

Pediatric Feeding Disorder: A Practical Approach

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LEARNING OBJECTIVES

At the end of this presentation the participant will be able to:

- Describe normal feeding patterns in children
- Identify common feeding problems in pediatrics
- Explain several strategies to avoid or ameliorate feeding problems
- Describe the differences between feeding problems and pediatric feeding disorder
- Describe how to manage pediatric feeding disorder

WHAT WAS KNOWN

INTRODUCTION

- Pediatric feeding disorder previously lacked a **universally accepted definition**
- Previous diagnostic paradigms defined feeding disorder from the **perspective of a single discipline**

WHAT IS NEW

INTRODUCTION

- A **unifying diagnostic term**, "Pediatric Feeding Disorder", using the framework of the World Health Organization's International Classification of Functioning, Disability, and Health
- PFD unifies the medical, nutritional, feeding skill, and/or psychosocial concerns associated with feeding disorders
- The proposed diagnostic criteria should promote the use of **common, precise, terminology necessary to advance clinical practice, research, and health-care policy**



PEDIATRIC FEEDING DISORDER

A LABOR OF LOVE

- **15 Authors** began working together in March 2015

• 7 Disciplines:

- Applied behavior analysis
- Child & pediatric psychology
- Developmental-behavioral pediatrics
- Dietetics / nutritional medicine
- Occupational therapy
- Pediatric gastroenterology
- Speech-language pathology



CONSENSUS ARTICLE PUBLISHED - JANUARY 2019

REVIEW ARTICLE: NUTRITION

OPEN

Pediatric Feeding Disorder—Consensus Definition and Conceptual Framework

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NORMAL FEEDING

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NORMAL FEEDING

- Coordination of multiple body systems
- Developmental progression of food selectivity
- Children self-regulate and **may vary their oral intake up to 30% daily with no effect on growth**
- Feeding plays a central role in the caregiver-child relationship

Phalen 2013

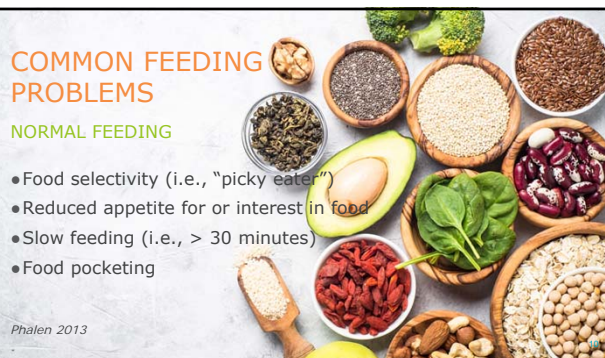
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COMMON FEEDING PROBLEMS

NORMAL FEEDING

- Food selectivity (i.e., "picky eater")
- Reduced appetite for or interest in food
- Slow feeding (i.e., > 30 minutes)
- Food pocketing

Phalen 2013



Between 25% and 50% of neurotypical children and up to 80% of those with developmental disabilities have **feeding problems**

Phalen 2013

PEDIATRIC FEEDING DISORDER

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Pediatric feeding disorder previously lacked a universally accepted definition

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AMERICAN SPEECH-LANGUAGE HEARING ASSOCIATION

PEDIATRIC FEEDING DISORDER

- **Pediatric dysphagia**: impaired oral, pharyngeal, and/or esophageal phases of **swallowing** (ASHA* 2014)

* American Speech-Language-Hearing Association

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WORLD HEALTH ORGANIZATION

ICD-10 (2016)

F98.2. Feeding disorder of infancy and childhood: "varying manifestations usually specific to **infancy and early childhood**. It generally involves **food refusal and extreme faddiness** in the presence of an adequate food supply, a reasonably competent caregiver, and the **absence of organic disease**"

