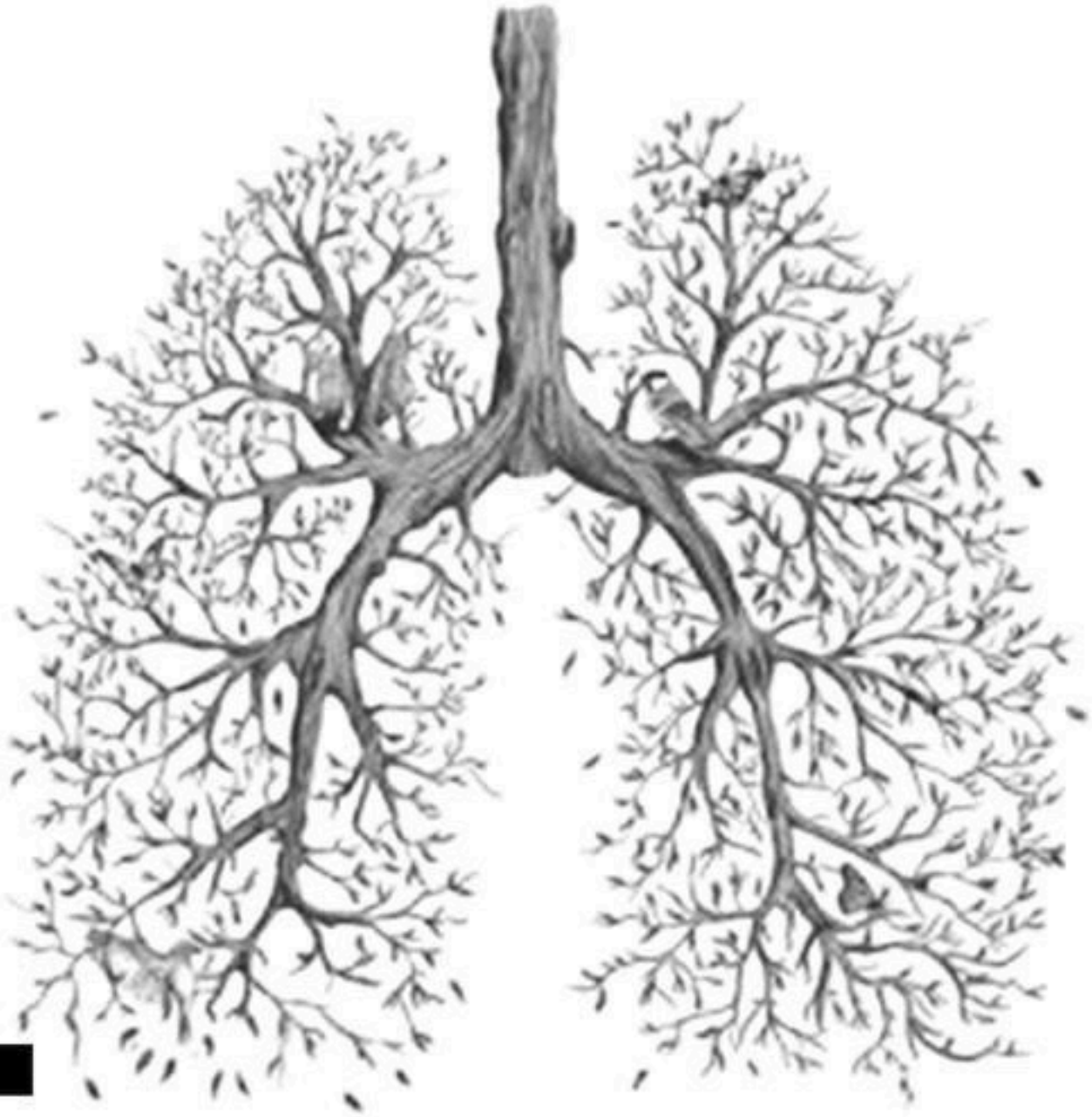




Medical Committee  
The University of Jordan

# Community Medicine



Slides

Sheet

Slide #: 11

Doctor: *Ahmad Al-Bataineh*

Date:

## *Chapter 7*

# **Nutrition in Childhood**

# Krause's *Food & Nutrition Therapy*

# Childhood

**n** Toddlers 1-3 years

**n** Preschool children 3-5 years

**n** School- age children 5-12 years

**n** Adolescence 12-18 years

# Nutrition in childhood

- n** Nutrition requirements are affected by a generally slowed and erratic growth rate between infancy and adolescence and a child individual needs.
- n** A child food choices are determined by numerous family and community factors.
- n** Nutrition intake and developing food patterns in young children are governed by food availability and food choices.
- n** Consideration in feeding young children are guided by meeting physical and psychosocial needs.
- n** Nutrition concerns during childhood relate to growth and development needs for positive health.

