CHILDHOOD OBESITY

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WHAT IS OBESITY?

- Body Mass Index (BMI) is defined as a person's weight in kilograms (kg) divided by his or her height in meters squared. (NIH, 2017) It is used to determine if one is overweight or obese.
- Overweight: BMI is at or above the 85th percentile and below the 95th percentile among children and teens of the same age and sex (CDC, 2015)
- Obese: BMI is at or above 95th percentile (CDC, 2015)
SIGNS OF OBESITY

• Increase in BMI
• High birth weight and history of maternal gestational diabetes
• Family history
  • Obesity
  • Type 2 diabetes
  • Hypertension
  • Sleep apnea
SYMPTOMS OF OBESITY

Appearance
• Stretch marks on hips and abdomens

Psychological
• Eating disorders
• Poor self esteem

Pulmonary
• Shortness of breath when active
• Sleep apnea

Reproductive
• Early puberty

Orthopedic
• Flat feet
• Dislocated hip
CAUSES OF CHILDHOOD OBESITY

Behaviors:

• Eating foods in high calories; Taking in more calories than burning (Precision Nutrition, 2017)
• Insufficient sleep for the age group
• Sedentary lifestyle of parents
• Lack of physical activity
SOCIAL DETERMINANTS OF HEALTH

• The social determinants of health are defined as the “conditions in the environments in which people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks.” (Healthy People 2020, n.d.)

• The five determinants are:
  • Economic Stability
  • Education
  • Social and Community Context
  • Health and Health Care
  • Neighborhood and Built Environment (Healthy People 2020)
HOW DO THE SOCIAL DETERMINANTS PUT THE CHILDREN AT RISK?

**Economic Stability:** Children from low income households are more at risk of becoming obese
- Obesity prevalence decreases as income increases

**Education:** Obesity prevalence decreases as education increases

**Social and Community Context:** Community impact on what is acceptable and not acceptable

**Health and Health Care:** Access to primary/preventative care
- Health literacy and health education

**Neighborhood and Built Environment:**
- Hard to make choices if your environment does not support healthy choices
TREATMENT

Nutritional counseling
  • Diet changes

Physical Activity
  • Young people aged 6–17 years get at least 60 minutes of physical activity daily. (U.S. Department of Health and Human Services, 2008)

Behavioral changes
  • Boost self esteem and confidence

Therapy
  • Talk about feelings related to weight
  • Focus on changing behaviors
  • Family counseling to help at home
AGES 2-5
GLOBAL TRENDS

• Childhood obesity is a global issue as rates are increasing around the world.

• The Harvard School of Public Health (2010) estimates that 43 million children under the age of 5 are overweight or obese.

• In 2014, the World Obesity Federation (IOTF) estimated the prevalence of overweight boys/girls in each region of the world:

<table>
<thead>
<tr>
<th>Boys</th>
<th>Girls</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Mediterranean – 60.4% (Kuwait)</td>
<td>Bahrain – 42.4%</td>
</tr>
<tr>
<td>European – 45% (Crete/Greece)</td>
<td>Greece – 37.7%</td>
</tr>
<tr>
<td>North America – 36.9% (Mexico)</td>
<td>Venezuela – 33.5%</td>
</tr>
<tr>
<td>New Zealand – 28.2%</td>
<td>New Zealand – 28.8%</td>
</tr>
</tbody>
</table>
NATIONAL OBESITY RATES

- The prevalence of obesity was 8.9% among children aged 2 to 5. (CDC, 2016)
- In 2014, 14.5% of WIC participants aged 2 to 4 years of age had obesity. (CDC, 2016)
- The prevalence of obesity in children aged 2 to 5 years decreased from 13.9% in 2003/2004 to 9.4% in 2013/2014. (CDC, 2016)
NATIONAL OBESITY

Overweight vs Obese

Overweight: having a higher body weight than is considered normal for your height or build.

Obesity: a condition of having an excess amount of body fat.