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AVOIDANT/RESTRICTIVE FOOD INTAKE DISORDER

(*DSM-5™* F50.8) – APA 2013

American Psychological Association

- **Eating or feeding disturbance with persistent failure to meet appropriate nutritional &/or energy needs (with ≥ 1 of the following)**:
 - Significant weight loss (or poor weight gain or **faltering growth** in children)
 - Significant **nutritional deficiency** (or related health impact)
 - Dependence on **enteral feeding** or **oral nutritional supplements**
 - Marked interference with psychosocial functioning

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AVOIDANT/RESTRICTIVE FOOD INTAKE DISORDER

(*DSM-5™* F50.8) – APA 2013

American Psychological Association

- Not better explained by **lack of available food or culturally sanctioned practice** (e.g., religious fasting, normal dieting) or **developmentally normal** behaviors (e.g., picky eating in toddlers, reduced intake in older adults)
- Not exclusively during the course of **anorexia nervosa** or **bulimia nervosa**
- Not attributable to concurrent medical condition & not better explained by another mental disorder; **severity must exceed that routinely associated with the condition** or disorder and warrants additional clinical attention

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AVOIDANT/RESTRICTIVE FOOD INTAKE DISORDER

(*DSM-5™* F50.8) – APA 2013

American Psychological Association

- May be based on **sensory characteristics** of food qualities (e.g., appearance, color, smell, texture, temperature, taste)
 - May manifest as **refusal to eat** particular brands of foods or to tolerate the smell of food being eaten by others
 - Individuals who **have autism spectrum disorder** may show similar behaviors
- May represent a **conditioned negative response** associated with an aversive experience (e.g., choking, esophagoscopy, repeated vomiting)

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AVOIDANT/RESTRICTIVE FOOD INTAKE DISORDER

(DSM-5™ F50.8) – APA 2013

American
Psychological
Association

- Associated Features Supporting Diagnosis:
 - **Lack of interest** in eating or food
 - Young infants **too sleepy, distressed, or agitated** to feed
 - Infants & young children may not:
 - **engage** with primary caregiver during feeding
 - **communicate** hunger in favor of other activities
- In older children & adolescents, may be associated with:
 - Generalized **emotional difficulties**

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PROBLEMS WITH ARFID

- Specifically **excludes** children whose primary challenge is a **skill deficit**
- Severity of eating **disturbance must exceed** that associated with **comorbidity**
- No limitations re: **age of onset**
- **Non-specific**: 29% teens at eating disorder clinic

de Vries 2014, Fisher 2014, Kurz 2015, Mussatto 2014

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PEDIATRIC FEEDING DISORDER

*Impaired oral intake that is not **age-appropriate**, and is associated with medical, nutritional, feeding skill, and/or psychosocial **dysfunction**.*

Goday et al., 2019

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PEDIATRIC FEEDING DISORDER

- PFD results in **disability** as defined by the World Health Organization (WHO) *International Classification of Functioning, Disability, and Health (ICF)*
 - **Impairment**: a problem in body function or structure, or
 - **Activity limitation**: difficulty executing a task or action, or
 - **Participation restriction**: problem with life situations

Goday et al., 2019

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PROPOSED DIAGNOSTIC CRITERIA

Pediatric feeding disorder:

- A. A disturbance in oral intake of nutrients, inappropriate for age, lasting at least 2 weeks and associated with 1 or more of the following:
 1. **Medical dysfunction**, as evidenced by any of the following:
 - a. Cardiorespiratory compromise during oral feeding
 - b. Aspiration or recurrent aspiration pneumonia
 2. **Nutritional dysfunction**, as evidenced by any of the following:
 - a. Malnutrition
 - b. Specific nutrient deficiency or significantly restricted intake of one or more nutrients resulting from decreased dietary diversity
 - c. Reliance on enteral feeds or oral supplements to sustain nutrition and/or hydration

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PROPOSED DIAGNOSTIC CRITERIA

Pediatric feeding disorder:

