Childhood Obesity and Type II Diabetes: A Rising Epidemic

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National Initiatives Addressing Childhood Obesity

- The First Lady (Obama) Unveils *Childhood Obesity* Task Force Action Plan
- Healthy People 2010-2010 Goals
- Robert Wood Johnson Foundation
- Institute of Medicine (IOM) Recommendations
Healthy People 2010 lists “overweight and obesity” as 1 of 10 high priority public health issues.
Childhood Obesity

The growing number of overweight children in Texas schools is a serious concern.

Healthy lifestyle choices must be developed at an early age.

(Texas Health Institute, 2008)
Measureable Outcomes

Successful overweight prevention programs have resulted in
  -- increased academic scores
  -- decreased discipline problems
  -- improved test scores
  -- reduced absenteeism

(Texas Health Institute, 2008)
Obesity in Schools

- It costs a school district $40.00/day for each child that misses school.

- Texas school districts have been mandated to implement prevention programs to address nutrition, physical education, parent involvement, and to staff obesity prevention efforts.

(Texas Health Institute, 2008)
Obesity in Texas

- According to The Texas Health Institute (2008), obesity is determined by body mass index (BMI) indicators which are determined from height and weight calculations.

- For children and adolescents, obesity is determined differently.
Differentiating Overweight and Obesity

- **Overweight**: BMI = at or above 85\textsuperscript{th} percentile (lower than the 95\textsuperscript{th} percentile).

- **Obesity**: BMI = at or above 95\textsuperscript{th} percentile for children of same age and sex.

(Texas Health Institute, 2008)
World Health Organization (WHO)
Definition of Obesity

- Overweight is a BMI of 25kg/m²
  (weight in kilograms/height in meters squared)

- Obesity is a BMI of 30kg/m²
  (weight in kilograms/height in meters squared)
Childhood Obesity
Texas Statistics

- Texas ranks 6th highest in the nation for obesity in 10-17 year olds.
- 42% of 4th graders in Texas are obese or overweight.
- U. S. Surgeon General’s Office reports that overweight children have a 70% change of becoming overweight or obese adults.
Statistics

- The United States is in the midst of a childhood obesity epidemic.

- A study conducted in Corpus Christi, TX of students (average of 15.3 years of age) using The Youth Risk Behavior Survey developed by the CDC, showed Hispanic boys and girls had a 48% greater likelihood of being at risk and overweight as compared to non-Hispanic whites at 35%.

(Stovitz, 2008)
Childhood Obesity
National Statistics - 2008

- Increase from 10.5% to 15.5% in 12-19 year olds (>5%)
- Increase from 11.3% to 15.3% in 6-11 year olds (>4%)
- Increase from 7.2% to 10.4% in 2-5 year olds (>3.2%)
- Increase from 13.8% to 16.0% overall for female children (>2.2 %)
- Increase from 14.0% to 18.2% overall for male children (>4.2%)

(Wofford, 2008)
Statistics for Childhood Type II Diabetes (Difficult to Determine)

- Diabetes is one of the most common chronic diseases in children and adolescents; 151,000 – 200,000 people below the age of 20 years have diabetes.

- When diabetes strikes during childhood, it is routinely assumed to be type 1, or juvenile-onset diabetes. However, in the last 2 decades, type 2 diabetes (formerly known as adult-onset diabetes) has been reported among U.S. children and adolescents with increasing frequency.

(Center for Disease Control, 2010)
Childhood Obesity

- Rates of childhood obesity are higher in states with high childhood poverty — Mississippi, Louisiana, Kentucky.
- Obesity rates are higher in Mexican-American and Afro-American females.
- Obesity rates are higher in Mexican American males.

(Desjardins & Schwartz, 2007)
Definition of Childhood Obesity

- Overweight is a body mass index (BMI) of > 25 kg/m²
- Obesity is a BMI of 30kg/m²

---As defined by the World Health Organization (WHO)

(MacPhee, 2008)
Childhood Obesity - Etiology

- Increased weight gain = equals increased energy consumption and decreased energy expenditure = obesity
Factors Related to Etiology of Childhood Obesity

- increased caloric intake
- decreased physical activity
- increased TV viewing

(Wofford, 2008)
# Childhood Obesity

## Risk Factors

<table>
<thead>
<tr>
<th>Maternal smoking</th>
<th>Inactivity</th>
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<tr>
<td>Obesity during pregnancy</td>
<td>Intake of sweetened beverages</td>
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<tr>
<td>Non-breast fed children</td>
<td>Over-nutrition</td>
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<tr>
<td>Obese parents</td>
<td></td>
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<tr>
<td>Poverty</td>
<td></td>
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<td>Hispanic and foreign born</td>
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<td>Adolescent parenting</td>
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Psychological and Physical Impact of Childhood Obesity