1/3 of all children and adolescents were overweight or obese as of 2012

22 million children under age 5 are overweight

4x childhood obesity rates have quadrupled in the past 30 years

1 out of every 6 youths is obese

http://www.wheelsforwishes.org/childhood-obesity-awareness/
OBESITY RATES IN ILLINOIS

Childhood Obesity New Data

2- to 4-year-old WIC participants

Current obesity rate (2014)

15.2%

Rank among states (2014)

14/51

Historical rates (2000-2014)

Source: stateofobesity.org/wic
TARGET AUDIENCE

Parents of the children (2-5)

- Children are too young to fully understand the concepts
- Parents can be educated to control the child’s diet/exercise
- Older children - teachers
- Younger children (2-5) do not have teachers

Target ‘patients’ are the children
METHOD OF INTERVENTION

• **Interpersonal**: (family/friends, primary groups)
  o Parents at this age are sole manipulators of the environment
  o Children are susceptible to ‘copy’ behavior

• **Community Level**: These are the societal factors that influence parents behavior
  o Institutional factors/public policy:
    • Rules/regulations that drive behavior a certain way
  o Organizational factors:
    (workplaces, schools)
    • For ex: healthier options available?
  o Social Norms/standards: The general level of acceptability regarding lifestyle and behavior in a community
RECOMMENDED INTERVENTIONS

**Lifestyle intervention:**
- Promoting initial weight loss, achieving sustained and enduring weight loss (West, Coulon, Monroe, & Wilson, 2016)
- A nutrition or activity component and a behaviour change - increase physical activity, decrease sedentary activity, change nutrition intake or weight status in children and involve parents or caregivers as a key participant (Golley, Hendrie, Slater and Corsini 115)

**Family-based intervention:**
- Involves the child and the parent - associated with positive outcomes since families treated together share common treatment goals (Yun et al., 2015)
- Emphasize intra-familial and contextual factors that define and govern daily life and family decision making (Davison, Jurkowski, Li, Kranz & Lawson, 2013)

**Community-level intervention:**
- Restrict what advertisers are permitted to do, or subside certain foods (Merry & Voigt, 2014)
The Childhood Obesity Intervention Cost-Effectiveness Study (CHOICES), [http://choicesproject.org/](http://choicesproject.org/)
- Identify the most cost-effective policy and programmatic interventions that can contribute to eliminating the energy gap and reversing the childhood obesity epidemic
- Identify the most promising programs and policies for evaluation
- Building a computer model of the US population and projecting BMI changes
- Synthesizing scientific literature to estimate the effects of obesity prevention interventions
- Integrating information on the economic costs and health effects of interventions

Childhood Obesity Research Demonstration Project (CORD), [https://www.cdc.gov/nccdphp/dnpao/division-information/programs/researchproject.html](https://www.cdc.gov/nccdphp/dnpao/division-information/programs/researchproject.html)
- Increasing children’s physical activity and consumption of fruits, vegetables, and healthier beverages
- Ensuring children get enough sleep
- Decreasing children’s screen time and consumption of sugary drinks and energy-dense foods
AGES 6-11
UNITED STATES OBESITY TRENDS

Chart 7: Comparison of obesity trends (in percent) in the US in 1990 and 2010

Source: Data obtained from CDC
In 2011-2014, for children and adolescents aged 2-19 years:

- “The prevalence of obesity has remained fairly stable at about 17% and affects about 12.7 million children and adolescents.

- The prevalence of obesity was higher among Hispanics (21.9%) and non-Hispanic blacks (19.5%) than among non-Hispanic whites (14.7%).

- The prevalence of obesity was lower in non-Hispanic Asian youth (8.6%) than in youth who were non-Hispanic white, non-Hispanic black, or Hispanic.