3. **Feeding skill dysfunction**, as evidenced by any of the following:
 - a. Need for texture modification of liquid or food
 - b. Use of modified feeding position or equipment
 - c. Use of modified feeding strategies
4. **Psychosocial dysfunction**, as evidenced by any of the following:
 - a. Active or passive avoidance behaviors by child when feeding or being fed
 - b. Inappropriate caregiver management of child's feeding and/or nutrition needs
 - c. Disruption of social functioning within a feeding context
 - d. Disruption of caregiver-child relationship associated with feeding

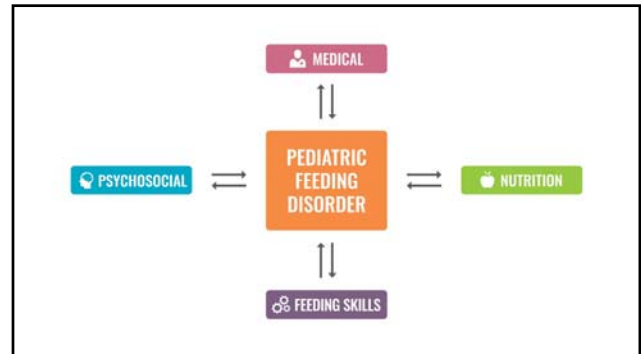
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PROPOSED DIAGNOSTIC CRITERIA

Pediatric feeding disorder:

- b. **Absence** of the cognitive processes consistent with **eating disorders** and pattern of oral intake is not due to a **lack of food** or congruent with **cultural norms**.

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MEDICAL FACTORS

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MEDICAL FACTORS PEDIATRIC FEEDING DISORDER

- Prematurity
- Cardiopulmonary disease
- Genetic/chromosomal anomalies
- Craniofacial anomalies
- Neurodevelopmental disorders
- Gastrointestinal disorders



de Vries 2014, Mussatto 2014

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NEURODEVELOPMENTAL DISORDERS

Medical Factors

MEDICAL FACTORS

- Autism spectrum disorder: sensory
- Global developmental delay (< 5 years old: cognitive DQ or standard score < 70)
- Intellectual disability: (≥ 5 years old: intellectual + adaptive standard score < 70)
- Cerebral palsy: motor

Benfer 2013, Sharp 2013, Shmaya 2015

GI DISORDERS

Medical Factors

MEDICAL FACTORS

- Gastroesophageal reflux disease (GERD)
- Chronic constipation +/- overflow incontinence (i.e., encopresis)
- Eosinophilic esophagitis

Benfer 2013, Sharp 2013, Shmaya 2015

NUTRITIONAL FACTORS



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NUTRITIONAL FACTORS

PEDIATRIC FEEDING DISORDER

- Restricted quality, quantity, variety
- Inadequate energy intake = risk for **weight faltering**
- Excluding entire food groups = risk for **micronutrient deficiency**
- Excessive energy intake and/or reduced energy requirement = risk for **obesity**

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NUTRITIONAL FACTORS

small FOR GESTATIONAL AGE

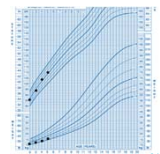
- **Definition:** birth weight < 3rd vs. < 10th percentile for gestational age
- **Etiology:**
 - *Fetal* (intrauterine) growth restriction
 - *Constitutional* (i.e., maternal height, weight, ethnicity, and parity)
- Up to 15% of infants born **SGA fail to catch up by age 2 years**

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NUTRITIONAL FACTORS

WEIGHT FALTERING: DEFINITION

- aka **failure to thrive** or **poor weight gain**
- **Sustained** decrease in growth velocity, best defined as a **W/L or BMI < 5th percentile**
- **Inadequate energy intake, reduced absorption, increased energy requirement**
- Age-appropriate growth chart
 - WHO: 0 to 24 months
 - CDC: 2 to 20 years



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NUTRITIONAL FACTORS

WEIGHT FALTERING: COMPLICATIONS

- May result in **malnutrition**
- If severe, affects linear growth and head circumference