# Childhood Growth and Development

- n** Growth patterns: growth spurts, appetite
- n** Catch-up growth: after illness or undernutrition
- n** Assessing growth: CDC growth charts, growth channels

## Physical growth during childhood

- n** Growth Rate: The rapid rate of growth during infancy is followed by a deceleration during the preschool and school-age years.
- n** Weight gain approximately 1.8 to 2.7 kg per year.
- n** Length increases approximately 7.6 cm per year between 1 year and 8 years of age, then increases 5.1 cm per year until the pubertal growth spurt.
- n** Between 6 years of age and the adolescent growth spurt, gender differences can be noted.
- n** At age 6 boys are taller and heavier than girls. By age 9 the height of the average female is the same as that of the 9-year-old male and her

## Growth charts:

- n** The infants growth charts are constructed to 36 months of age and should be used until the child is at least 24 months old.
- n** Growth channel: the progressive regular growth pattern of children, guided along individual genetically controlled channels, influenced by nutritional and health status.

# Energy and Protein

- n** Energy needs determined on the basis of basal metabolism, rate of growth, and energy expenditure
- n** The need for protein per kilogram of body weight decreases from approximately 1.1 g in early childhood to 0.95 g in late childhood



# Recommended energy intakes for children

**n** At age 1-3 years 102 kcal/kg/day  
(1300 kcal/day).

At age 4-6 years 90 kcal/kg/day  
(1800 kcal/day).

At age 7-10 years 70 kcal/kg/day  
(2000 kcal/day).

# Minerals and Vitamins

- n** Children between 1 and 3 years of age are at high risk for iron deficiency
- n** Calcium is needed for adequate mineralization and maintenance of growing bone
- n** Zinc is essential for growth.
- n** Vitamin D is needed for calcium absorption and deposition in bone

# Malnutrition in children

\*Protein-Energy Malnutrition (PEM):

a. Kwashirchoire

b. Marasmus

\*Vitamin A deficiency

\*Vitamin D deficiency

\*Iron deficiency anemia

\*Zinc deficiency

\*Lead toxicity

# Standards for selected PEM indicators

- n** Serum total protein (g/dl) age 1-17 years deficiency is  $<5.5$
- n** Serum albumin (g/dl) age 1-17 years deficiency is  $<2.8$
- n** Total lymphocyte count ( $\text{mm}^3$ ) all ages deficiency is  $<1500$
- n** Creatinine-height index 3 months to 17 years deficiency is  $<0.5$

# Vitamin-Mineral Supplements

- n** Fluoride and dental caries
- n** At-risk groups: deprived families, parental neglect or abuse, anorexia or fad diets, chronic disease, weight-loss diets
- n** Avoid megadoses
- n** Complementary nutrition therapies

# Intake Patterns

- n Changes in food patterns over time
- n Family environment
- n Societal trends
- n Media messages
- n Peer influence
- n Illness or disease

# Feeding Preschool Children

- n Developmental progress
- n Growth rate slows
- n Parents control foods offered and set limits on inappropriate behaviors
- n Importance of snacks
- n Portion sizes

# Feeding Preschool Children–cont'd

- n Sensory factors
- n Physical environment
- n Excessive intake of fruit juice
- n Meals and snacks in day-care
- n Peer influence



# Feeding School-Aged Children

- n Slow steady growth
- n Influence of peers and significant adults
- n School lunch program
- n Special diets
- n Home-packed lunches
- n Importance of breakfast
- n Snacks

