

HI ISSUES RELATED TO FEEDING

Sherri Shubin Cohen, MD, MPH
Medical Director, Martha Escoll Lubeck
Feeding and Swallowing Center
Program Director, Nutrition Fellowship
Associate Professor of Clinical Pediatrics
Perelman School of Medicine
University of Pennsylvania



WHAT IS A PEDIATRIC FEEDING DISORDER?

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

REVIEW ARTICLE: NUTRITION

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Pediatric Feeding Disorder—Consensus Definition and Conceptual Framework

**Praveen S. Goday, ††Susanna Y. Huh, *Alan Silverman, §Colleen T. Lukens, ††Pamela Dodrill, ††Sherri S. Cohen, *Amy L. Delaney, #Mary B. Feuling, **Richard J. Noel, ††Erika Gisel, ††Amy Kenzer, §§Daniel B. Kessler, ††††Olaf Kraus de Camargo, †††Joy Browne, and †††James A. Phalen*

ABSTRACT

Pediatric feeding disorders (PFDs) lack a universally accepted definition. Feeding disorders require comprehensive assessment and treatment of 4 closely related, complementary domains (medical, psychosocial, and feeding skill-based systems and associated nutritional complications). Previous diagnostic paradigms have, however, typically defined feeding disorders using the lens of a single professional discipline and fail to characterize associated functional limitations that are critical to plan appropriate interventions and improve quality of life. Using the framework of the World Health Organization's International Classification of Diseases, 11th Edition, this

What Is Known

- Pediatric feeding disorders lack a universally accepted definition.
- Previous diagnostic paradigms have defined feeding disorder from the perspective of a single medical discipline.

PEDIATRIC FEEDING DISORDERS

Presenting Problems	
Feeding selectivity	Requiring distraction to feed
Inconsistent oral acceptance	“Dream feeding”
Volume limitation/early satiety	Pocketing food
Food refusal	Lengthy mealtimes
Trouble remaining seated for meals	Difficulty transitioning from breast/ bottle to cup
Coughing, choking, gagging, vomiting	Difficulty with chewing/texture progression
Limited/no self-feeding	Impaired swallow safety
Slow weight gain/malnutrition	Reliance on nutritious supplementation orally and/or via tube

WHY DO CHILDREN WITH HI HAVE FEEDING DIFFICULTIES?

Disease Severity

- Insulin reduces appetite and feeding through signaling mechanisms in the brain
- Developmental delay