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FEEDING SKILL FACTORS

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FEEDING SKILL FACTORS

PEDIATRIC FEEDING DISORDER

- Illness, injury, or developmental delay
- Impaired oropharyngeal or sensory-motor function
- Altered oral experiences

Benfer 2013, Dodrill 2014, de Vries 2014

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FEEDING SKILL FACTORS

ORAL MOTOR DELAY

- Oral motor hypotonia
- Underdeveloped suck-swallow-breathe pattern
- Poor lip closure: drooling after age 12 months
- Lack of tongue lateralization
- Loss of liquid or solid from the mouth

Benfer 2013, Phalen 2013, Dodrill 2014

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FEEDING SKILL FACTORS

OROPHARYNGEAL DYSPHAGIA

- Pathological difficulty swallowing
- Due to underlying neurologic or structural abnormalities
- Symptoms: gagging, choking, coughing, vomiting, apnea, cyanosis during feeds
- Complications: aspiration, pneumonitis

Phalen 2013, Dodrill 2015

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PSYCHOSOCIAL FACTORS

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PSYCHOSOCIAL DYSFUNCTION

- Developmental delay +/- unrealistic caregiver expectations
- Mental and behavioral health disorders in the child or caregiver
- Social: Disruptive caregiver-child interactions; inappropriate community or cultural influences
- Environmental: Distracting feeding environment, inconsistent mealtime scheduling, inadvertent reinforcement of refusal

Poppert 2015

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PSYCHOSOCIAL DYSFUNCTION

- Learned aversion
- Stress/distress
- Disruptive behavior
- Food over-selectivity
- Failure to advance to age-appropriate feeding
- Grazing behavior
- Caregiver use of compensatory strategies

EVALUATION

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FEEDING HISTORY

- Formula preparation (i.e., concentration)
- Addition of infant cereal, puréed solids, or proprietary thickeners to formula
- Feeding preferences and nutritional deficits
- Grazing
- Dietary supplements/oral nutrition supplements

Phalen 2013

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FEEDING HISTORY

- Difficulty chewing, excessive drooling, or food/liquid leaving the mouth or nose
- Patient's age at and difficulty with transitions from liquids → purées → solids
- Symptoms of oropharyngeal dysphagia
- Refusal, tantrums, rumination, pica, sensory aversion, sleep-feeding

Phalen 2013

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FEEDING OBSERVATION

- Appropriate child positioning and posture
- Child's hunger and satiety cues
- Caretaker's response to and interactions with the child
- Delayed oral motor or self-feeding skills
- Oropharyngeal dysphagia

Phalen 2013

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EXAMINATION

- Oral motor examination
 - Facial symmetry
 - Hard and soft palate for (submucous) cleft
 - Dentition
 - Symmetry and movement of lips and tongue
 - Vocal intensity, pitch, and quality
 - Cranial nerves

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LABORATORY STUDIES

- Weight faltering:
 - CBC
 - Urinalysis
 - BMP: BUN, serum electrolytes
 - IgA antibodies to tissue transglutaminase
- Pica:
 - Serum iron and lead levels

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*Optimal care of children with PFD
requires a team approach*

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TEAM PLAYERS

Feeding Skills Expert: SLP or OT

- Oral sensory-motor & feeding evaluation
- Video fluoroscopic swallow study

Pediatric Gastroenterologist

- Severe recalcitrant constipation, GERD, and eosinophilic esophagitis
- Co-manage enteral feeds

Pediatric Registered Dietitian

- Caloric intake, nutritional quality, dietary practices

Developmental Pediatrician

- Global developmental delay, autism spectrum disorder, and parent-child conflict

Clinical child psychologist or clinical social worker

- Parent-child conflict
- Maladaptive mealtime behaviors

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MANAGEMENT

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small FOR GESTATIONAL AGE

- **Rapid catch-up growth** before age 2 years increases risk of **metabolic disease**
- Excessive weight impacts care and ADLs
- Aim for **W/L or BMI between 10th and 50th percentile** if child born SGA or has CP