# Overweight/Obesity

- n** Increasing prevalence
- n** Influence of access to food, eating tied to leisure activities, children making food decisions, portion sizes, and inactivity
- n** Consequences: discrimination, negative self-image, depression, decreased socialization
- n** Increases cardiovascular risk factors (hyperlipidemia, hypertension, and hyperinsulinemia) and type 2 diabetes

# Interventions for Childhood Obesity

- n Family involvement
- n Dietary modifications
- n Nutrition information
- n Physical activity
- n Behavioral strategies
- n Prevention

# Iron Deficiency

- n** One of the most common nutrient disorders of childhood
- n** Affects approximately 9% of toddlers
- n** Linked to lower test scores
- n** Dietary factors

# Dental Caries

- n** Composition of the diet and an individual's eating habits are significant factors in developing dental caries
- n** Frequent use of sweetened drinks in bottles
- n** Fewer cariogenic snacks should be emphasized
- n** Protein foods such as cheese, nuts, and meat should be eaten with sticky foods
- n** Dental hygiene and fluoride

# Allergies

- n** Food allergies usually manifest in infancy and childhood
- n** Allergic responses include respiratory or gastrointestinal symptoms, skin reactions, fatigue, or behavior changes

# Attention Deficit Hyperactivity Disorder

- n** Dietary factors have been suggested as causes of ADHD
- n** Various dietary treatments include Feingold diet, omission of sugar, allergy elimination diets, and megavitamin therapy
- n** Little evidence to support these interventions

# Autism Spectrum Disorders

- n** Affect 1 in 166 children
- n** Affects children's nutrition and feeding, with very restricted food acceptance, hypersensitivities, and difficulty in making transitions: behavioral interventions may be helpful
- n** Little success with elimination diets, essential fatty acid supplements, megadoses of vitamins, other alternative therapies



# Preventing Chronic Disease

- n** Roots of chronic diseases in adults, such as heart disease, cancer, diabetes, and obesity are often based in childhood
- n** Dietary fat and cardiovascular disease
- n** Calcium and bone health and obesity
- n** Fiber
- n** Physical activity

# MyActivity Pyramid



Family Nutrition Education Program  
Revised and Updated by Missouri Extension

## MyActivity Pyramid

Be physically active at least 60 minutes every day, or most days.  
Use these suggestions to help meet your goal:

Everyday Activities As often as possible	Active Aerobics and Recreational Activities 3-5 times a week	Flexibility and Strength 2-3 times a week	Inactivity Cut down
<ul style="list-style-type: none"> <li>• Playing outside</li> <li>• Helping with chores around the house or yard</li> <li>• Taking the stairs instead of the elevator</li> <li>• Picking up toys</li> <li>• Walking</li> </ul> 	<ul style="list-style-type: none"> <li>• Playing basketball</li> <li>• Biking</li> <li>• Playing baseball or softball</li> <li>• Rollerblading</li> <li>• Skateboarding</li> <li>• Playing soccer</li> <li>• Swimming</li> <li>• Playground games</li> <li>• Jumping rope</li> </ul> 	<ul style="list-style-type: none"> <li>• Practicing martial arts</li> <li>• Rope climbing</li> <li>• Stretching</li> <li>• Practicing yoga</li> <li>• Doing push-ups and pull-ups</li> </ul> 	<ul style="list-style-type: none"> <li>• Watching television</li> <li>• Playing on the computer</li> <li>• Sitting for too long</li> <li>• Playing video games</li> </ul> 

### Find your balance between food and fun:

- Move more. Aim for at least 60 minutes every day, or most days.
- Walk, dance, bike, rollerblade – it all counts. How great is that!

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# Focal Points

- n** Children's diets should provide enough energy to support optimal growth and development without causing excessive weight gain.
- n** For children's diets emphasis should be placed on fruits and vegetables, whole-grain products, low-fat dairy products, legumes, and lean meat, fish, and poultry.
- n** Fermentable carbohydrate intake should be controlled for good dental health.
- n** Adherence to general food guidelines is beneficial for children because their total fat intake decreases and their food fiber and micronutrient intake increases, resulting in a more nutrient-dense diet.
- n** Physical changes in the years between infancy and adolescence happen at a slower and steadier pace, and the cognitive, physical, and socioemotional growth is significant.
- n** Nutrition education and resources for families and children can help establish healthy, positive eating and activity patterns that carry through during adolescence and adulthood.