td>
</tr>
<tr>
<td>South Atlantic</td>
<td>14.96</td>
</tr>
<tr>
<td>East South-Central</td>
<td>16.44</td>
</tr>
<tr>
<td>West South-Central</td>
<td>17.00</td>
</tr>
<tr>
<td>Mountain</td>
<td>12.14</td>
</tr>
</tbody>
</table>

Adapted from Singh et al. Journal of Community Health 2008 33(2) 90-102
Childhood Obesity

Child Obesity Related Behaviors

- Dietary intake and eating behaviors
- Physical Activity
- Sedentary Time
Childhood Obesity

Child Obesity Related Behaviors

- Dietary intake and eating behaviors
- Physical Activity
- Sedentary Time
AAP Dietary Recommendations to Prevent Childhood Obesity

- Breastfeeding
- Fruit and vegetables
  - 5 A Day
  - USDA (2 cups veggies, 1 ½ fruit)
- Limit sweetened beverages
- Limit consumption energy-dense foods
- Calcium-rich diet
- Fiber-rich diet

*Pediatrics* 2007. 120(S4)S164-S192
AAP Dietary Recommendations to Prevent Childhood Obesity

- Family meals
- Age-appropriate portion sizes
- Healthy breakfast every day
- Limit eating out, especially fast food

Pediatrics 2007. 120(S4)S164-S192
Obesity Prevention: Behavior Change

- Individual Factors
- Environmental Factors
  - Home
  - Family Behaviors
  - Parenting
  - School & Childcare Centers
  - Community
  - Policy
Obesity Prevention: Behavior Change

- Individual Factors
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Model of the Home Food Environment

Children’s Dietary Intake

Child Individual Factors

Home Food Environment

Socio-Cultural Environment

Built & Natural Environment

Political & Economic Environment

Adapted from Rosenkranz and Dzewaltowski Nutrition Reviews. 2008. 66(3)123-140
Environmental Factors

• Socio-Cultural Environment

• Built & Natural Environment

• Political & Economic Environment

Adapted from Rosenkranz and Dzewaltowsk Nutrition Reviews. 2008. 66(3)123-140
Environmental Factors

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Environmental Factors

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- Political & Economic Environment
Environmental Factors

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- Political & Economic Environment
Socio-cultural Environments

- Breastfeeding (BF)
  - 77% of babies born 2005-2006 ever BF (increase)
  - Only 35% still BF at 6 months

CDC/NCHS brief: http://www.cdc.gov/nchs/data/databriefs/db05.htm
**Socio-cultural Environments**

- Breastfeeding (BF)
  - BF less common in lower income groups (57%)
  - African American mothers
    - lowest prevalence of ever BF (65%)
    - Increasing in prevalence (36% in 1993/94)

CDC/NCHS brief: http://www.cdc.gov/nchs/data/databriefs/db05.htm
Socio-cultural Environments

• Breastfeeding (BF)
  – BF more common in less acculturated than more acculturated Hispanic mothers
  – More acculturated Hispanic similar rates to Non-Hispanic white mothers
  • More likely to site that baby prefers bottle

Socio-cultural Environments

• Family
  – Parental intake (van der Horst 2006)
  – Home availability and accessibility of fruit and vegetables (van der Horst 2006, Jago 2006)
  – Portion sizes affects intake (Fisher 2007)
  – Food preparation
Socio-cultural Environments

• Family meals lower risk of obesity (Rhee 2008)
  – May vary by ethnic group
• Parenting
  – Emotional climate in which parent practices are expressed (Darling and Steinberg 1993)
  – Context specific
Baumrind’s Parenting Styles

<table>
<thead>
<tr>
<th>Responsiveness</th>
<th>High</th>
<th>Low</th>
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<tbody>
<tr>
<td>High</td>
<td>Authoritative</td>
<td>Authoritarian</td>
</tr>
<tr>
<td>Low</td>
<td>Indulgent</td>
<td>Uninvolved</td>
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Demandingness
Baumrind’s Parenting Styles

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</tr>
<tr>
<td></td>
<td>Authoritarian</td>
</tr>
<tr>
<td></td>
<td>Uninvolved</td>
</tr>
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Parenting style and child weight status