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WEIGHT FALTERING

- **Multivitamin** with iron and zinc
- Increase energy intake
 - Breast milk/formula: 22 to 24 kcal/oz
 - Solids: add eggs, cheese, cream, butter, cooking oil, beans, nut butter, avocado
 - Whole milk + instant breakfast preparation or non-fat dry milk

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WEIGHT FALTERING

- **Insufficient data** to support medication to treat PFD or weight faltering
 - cyproheptadine
 - dronabinol
 - megestrol acetate
 - oxandrolone
 - atypical antipsychotics

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FOOD RULES

Four simple yet powerful words:

"Kitchen open"

"Kitchen closed"

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FOOD RULES: SCHEDULING

- Three scheduled meals
- One or two light snacks
- Same room, same table, same utensils for every meal
- Mealtimes no longer than 30 minutes
- Only water between meals
- No grazing, juice, or coaxing

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FOOD RULES: ENVIRONMENT

- Make mealtime pleasant and enjoyable
- Entire family sits at table together
- Offer food only at the table
- Not walking around, at sofa or in bedroom
- Neutral atmosphere
- Eliminate distractions

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FOOD RULES: ENVIRONMENT

- If unable to remain seated: buckled in highchair or booster seat
- Expose to same-aged peers for one meal
- Never reward with food
- Be patient: **kids must see food 20-30x**
- Praise good and ignore bad

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FOOD RULES: PROCEDURES

- One menu & same food for everyone
- One non-preferred/new food + one or two preferred foods
- Solids first, fluids last
- Juice: 100% undiluted 4 oz/day max
- No toddler formula or sugary drinks
- Milk: 16 oz/day max

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FOOD RULES: PARENTING

- Avoid excessive coaxing, threats, or force feeding; never punish
- Division of power*:
 - Caretaker chooses what, when, where
 - Child chooses: how much or whether

*Ellyn Satter's Division of Responsibility, 2019, published at EllynSatterInstitute.org

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ORAL MOTOR FEEDING THERAPY

- Feeding expert: SLP or OT
- Proper positioning and posture
- Thickened liquids, modification of bolus size
- Oral motor and desensitization exercises
- Specialized nipples and bottles
- Altering sensory aspects of food
- Transcutaneous neuromuscular electrical stimulation (i.e., NMES, e-stim)

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BEHAVIORAL FEEDING THERAPY

- Ideally: interdisciplinary team
- Goal: eliminate factors that reinforce maladaptive mealtime behavior
- Setting: outpatient, partial day, inpatient
- Caregiver involvement & compliance is key

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ENTERAL NUTRITION

- Indication: oral feeds are unsafe or provide insufficient energy and nutrients
- Options: NG, OG, G, or G-J tube
- If tolerated, bolus preferred over continuous
- If safe, offer oral tastes/feeds before enteral

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ENTERAL NUTRITION

- Benefits:
 - Safe, efficient
 - Allows catch-up growth
 - Eliminates caretaker pressure for oral feeds
- Risks:
 - Retching or aggravated GERD
 - Overweight/obesity
 - Delayed oral motor and sensory skills

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ENTERAL NUTRITION

- Earlier in life g-tube placed, more difficult for child to wean from it later
- Inappropriate tube dependency: child able to safely feed by mouth



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ENTERAL NUTRITION

- Goals:
 - Expose to mealtime environment
 - Touch & interact with food
 - Bolus enteral feeds
 - Advance oral feeds, when possible
 - Feeding therapy involving parents
 - No enteral feeds, fluids, or flushes for 12 months

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SUMMARY

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SUMMARY

- Feeding problems and PFD are common
- Multiple factors contribute to PFD
- Many feeding problems are preventable or easily treated
- Untreated PFD may result in complications
- Treatment of PFD improves nutritional status, growth, feeding safety, and quality of life

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QUESTIONS

Nutrition-related resources and tools are available from the Nestlé Nutrition Institute at nestlenutritioninstitute.org

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