Glucose Stability

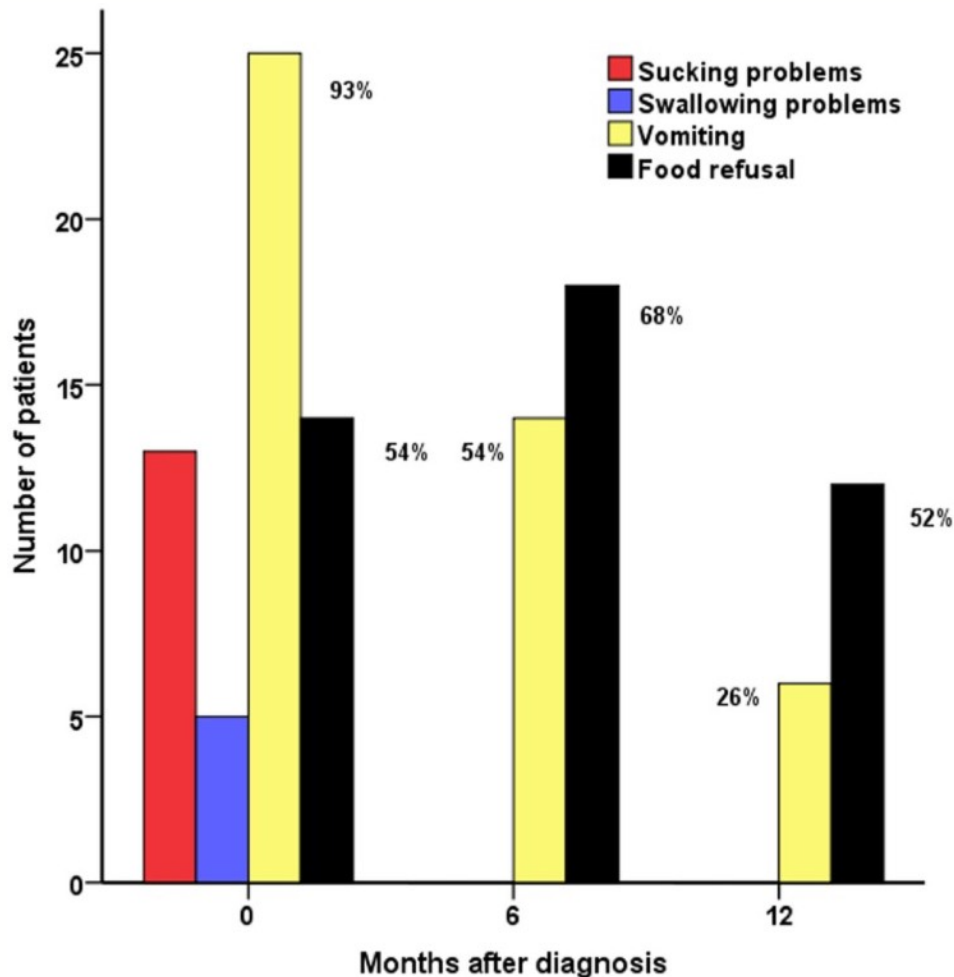
- Need for frequent meals
- Stressful mealtimes
- Tube feeds



Medications

- Diazoxide
- Unpleasant taste
- Octreotide
- Gastrointestinal dysmotility

FEEDING ISSUES IN CONGENITAL HYPERINSULINISM



34% of children with congenital hyperinsulinism were identified as having a feeding disorder at diagnosis

- 93% treated for gastroesophageal reflux
- 75% received tube feeding

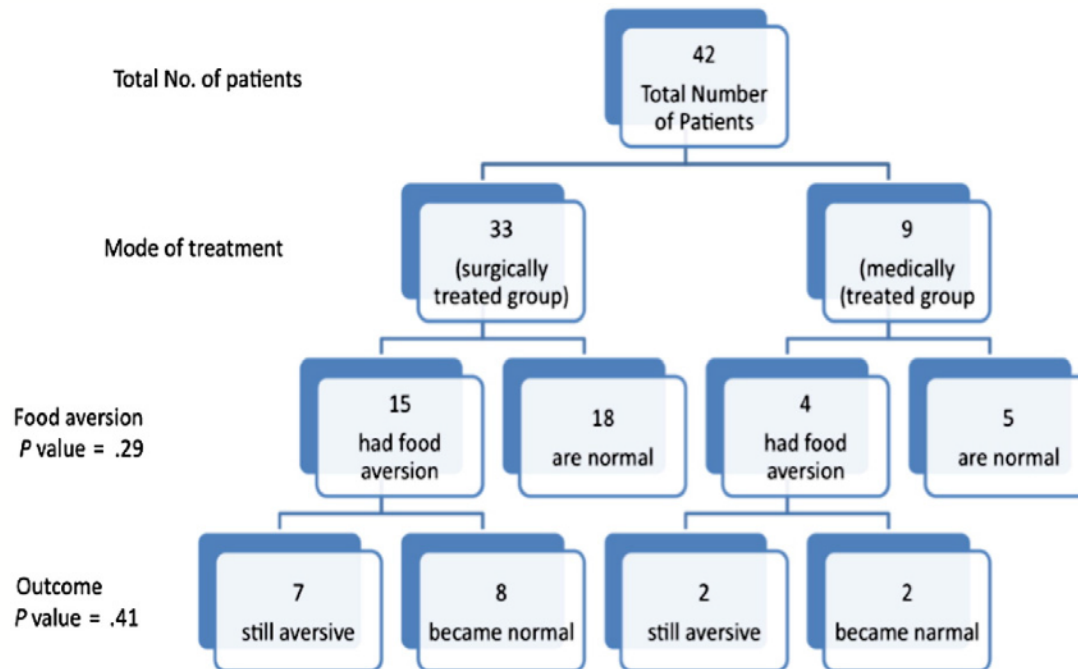
FEEDING ISSUES IN CONGENITAL HYPERINSULINISM

