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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

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

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

Pediatric feeding disorder previously lacked a universally accepted definition

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

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**"

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

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

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)

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**

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

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

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

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 pneumonitis
    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

PROPOSED DIAGNOSTIC CRITERIA

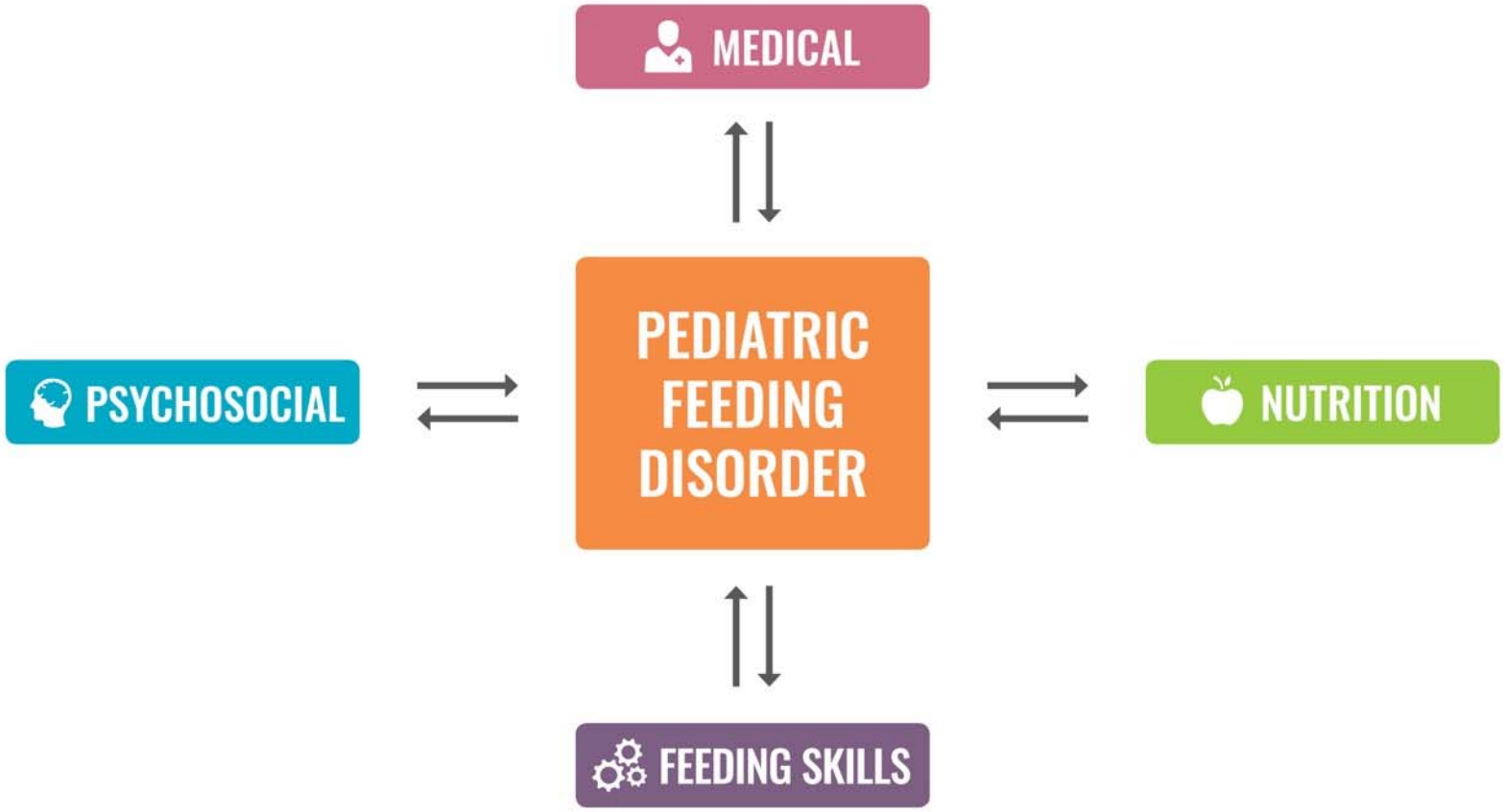
Pediatric feeding disorder:

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

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**.


