1. Infant and Childhood Nutrition Issues in the United States...

INFANT AND CHILDHOOD NUTRITION ISSUES IN THE UNITED STATES
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2. Healthy People 2010 Goals Focusing on Children

Healthy People 2010 Goals Focusing on Children

• Reduce growth retardation among low income children under age 5 to 5%
• Reduce iron deficiency
• Increase calcium intake
• Achieve food security in 94% of U.S. households
• Cut by >50% the proportion of children and adolescents overweight and obese
• Improve the overall dietary quality of meals and snacks consumed at school

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3. Healthy People 2010 objectives for Children

**Healthy People 2010 objectives for Children**

- Increase fruit, vegetable and whole grain intake
- Decrease sodium, total and saturated fat intake
- Increase moderate and vigorous physical activity in children
- Daily PE classes in school
- Improve school PE facilities
- Decrease television watching

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4. Identification of Common Nutrition Problems

**Identification of Common Nutrition Problems**

- Anthropometric
- Biochemical
- Clinical
- Dietary

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5. Anthropometric Assessment

Anthropometric Assessment

- **Screening**
  - Weight
  - Height
  - Head circumference
  - Weight for height
  - BMI
  - Sexual maturation

- **At risk**
  - Height Z score
  - Weight Z score
  - TSF/AMC
  - Height velocity
  - Prediction mature height

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6. CDC Growth Chart: United States

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7. CDC Growth Chart: United States

8. Indicators of Nutritional Status

Indicators of Nutritional Status

- Head circumference-for-age
  - <5th percentile
  - >95th percentile

- Stunting/shortness
  - length or height-for-age
  - <5th percentile

- Underweight weight-for-length
- BMI-for-age
  - <5th percentile

Source: CDC

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9. Indicators of Nutritional Status

**Indicators of Nutritional Status**

- **Overweight**
  - weight-for-length: > 95th percentile
  - BMI-for-age

- **Risk of overweight**
  - BMI-for-age: 85th to 95th percentile

10. American Academy of Pediatrics Guidelines

**American Academy of Pediatrics Guidelines**

- Exclusive breastfeeding to 6 months, continuing until 12 months
- Iron fortified infant formula
- Delay complementary foods until 4-6 months
- Juice introduced at 6 months
- Cows milk introduced after 12 months
- Whole milk, 1-2 yrs
- Low fat dairy products after 2 years
- Limit juice to 6 ounces a day
11. Positive Caretaker Influences on Eating Behavior

**Positive Caretaker Influences on Eating Behavior**

- **Exposure**
  Familiarity increases food acceptance and the willingness to try new foods

- **Modeling**
  Adults, siblings, and peers provide direct and indirect examples in eating behavior

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12. Positive Caretaker Influences on Eating Behavior

**Positive Caretaker Influences on Eating Behavior**

- **Positive reinforcement**
  Happy, safe, relaxed feeding atmosphere; recognition, praise, and approval to reinforce appropriate behavior

- **Stimulation**
  Emotional support, encouragement, and affection around feeding.

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13. Positive Caretaker Influences on Eating Behavior

Positive Caretaker Influences on Eating Behavior

- **Discipline**: Consistent, appropriate limit setting; solid family organization in problem solving and guidance in feeding issues.

- **Caretaker responsiveness**: Appropriate, sensitive responses to developmental readiness and emotional issues involved in feeding.

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14. What Are Children Eating?

What Are Children Eating?

- Calories static or declining
- Micronutrient intake generally adequate; exceptions are iron, calcium and zinc
- Higher than recommended intakes of fat, saturated fat and sodium
- Low intakes of fiber, fruits and vegetables
- Eating more frequently

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15. Trends in Demographics

Trends in Demographics

- 1960
  - 90% of children lived with 2 parents
  - 19% of women with children <6 years of age were working
  - Significantly fewer meals were eaten out of the home

- 1990
  - 70% of children living with 2 parents
  - 60% of women with children <6 years of age were working
  - One third of total food expenditure spent on food eaten outside the home
  - Primary issue is convenience


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16. What are Children Eating?

What are Children Eating?