- The prevalence of obesity was 8.9% among 2- to 5-year-olds compared with 17.5% of 6- to 11-year-olds and 20.5% of 12- to 19-year-olds. Childhood obesity is also more common among certain populations.” (CDC, 2016)
UNITED STATES OBESITY TRENDS


2 Test for linear trend for 2003–2004 through 2013–2014 not significant (p > 0.05).

SOURCE: CDC/NCHS, National Health and Nutrition Examination Survey.

(The State of Obesity, 2016)
UNITED STATES
OBESITY TRENDS

 Obesity and Overweight Rates for Children Ages 2 to 19, NHANES by Gender and Race 

Note: The Centers for Disease Control and Prevention uses the term Hispanic in analysis. § = non-Hispanic.

(The State of Obesity, 2016)
### ILLINOIS OBESITY RATE

<table>
<thead>
<tr>
<th>Rank</th>
<th>State</th>
<th>Obesity Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mississippi</td>
<td>21.7%</td>
</tr>
<tr>
<td>2</td>
<td>South Carolina</td>
<td>21.5%</td>
</tr>
<tr>
<td>3</td>
<td>District of Columbia</td>
<td>21.4%</td>
</tr>
<tr>
<td>4</td>
<td>Louisiana</td>
<td>21.1%</td>
</tr>
<tr>
<td>5</td>
<td>Tennessee</td>
<td>20.5%</td>
</tr>
<tr>
<td>6</td>
<td>Arkansas</td>
<td>20.0%</td>
</tr>
<tr>
<td>7</td>
<td>Arizona</td>
<td>19.8%</td>
</tr>
<tr>
<td>8</td>
<td>Kentucky</td>
<td>19.7%</td>
</tr>
<tr>
<td>9</td>
<td>Illinois</td>
<td>19.3%</td>
</tr>
<tr>
<td>10</td>
<td>Texas</td>
<td>19.1%</td>
</tr>
</tbody>
</table>

ILLINOIS OBESITY RATE

童年的肥胖率，年龄10至17岁，伊利诺伊州和美国，2003年，2007年，2011年至2012年

<table>
<thead>
<tr>
<th>年份</th>
<th>伊利诺伊州</th>
<th>美国</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>15.8%</td>
<td>14.8%</td>
</tr>
<tr>
<td>2007</td>
<td>20.7%</td>
<td>16.4%</td>
</tr>
<tr>
<td>2011-2012</td>
<td>19.3%</td>
<td>15.7%</td>
</tr>
</tbody>
</table>

来源：儿童和青少年健康数据资源中心，国家儿童健康调查。5月13日，2016年。http://childhealthdata.org/
FACTORS CONTRIBUTING TO OBESITY, AGES 6-11

- Easy accessibility and increased use of motorized transportation
- Decrease in amount of recreational physical activities.
- Increase in sedentary lifestyle.
- Greater portions and availability of nutrient dense foods.
- Easy accessibility and low cost for convenience food and fast food outlets.
- More frequent and widespread food purchasing opportunities.
Target Audience: Children, ages 6-11

1. Mediators (Parents, Teachers, Doctors)

2. Influences on health: socio-economic, education, culture, beliefs, attitude, religion, values, and skills
   - Lack of nutrition/health education for children and families
   - Dietary intake of energy dense foods
   - Portion distortion/size
   - Lack of knowledge/skill with cooking
   - Community resources geared toward convenience foods rather than healthy foods
LEVELS OF INTERVENTION

A combination of all three mentioned levels of intervention:

- Intrapersonal
- Interpersonal
- Community
- All levels of intervention can contribute to prevention and control of weight gain and obesity.
INTRAPERSONAL INTERVENTIONS

- **Nutrition**
  - Increase water intake/ decrease sugary drinks (soda and fruit juice)
  - Increase fruit and vegetable intake to five a day
- **Physical Activity**
  - Reduce TV/screen time
  - Encourage at least one hour of physical activity a day
    - Safe bicycle lanes
    - Outdoor playing
- **Stress Reduction**
  - Spend more time together as a family
    - Regular family dinners
    - Adequate sleep duration of 9 – 12 hours (National Sleep Foundation, n.d.)
INTERPERSONAL INTERVENTIONS