- HI Global Registry
 - 69% reported feeding issues
 - 40% appetite issues
 - 39% food refusal

Has the participant experienced any feeding issues regularly (check all that apply)?	All Participants	Diffuse			Focal			Other HI Type
	W/WO Surgery	No Surgery	Pancreat ectomy	Total	No Surgery	Pancreat ectomy	Total	No Surgery
	N (%)	N	N	N (%)	N	N	N	N (%)
No feeding issues	41 (31%)	15	3	18 (27%)	0	3	3	13 (38%)
Feeding Issues(s)	91 (69%)	32	16	48 (73%)	1	7	8	21 (62%)
<i>Poor appetite</i>	53 (40%)	20	10	30 (45%)	1	1	2	12 (35%)
<i>Refusing to eat</i>	52 (39%)	18	8	26 (39%)	1	4	5	13 (38%)
<i>Reflux</i>	38 (36%)	16	7	23 (35%)	0	4	4	6 (18%)
<i>Problems with texture</i>	38 (29%)	14	9	23 (35%)	1	3	4	8 (24%)
<i>Gagging</i>	35 (27%)	14	7	21 (32%)	0	1	1	6 (18%)
<i>Vomiting</i>	34 (26%)	12	6	18 (27%)	1	4	5	6 (18%)
<i>Uncoordinated oral skills</i>	27 (20%)	10	7	17 (26%)	1	1	2	6 (18%)
<i>Slow eating</i>	34 (26%)	16	8	24 (36%)	0	1	1	6 (18%)
<i>Coughing</i>	19 (14%)	8	6	14 (21%)	0	0	0	3 (9%)
<i>Overeating</i>	11 (8%)	7	2	9 (14%)	0	0	0	1 (3%)
Total	132	47	19	66	1	10	11	34

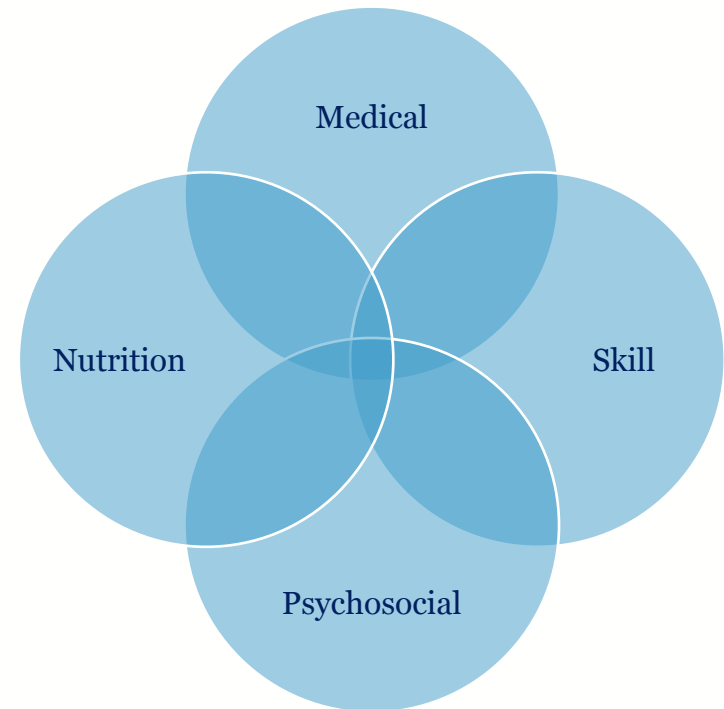
DOES TYPE OF HI TREATMENT CAUSE FEEDING DISORDERS?