- Quality of diet decreases with increasing age
- Little correlation with income
- Regardless of ethnic group, children in general not meeting The Dietary Guidelines
- Teenagers replace milk with soda

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17. Iron Deficiency Anemia

Iron Deficiency Anemia

• Most prevalent micronutrient deficiency
  – 25% of infants worldwide
  – 50% of children in developing countries
  – 10% of U.S. toddlers aged 1-2 years
  – 9% of U.S. adolescent females

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18. Short Term Consequences of Iron Deficiency Anemia

Short Term Consequences of Iron Deficiency Anemia

• Lower test scores on mental development
• Lower test scores on motor development
• Variable improvement in test scores after treatment


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19. Long Term Consequences

Long Term Consequences

- 191 infants, 12 -23 months of age
- Response to therapy at 3 months excellent as evaluated by hemoglobin
- However, 64% still had some biochemical abnormality
- Delayed developmental scores at ages 2-3 years


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20. Evaluation at School Entry (Age 5 Years)

Evaluation at School Entry (Age 5 Years)

- 163 children completed a comprehensive evaluation
- All had excellent growth and hematological status
- Previously anemic children had lower scores on tests of mental and motor functioning


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Cognitive Effects of Iron Supplementation in Adolescence

- 14% of 716 adolescent girls screened at 4 Baltimore High Schools had iron deficiency
- The 78 randomized to receive 650 mg ferrous sulfate versus placebo daily for 8 weeks had significantly better scores on verbal learning and memory post intervention.
- No effects were seen on attention


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22. Obesity in Children

Obesity in Children

- Obesity now more common than failure to thrive; across all income strata
- NIDDM increasing
- Mean weights of 10 year old children 3 pounds greater than in 1970s
- Decreased physical activity combined with poor dietary patterns
- School meals have a major impact on overall intake

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23. **Negative Effects of Television Watching**

Negative Effects of Television Watching

- NHANES showed a linear relationship between BMI and number of hours of television watched
- The effects were not strongly effected by income

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24. **Television Viewing and Pediatric Hypercholesterolemia**

Television Viewing and Pediatric Hypercholesterolemia

- 8% of 1081 children, mean age 7 years had TC >200 mg/dL
- 53% of these children watched >2 hours of TV per day
- RR of 2.2 for >2 hours, 4.8 for >4 hours

*Pediatrics* 1992;60;75-79

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25. Food Advertising

Food Advertising

- Approximately half of the advertisements during “children’s TV” are food related
- High sugar and high fat foods are most advertised
- Nearly 90% of children eat or drink something while watching TV
- Children’s requests and parent’s purchasing paralleled advertising frequency
- Mother’s recognize the influence of TV on their children’s diets and their own purchasing behavior

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26. Television Watching and Obesity

Television Watching and Obesity

- Possibilities
  - Reduced energy expenditure due to displaced physical activity
  - Increased dietary intake
  - A combination of both

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27. Calcium Intake and Soft Drink Consumption

**Calcium Intake and Soft Drink Consumption**

- In 1999 average per capita intake soda was 576, 12 ounce servings/year
- Boys 12-19 years drink ~28 oz/day
- Girls 12-19 years drink ~20 oz/day
- Provides ~8% total daily calorie intake
- Currently teens drink twice as much soda as milk
- 20 years ago teens drank twice as much milk as soda
- Teenage girls consume ~60% RDA for calcium

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28. Eating Habits of the Nation’s Youth

**Eating Habits of the Nation’s Youth**

- 1 in 5 students aged 15-18 regularly skip breakfast
- Although 27% of students describe themselves as overweight, 40% report trying to lose weight
- 8% of high school girls take laxatives or vomit, 9% take diet pills for weight control


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29. Eating Habits of the Nation’s Youth

Eating Habits of the Nation’s Youth

- 84% eat too much fat, 91% eat too much saturated fat
- Only 1 in 5 young people eats the recommended five daily servings of fruits and vegetables.
- Average Ca intake of adolescent girls is 800mg/day


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30. Environmental Influences

Environmental Influences

- Television
- Ethnicity not protective against strong social pressures
- Social pressures to be thin has ramifications beyond poor nutrition
- Following Dietary Guidelines similar across income levels
- Rapid acculturation

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31. **Low Income**

**Low Income**

- Less balanced, fewer fruits and vegetables (access or cost)
- Parental smoking associated with poorer quality diets

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32. **Physical Activity Among Young People**

**Physical Activity Among Young People**

- Daily participation in PE classes dropped from 42% in 1991 to 25% in 1995
- The time students spend being active in PE classes is decreasing
- Girls are less active than boys
- African American girls have the lowest activity levels

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The Opportunity

- Child Nutrition and WIC reauthorization Act 2004
- More than 95% of all children and adolescents aged 5-17 are enrolled in school
- Schools can offer many opportunities for young people to practice healthy eating.
- Teachers, food service personnel, and other staff can contribute their expertise and model appropriate eating behaviors.

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