Defining healthy diets for children and adolescents

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Background

• Early nutrition → growth, physical and cognitive development
  • Energy, macronutrient and micronutrients
  • Infancy, childhood and adolescence (adulthood)

• Double burden (under- and overnutrition)

• International and national nutrient and food guidelines
  • Guided by FAO principles
  • Sustainability dimensions

• Health and environment
Current state of child nutrition

In Northern America... 176 million
- Stunted 151 million
- Wasted 51 million
- Overweight 38 million

In Asia... 83.6 million
- Stunted 35.0 million
- Wasted 17.5 million

In Africa... 58.7 million
- Stunted 13.8 million
- Wasted 9.7 million

In Latin America and Caribbean... 5.1 million
- Stunted 0.7 million
- Wasted 3.9 million

UNICEF / WHO / World Bank Group Joint Child Malnutrition Estimates
Current state of child nutrition

WHAT?

The double burden of malnutrition is characterized by the coexistence of:

- Undernutrition (wasting, stunting and micronutrient deficiencies) along with over-weight and obesity
- and diet-related noncommunicable diseases
- within individuals, households and populations
- throughout life
Drivers of the double burden

Social and demographic
- Socioeconomic disadvantage and poverty
- Food insecurity

Behavioural
- Lifestyle and habits
- Psychological factors

Environmental
- Food supply and systems
- Food portion sizes and cost
- Cultural and social aspects
- Urban and built environment
- Trade and trade policy

Biological
- Inheritability
- Epigenetic
- Early-life experience

WHO
Current state of child nutrition
Overview

• UNICEF commissioned background paper

• Overview of diet to support normal child growth and development
  • Birth – 18 years
  • Key nutrients and food groups
  • Environmental impacts

• Method – *rapid* review of international dietary guidelines
  • World Health Organisation (WHO)
  • High Income Countries (HIC) – USA, Canada, UK and Australia
Infants (birth – 6 months)

• Exclusive breastfeeding
  • Initiated within 1 hour of birth
  • > 6 months duration
  • Vitamin D supplementation: birth - 1 year (8.5-10 μg, for part or all of the year, in some countries)
Infants (6 months – 2 years)

• Complementary feeding
  • From 6 months
  • Developmental readiness, nutrient needs (e.g. iron)
  • Continue breastfeeding
  • Variety of foods (dietary diversity)
  • Adequate zinc, vitamin B12 and iron (micronutrient powders)
  • Fortification of complementary foods with iron-containing micronutrient powders is recommended in populations where anaemia is a public health problem
Infants (birth – 2 years)

• Complementary feeding
  • Timing?
  • Insufficient evidence on ‘window of tolerance’ (e.g. Allergy)
  • More research needed

• Safe preparation and storage
  • Safe water, sanitation systems, hygiene
  • No raw or undercooked meat/egg
  • No unpasteurized milk/juice
  • Avoid contamination between cooked and uncooked foods
Young children (2 – 5 years)

• Included in most national dietary guidelines

• 4-5 main food groups
  • Fruit, vegetables, grains, lean proteins and dairy

• Energy intakes in balance with expenditure
  • <10%E (ideally <5%) from free sugars
  • <10%E from saturated fat
  • <1%E from trans fats

• Adequate potassium and sodium levels

• Anaemia → iron supplementation and micronutrient powders
Older children (5 – 9 years)

- 4-5 main food groups
  - Increase proportionately (age and sex)
- Low F&V, high energy dense foods → overweight and obesity
  - Free sugars, saturated fat and trans fats
- Protein, calcium (700-1000 mg), vitamin D (5 μg) → bone development
- Fluoride (1-1.2 mg) → dental caries
- Anaemia → iron supplementation and powders
Adolescents (10 – 18 years)

- Rapid growth and development
- 4-5 main food groups
  - 30%E from fat, 55-75%E from carbohydrates, 10-15%E from protein
  - Free sugars, saturated fat and trans fats
- Disordered eating
- Milk, calcium-fortified alternative → skeletal calcium deposition
- Girls iron requirements increase (14-18 years)
  - Iron deficiency (supplementation)
Environmental sustainability

• Over-production / consumption
  • Environmental degradation and NCDs
• Food with heavy environmental impact
  • E.g. Ruminant meats
• Food waste
• Recommendations to reflect human and environmental health
  • E.g. Breastfeeding compatible
• Instil healthy and sustainable eating habits
• Critical role in setting family diets, but also future generations
Discussion

• Significant advances
  • Miconutrient requirements
  • Exclusive breastfeeding
  • Single nutrients (e.g. calcium, iron)

• Less evidence for other nutrients
  • Limited scientific evidence of specific child and adolescent requirements (such as for vitamin A, thiamine, riboflavin, niacin, vitamin B6, vitamin B12, vitamin E and vitamin K
    • Child recommendations extrapolated from adults
    • Median population intakes
Discussion cont.

- Reductionist single nutrient approach
- Public confusion → fads and advocacy groups
- LMIC → target growth, infection risk and prevent NCDs
- No separate recommendations < 2 years
  - Not in main national guidelines
- Child intakes suboptimal
  - Limited by lack of research/funding
Possible next steps for this review

• Undertake a more comprehensive review including systematic methodologies and further country sampling of guidelines

• Greater discussion on different perspectives when defining a healthy diet and their relative merits – from nutrients, foods, dietary patterns

• Exploration of dietary needs and their relationship to a child’s developmental stage (re. motor skills, physiology, etc.)

• Further analysis of differences in dietary needs by sex across childhood and adolescence

• Explore example diets with foods

• Discussion on minimum dietary diversity (MDD), minimum meal frequency (MMF), minimal acceptable diet (MAD) equivalents for older children and adolescents
Next steps in the field

- International complementary feeding guidelines
- Integrated health-environmental parameters and the equitable «share» of burden for children
- Greater research needed to understand how we shift children to healthier diets, and adolescents – shaping sustainable habits
- Further research into links between early nutrition (including the fetal origins of disease and epigenetic mechanisms) and child growth and long-term health and cognitive trajectories
- Dietary recommendations also need to be considered in the context of the double burden and a sustainable diet
Next steps in the field

• Better understanding of dietary patterns
  • Map magnitude of issue
  • Global ‘benchmark’ (comprehensive review)
  • Prioritise and inform strategies
  • Context of sustainable diet

• Political economy must be recognized and integrated into implementation research

• Consensus and ownership should ideally be achieved from relevant ministries of health, agriculture and commerce
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