- 45% had food aversion
- Mode of treatment did not impact likelihood of developing food aversion



HOW TO INTERVENE

- Presenting problems
- Contributing factors
- Desired outcomes
- Multidisciplinary
 - Medical
 - Nutritional
 - Skill-based
 - Psychological
- Impairment in one domain can lead to dysfunction in any of the others



HOW TO INTERVENE

- Behavioral intervention
 - Systematic desensitization
 - Shaping
 - Contingency management
 - Differential attention
- Nutritional intervention
 - Tube feeding manipulation
 - Mealtime scheduling



HOW TO INTERVENE

- Oral-motor intervention
 - Exercises before meals
 - Exercises outside of meals
- Other
 - Play therapy
 - Family therapy
 - Psychoeducation
- Caregiver teaching
- Outpatient, Day Hospital, Inpatient
- **Best available evidence supports behavioral intervention that includes nutritional manipulation**



ABC PARADIGM

- **A**ntecedent
 - What precedes or triggers the behavior
- **B**ehavior
 - What is the behavior of interest
- **C**onsequence
 - What happens after the behavior to ultimately change the frequency of the behavior



ABC PARADIGM

Antecedent: what precedes or triggers the behavior

- Factors that can disrupt the typical progression of feeding development
 - Discomfort associated with chronic medical condition
 - Endocrinologic, Gastrointestinal, Respiratory, Cardiac, Neurologic
 - Developmental
 - Delayed feeding skill acquisition
 - Anatomical
 - Dental decay, unrepaired tracheoesophageal fistula
 - Limited appetite
 - Organic, temperamental, learned, tube feeding schedule
 - Inconsistent mealtime routine
 - Difficult to develop a typical hunger/satiety cycle
 - Inappropriate presentation of food
 - Bite size, texture

ABC PARADIGM



Behavior: what is the target behavior

- Increase the consumption of food
 - Volume
 - Variety
 - Texture
- Decrease disruptive behavior



ABC PARADIGM

Consequence: feeding problem is maintained by environmental factors (inadvertent reinforcement)

- The consequence affects the likelihood of the behavior occurring in the future
 - Negative reinforcement
 - Child behaves inappropriately, parent removes the food, increases the likelihood the behavior will occur in the future
 - Positive reinforcement
 - Child behaves inappropriately, parent provides attention, increases the likelihood the behavior will occur in the future



- Caregivers have difficulty responding effectively to negative mealtime behavior
- Caregivers focus more on maladaptive eating behavior than appropriate eating behavior

BEHAVIOR SHAPING



- Change the **antecedent**
 - *Cannot have active physical discomfort for behavioral therapy to be successful*
 - Mealtime structure: develop hunger and satiety cycle
 - 3 meals, 2-3 snacks
 - Limit meals to 20-30 minutes
 - Minimize grazing
 - Optimize tube feeding schedule
 - Feed in developmentally appropriate supportive seating
 - Limit distractions
 - Texture progression
 - Gradual transition from baby food to pureed then mashed table foods
 - Avoid stage 3 baby foods
 - Avoid mixing crunchy foods into pureed foods

BEHAVIOR SHAPING

- Change the **consequence**
 - Use rewards instead of distractions
 - Alternate bites of preferred and non-preferred foods
 - Repeated introduction of new foods is needed before acceptance is established
 - Consistent approach across all caregivers



PEDIATRIC FEEDING AND SWALLOWING CENTER

Sherrri Cohen, MD, MPH

cohens@chop.edu

<https://www.chop.edu/centers-programs/pediatric-feeding-and-swallowing-center>