**PSYCHOLOGICAL**
- Negative body image
- Decreased self esteem
- Inability to participate in normal child related play
- Depression/anxiety

(Wofford, 2008)

**PHYSICAL**
- Impaired glucose intolerance
- Type 2 diabetes
- Hypertension
- Dyslipidemia
- Systemic low grade inflammation

(Cali & Caprio, 2008)
Health Care Intervention - Schools

1) Screen Early
   (Target children in preschool populations)

2) Strong Focus on Prevention
   (Focus on building healthy habits, rather than restricting foods or behaviors)

3) Parental Involvement
   (Families model behaviors related to eating and exercise)
   (Isganaitis & Levitsky, 2008)
Community Health Nurse - Schools

- School prevention programs to increase healthy behaviors; lifestyle modifications
- Nutritional modification
- Health education programs
- Physical education programs (provide increased opportunity for physical activity)

(Texas Health Institute, 2008)
Community Health Nurse - Schools

● School Health Services
  - Identify children who are at risk for being overweight
  - Initiate Screening Programs and Appropriate Medical Referral and Follow-up (Acanthosis Nigricans, BMI, B/P, Height and Weight)
  - Monitor nutrition programs
  - Promote physical activity
  - Provide education

● Community Health Nurse/School Nurse
  - Monitor and promote available resources
  - Provide education

(Texas Health Institute, 2008)
Community nursing has a role in the prevention and treatment of childhood obesity, but the community nurse cannot do this alone. The entire community must be involved.

- Schools (after-school programs)
- Media and advertising
- Pediatrician’s offices
- Faith communities

(Desjardins & Schwartz, 2007)
Significance of Early Intervention and Management

Overweight children often develop into overweight adults who are at increased risk for heart disease, cancer, Type II Diabetes, metabolic syndrome, and musculoskeletal disorders.

Children who develop Type II Diabetes are at risk for development of diabetes-related complications, including hyperlipidemia, hypertension, and microalbuminuria.

(Wofford, 2008; Isganaitis & Levitsky, 2008; Wong, et al, 2010)
Type II Diabetes in Children

- Children and adolescents diagnosed with Type II Diabetes are generally between 10 and 19 years old, obese, have a strong family history for Type II Diabetes, and have insulin resistance. Generally, children and adolescents with Type II Diabetes have poor glycemic control (A1C = 10% - 12%).

- Those affected with Type II Diabetes belong to all ethnic groups, but it is more commonly seen in non-white groups.

Center for Disease Control, 2010
Pediatric Medical Management
Type II Diabetes

- Studies show that there is a wide variation in treatment regimes among the nation’s pediatric endocrinologist.

- Treatment regimes vary with ages and practice experience among providers.

- Variations in treatments vary due to lack of knowledge regarding the American Diabetic Association (ADA) gold standard recommendations.

- The main variations are seen in aggressiveness of treatment regimes.

(Wong, et al, 2010)
Health Care Delivery Planning

(Health Management Plan)

Parental and child consultation with primary care provider (PCP)

History and Physical Exam (PE) for child

Lab studies if positive findings on physical exam

Lab studies vary with type of diabetes and age of patient

(American Diabetes Association, 2010)
Health Care Planning (Continued)

- Individual plan based on PE findings and Lab findings.
- Parental Input
- Goal Setting
- Culturally Sensitive Nutrition Planning
- Daily Exercise Plan (At least 60 min/day)

- (Gurcia, 2009)
Clinicians caring for families with obese children must exercise compassion, sensitivity, and a firm conviction that obesity is an important chronic medical problem that can be treated and managed.

(MacPhee, 2008)
Medical Management

- Reasons for variation among providers include:
  -- lack of familiarity regarding current ADA recommendations.
  -- lack of experience with and knowledge of hypertensive and cholesterol-lowering medications.
  -- lack of current scientific evidence to support aggressive medication therapy.
Medical Management

- With current increases in incidence of Type II Diabetes among children, younger providers are exposed to more diabetic management for children during their training.

- More studies are needed to address the challenges associated with medical management for Type II Diabetes in children.
General Information Regarding Medical Management of Pediatric Diabetes

- All Type I diabetic management is treated with insulin. For adolescents who are difficult to control with regards to their growth and development, often oral supplements are required.

- Type II diabetic management may include the use of oral agents, insulin, or a combination of both.

- Insulin regimes include insulin by pump or by multiple injections daily. Pumps reduce the possibility of hypoglycemia, especially during sleep.

(Wong, et al, 2010)
General Medical Management

- Initial Visit to PCP/PE
- Visit with Dietitian
- Visit with Diabetic Educator
- Blood glucose testing
- HbA1C (q 3 months)
- Eye checks (r/o retinopathy)

- Lipid profile (cholesterol and triglycerides)
- Height and Weight measurements
- Urine testing (r/o microalbuminuria)

(American Diabetic Association, 2010)
References


THE END