MEDICAL
PSYCHOSOCIAL
PEDIATRIC FEEDING DISORDER
NUTRITION
FEEDING SKILLS

MEDICAL FACTORS

MEDICAL FACTORS

PEDIATRIC FEEDING DISORDER

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

de Vries 2014, Mussatto 2014

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

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**

NUTRITIONAL FACTORS

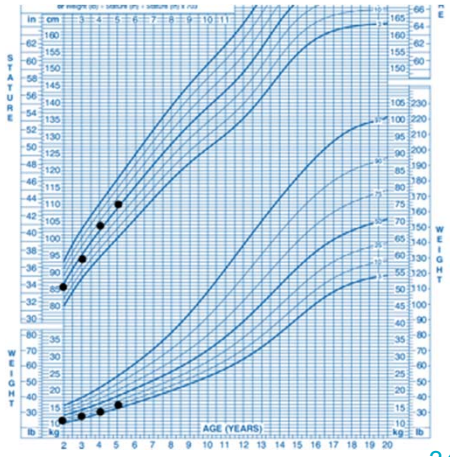
small FOR GESTATIONAL AGE

- **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**

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



NUTRITIONAL FACTORS

WEIGHT FALTERING: COMPLICATIONS

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

FEEDING SKILL FACTORS

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

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

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

PSYCHOSOCIAL FACTORS

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

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

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

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

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

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

LABORATORY STUDIES

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

Optimal care of children with PFD requires a team approach

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

MANAGEMENT

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

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

WEIGHT FALTERING

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

FOOD RULES

Four simple yet powerful words:

“Kitchen open”

“Kitchen closed”

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

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

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

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

FOOD RULES: PARENTING

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

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

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)

BEHAVIORAL FEEDING THERAPY

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

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

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

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

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

SUMMARY

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

REFERENCES

- "Feeding and Eating Disorders" in American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition. Washington, DC: American Psychiatric Association; 2013, pp329-354.
- American Speech-Language-Hearing Association (ASHA). Pediatric Dysphagia. Available at https://www.asha.org/Practice-Portal/Clinical-Topics/Pediatric-Dysphagia/ Accessed 12/16/2018.
- Benfer KA, Weir KA, Bell KL, et al. Oropharyngeal dysphagia and gross motor skills in children with cerebral palsy. Pediatrics 2013;131(5):e1553-62.
- de Vries IA, Breugem CC, van der Heul AM, et al. Prevalence of feeding disorders in children with cleft palate only: a retrospective study. Clin Oral Investig 2014;18(5):1507-15.
- Dodrill P. Feeding problems and oropharyngeal dysphagia in children. J Gastroenterol Hepatol Res 2014;3(5):1055-60
- Dodrill P, Gosa MM Pediatric Dysphagia: Physiology, Assessment, and Management. Ann Nutr Metab 2015;66 Suppl 5(24-31.
- Fisher MM, Rosen DS, Ornstein RM, Mammel KA, Katzman DK, Rome ES, et al. Characteristics of avoidant/restrictive food intake disorder in children and adolescents: a "new disorder" in DSM-5. J Adolesc Health. 2014 Jul. 55 (1):49-52
- Goday PS, Huh SY, Silverman A, Lukens CT, Dodrill P, Cohen SS, Delaney AL, Feuling MB, Noel RJ, Gisel E, Kenzer A, Kessler DB, de Camargo OK, Browne J, Phalen JA. Pediatric feeding disorder: consensus definition and conceptual framework. J Ped Gastr Nutr 2019;68(1):124-129.

REFERENCES

- Kurz S, van Dyck Z, Dremmel D, Munsch S, Hilbert A. Early-onset restrictive eating disturbances in primary school boys and girls. Eur Child Adolesc Psychiatry. 2015 Jul. 24 (7):779-85.
- Mussatto KA, Hoffmann RG, Hoffman GM, et al. Risk and prevalence of developmental delay in young children with congenital heart disease. Pediatrics 2014;133(3):e570-7.
- Phalen JA Managing feeding problems and feeding disorders. Pediatr Rev 2013;34(12):549-57.
- Poppert KM, Patton SR, Borner KB, et al. Systematic review: mealtime behavior measures used in pediatric chronic illness populations. J Pediatr Psychol 2015;40(5):475-86.
- Sharp WG, Berry RC, McCracken C, et al. Feeding problems and nutrient intake in children with autism spectrum disorders: a meta-analysis and comprehensive review of the literature. J Autism Dev Disord 2013;43(9):2159-73.
- Shmaya Y, Eilat-Adar S, Leitner Y, et al. Nutritional deficiencies and overweight prevalence among children with autism spectrum disorder. Res Dev Disabil 2015;38(1-6).

QUESTIONS

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

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