- School-Based Interventions
  - Homework and education related to nutrition and fitness.
  - Local resources for sports, nutrition, activities and other school community activities.
  - Increase the availability of healthy food choices in the cafeterias.
  - Promoting physical education in schools and after school programs.
  - Providing safe walking/biking routes to schools instead of taking the bus.
COMMUNITY INTERVENTIONS

- Parks, trails, bike paths and other active public spaces.
- Access to farmer markets and community gardens.
- Walk to school groups.
- Limiting proximity of fast food restaurants from schools and homes can help reduce weight gain.
- Taxing sugar-sweetened beverages and other food items that have high fat content can be done to deter unhealthy eating habits by means of economic disincentive.
- Food companies can be directed by the federal and state government to provide exact calorie labels on their products.
- Parks and recreation centers can replace the fast food/convenience food and offer only water and fresh fruit juice instead of carbonated beverages.
CURRENT INTERVENTIONS

• CATCH (Coordinated Approach to Child Health), http://catchinfo.org/
• CLOCC (Consortium to Lower Obesity in Chicago Children), http://www.clocc.net/
• 5-4-3-2-1 GO!, http://www.clocc.net/our-focus-areas/health-promotion-and-public-education/5-4-3-2-1-go/
• FORWARD (Fighting Obesity Reaching Healthy Weight among Residents in DuPage), http://www.dupagehealth.org/forward
• Action For Healthy Kids, http://www.actionforhealthykids.org/
• Let’s Move/Chef to School, http://www.chefsmoveotoschools.org/
• Edible School Garden, http://www.edibleschoolgardens.org/
• Chef Ann Foundation, http://www.chefannfoundation.org/
• Jamie Oliver Food Revolution Foundation, http://www.jamiesfoodrevolution.org/
• Pilot Light (Chicago), http://pilotlightchefs.org/
• Purple Asparagus (Chicago), http://purpleasparagus.com/
STUDIES ON INTERVENTIONS

Effectiveness of School Programs in Preventing Childhood Obesity: A Multilevel Comparison:

• 2003: 5,200 Grade 5 Students
• Study the effects of school programs in regard to preventing obesity.

Results

• Students from schools participating in a coordinated program that incorporated recommendations for school-based healthy eating programs exhibited significantly lower rates of overweight and obesity.
• Had healthier diets, and reported more physical activities than students from schools without nutrition programs. (Veugelers & Fitzgerald, 2005)
STUDIES ON INTERVENTIONS

A Randomized Trial of the Effects of Reducing Television Viewing and Computer Use on Body Mass Index in Young Children

• A randomized controlled clinical trial
• Assess the effects of reducing television viewing and computer use on children's body mass index (BMI)

Results

• Children randomized to the intervention group showed greater reductions in targeted sedentary behavior and energy intake compared with the monitoring control group.
• The change in television viewing was related to the change in energy intake but not to the change in physical activity. (Epstein et al., 2008)
STUDIES ON INTERVENTIONS

Examined short and long term effects of 3 month study

- Dietary-behavioral-physical activity intervention
- Focused on body composition, dietary and leisure time habits, and fitness among obese children

Randomized Prospective Study

- 22 participated
- Compared to 22 obese children with same age and gender

Results

- Significant differences in body weight
- After 1 year follow up
- Changes between intervention and control group
- Body weight and body fat percentage change
STUDIES ON INTERVENTION

Can educational program at school reduce how many carbonated drinks are consumed at school to prevent extreme weight gain in children?

- Cluster randomized controlled trial
- 6 schools; 644 children 7-11 years old
- One year focused on nutrition during school

Results

- Intervention group=0.2% decrease
- Number of drinks consumed decreased -> reduced number of overweight and obese children
QUESTIONS?
REFERENCES


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