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Session 3: Integrating Across Life Stages

Childhood and Adolescence

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Disclosures

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Integrating Nutrition Across Life Stages

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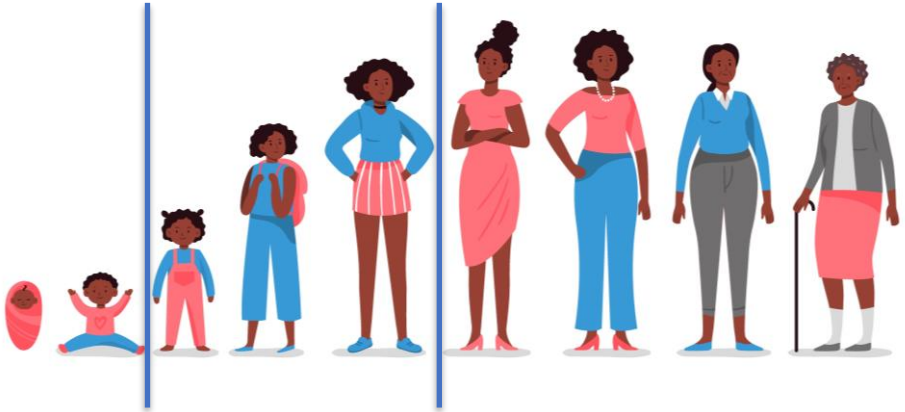
Nutrition from Early Childhood to Adolescence



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Children 2-5 Years

- 1,000 – 1,500 calories per day
- More independent eating
- Food fussiness and picky eating
- Override satiety cues / emotional eating
- Influenced by older children and adult role modeling
- Acquiring & establishing eating habits

Children 6-12 Years

- 1,500 – 2,200 calories per day
- Consistent but slower growth vs. younger children
- More independent eating and ability to acquire food
- Able to help with meal planning and preparation
- Disordered eating behavior may emerge
- Hormonal changes / puberty onset influence eating behavior
- Environmental factors play larger role (plus gene/environment interactions)

Children 13-18 Years

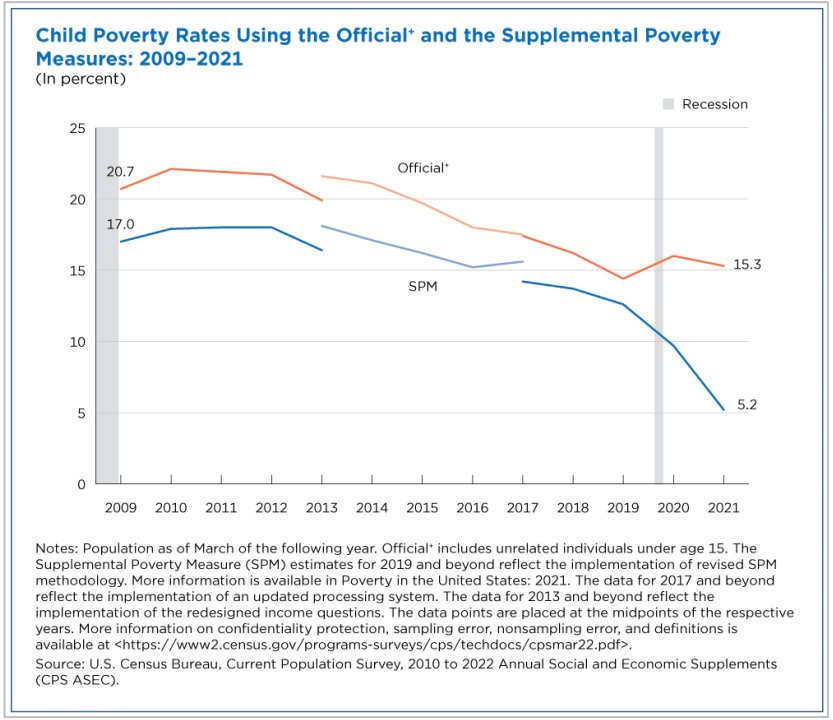
- 2,200 – 2,800 calories per day
- Hormonal changes / puberty onset
- Independent eating and ability to acquire food
- Disordered eating behavior may take root
- Ability to become pregnant
- Environmental factors play larger role (plus gene/environment interactions)

Nutrition and Non-Nutrition Issues affect Children's Nutrition & Health

- Children faced unprecedented adversity in recent years
- Impact on health and disease risk not fully known
- Inequities and lack of resilience exacerbate issues
- Non-nutrition issues like poverty, stress, discrimination affect children's nutritional status and risk of chronic disease
- Nutrition issues like food insecurity affect children's nutritional status and risk of chronic disease