• Secondary analysis of large prospective cohort (n=872)
  – Followed children from birth through first grade
• Parenting style measured at 4 ½ years old
• Child height and weight measured when child 6 ½ years old
• Children with authoritative parents had the lowest risk of overweight

Socio-cultural Environments

• Authoritative parenting style
  – Adolescent’s fruit and vegetable intake (van der Horst 2006)
  – Adolescent consumption of sweetened beverages (Kremers 2003)

• Child behavioral outcomes may vary by cultural and ethnicity (Darling and Steinberg 1993)
Socio-cultural Environments

• Feeding styles
  – Authoritative, Authoritarian, Indulgent, Uninvolved

• Children of indulgent parents had higher BMI z-scores than children of authoritarian parents

• Race/ethnic differences
  – Hispanic parents: Indulgent
  – African American: Uninvolved

(Patrick et al. 2005; Hughes et al 2005)
Socio-cultural Environments

• Authoritative feeding associated with
  – availability of fruit and vegetables
  – child consumption of dairy and vegetables

• Authoritarian feeding **negatively** associated with
  – availability of fruit and vegetables
  – child consumption of vegetables

(Patrick et al. 2005; Hughes et al 2005)
Built and Natural Environments

- **Fast Food Establishments**
  - Children who consumed fast food had poorer diet quality than non-consumers (Bowman et al, *Pediatrics* 2004)
  - Fast Food consumption associated with African American race and living in the South (Bowman et al, *Pediatrics* 2004)
  - Prevalence of Fast Food Establishments
    - Minority and low-income neighborhoods (Block et al, *Pediatrics* 2004)
Built and Natural Environments

• Grocery stores
  – Chain supermarkets associated with lower BMI in teens (Powell 2007)
  – Convenience stores associated with higher BMI in teens (Powell 2007)
    • Findings stronger for African American teens
  – Hispanic families purchase more F/V than AA or white (Culen 2007)
• Low family SES consistently associated with child obesity (Swinburn et al. 1999)
  – Energy dense foods tend to be lower cost (Drewnowski and Specter, 2004)
• Programs to Overcome Disparities
  – WIC
  – School lunch and breakfast participation
Regional Prevalence of Childhood Obesity

- National Survey of Children’s Health
- 55% of the state and 25% of the regional disparities in obesity explained by
  - race/ethnicity
  - household socioeconomic status
  - neighborhood social capital
  - television viewing
  - recreational computer use
  - physical activity

Singh et al. Journal of Community Health 2008 33(2) 90-102
Advocacy and Public Policy

- Strategies
  - Gather evidence
  - Seek partners to change policies
  - Organize conferences to develop strategies for achieving change
  - Identify pending legislation and lobby government
  - Look for evidence of how comparable issues are addressed regionally, nationally, and internationally

AAP: The Health Professional as Advocate
Conclusions

• Environment
• Family
  – Culturally relevant
  – Availability and accessibility
• Parenting
  – Authoritative
  – Role modeling
• Community planning
• Advocacy and Policy
• Culturally sensitive
Needed Research

• Interaction terms
• Ethnic differences
• Mediators and moderators
• Specific Gaps
  – Family structure and customs
  – Food parenting
Resources

• CNRC: http://www.bcm.edu/cnrc/
• 2005 USDA Dietary Guidelines: www.mypyramid.gov
• NICHQ: http://www.nichq.org/nichq
• AMA/AAP Expert Committee on Childhood Obesity: http://pediatrics.aappublications.org/cgi/content/full/102/3/e29
Thank You!

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Relative Odds of child overweight with parenting style

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<tr>
<th>Parenting Style</th>
<th>OR</th>
<th>95% CI</th>
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<tbody>
<tr>
<td>Authoritative (referent)</td>
<td>1.0</td>
<td></td>
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<tr>
<td>Authoritarian</td>
<td>4.88</td>
<td>2.15-11.1</td>
</tr>
<tr>
<td>Permissive</td>
<td>2.84</td>
<td>1.1-7.35</td>
</tr>
<tr>
<td>Neglectful</td>
<td>2.67</td>
<td>1.12-6.38</td>
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