Child Poverty Rates in US 2009-2021

- Child poverty rates decreased past 2 years largely due to public policy in response to COVID-19 pandemic
- Poverty affects all aspect of children's lives and chronic disease risk, including nutrition and diet
- Inequity and adversity/lack of resilience exacerbate issues



https://www.census.gov/library/stories/2022/09/record-drop-in-child-poverty.html

Child Nutrition & Health in Context of COVID-19 Natural Experiment

COVID-19 magnified children's vulnerability

- Increased food costs for families - as well as housing, fuel, health care
- Increased food insecurity - child care and school closures
- Heightened mental health challenges - social isolation due to child care and school closures, psychological and physical abuse and maltreatment experienced while sheltering in place

Non-Nutrition Federal and State Policy Affect Children's Nutrition & Health

Legal decisions affect children's health

Policy decisions affect children's health

Child Nutrition & Health in Context of Non-Nutrition Federal or State Policy

Expiration of expanded Child Tax Credits by American Rescue Plan

- Public policy success in reducing number of children in poverty
- Not renewing Credits for 2023 (loss of gains)

Supreme Court decision in *Dobbs v. Jackson Women's Health Organization* overturning *Roe v. Wade*

- Potential increase in adolescent pregnancy

State recreational cannabis legalization (e.g., Maryland voters passed constitutional amendment to legalize recreational cannabis for adults)

- Exposure and accidental ingestion – especially for children 2-6 years
- Adolescent exposure and use

Knowledge Gained Examining Childhood Trajectories vs. Critical Windows

Trajectories of risk over childhood via longitudinal studies

Critical time periods (e.g., transition to kindergarten; puberty)

Image source: Law icons created by Freepik - Flaticon

Example of Food Insecurity

Food Insecurity and Risk of Having Obesity

Previous studies show inconsistent relations between child food insecurity and obesity

Association may depend on child age and gender

Direction of association not clear (although majority found association between food insecurity and increased risk of having obesity)

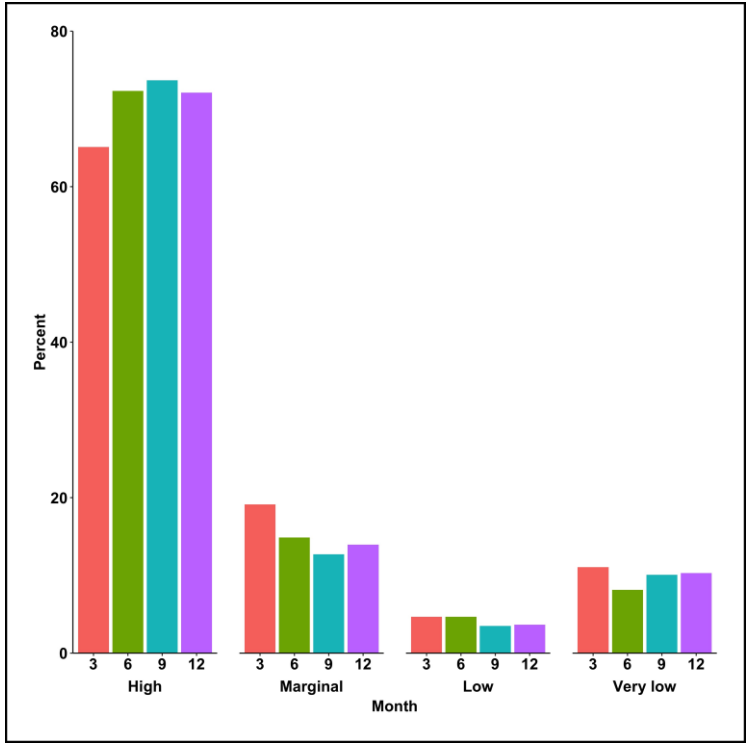
Food Insecurity Challenges

- Prior studies limited by design (cross-sectional) or duration (single time period in childhood)
- Static vs. dynamic nature food security status
- Measurement challenges – especially in young children
- Field advancing to “nutrition security,” which better captures intersecting and complex relation between social, economic, and environmental determinants of ensuring healthy diet (USDA)

Household Food Security Varies across Infancy

Household Food Security Status of Nurture Study Infants at 3, 6, 9, and 12 Months

Household Food Security	No. (%)			
	3 mo	6 mo	9 mo	12 mo
High	348 (65.3)	358 (72.9)	341 (74.8)	348 (74.7)
Marginal	67 (12.6)	48 (9.8)	43 (9.4)	40 (8.6)
Low	74 (13.9)	50 (10.1)	33 (7.2)	37 (7.9)
Very low	44 (8.3)	35 (7.1)	39 (8.6)	41 (8.8)



Benjamin-Neelon SE, Allen CA, Neelon B. Household food security and infant adiposity. *Pediatrics*. 2020 Sep;146(3):e20193725.

Causal Pathways Not Clear: Biological vs. Behavioral vs. Both

- Biological pathway:
  - Dietz et al. hypothesized in 1995 that “physiological adaptations to episodic food insufficiency” may influence obesity
- Behavioral pathway:
  - Food rationing & stretching
  - Increased intervals between feeding / meals
  - High-energy supplements to compensate for food shortages
- Likely intersection between biology, behavior, and environment