Effective Treatments for Packing for Children with Feeding Disorders: A Systematic Review

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Background

According to ASHA (2017):

- 25% to 45% of typically developing children have feeding and swallowing issues.
- Feeding problems that have severe consequences, occur in 3% to 10% of children.
- Higher prevalence in children with physical disabilities (29% to 90%) and medical illness and prematurity (10% to 49%).
- A symptom of swallowing and feeding disorders can include "over-packing the mouth and/or pocketing foods".
- As a result of packing, children can experience poor weight gain, poor nutrition, dehydration, and aspiration or penetration.

An important outcome for this population is to decrease the amount of food they pack in their mouth during mealtime.

Purpose

The purpose of this project is to present a systematic review on treatments used for packing for children with feeding disorders.

The specific research question is: Which treatments effectively reduce packing in children with feeding disorders?

Packing is primarily defined as any food or liquid larger than a pea in a child's mouth, 30 seconds after the child is presented with a bite (Vaz, 2012).

- *Decrease* in packing

Mouth clean is primarily defined as no food in a child's mouth, 30 seconds after the child is presented with a bite (Sharp, 2010).

- *Increase* in mouth clean
- If mouth clean is evident, the child is not packing any food in their mouth.

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Results

Interventions (Studies)	Participants	Dosage (Meals/Day & Length of Meal)	Individual Percentage of Zero Data (PZD)	Mean Percentage of Zero Data (PZD)
Chaser (Vaz et al., 2012)	n= 3 Cliff, Age: 4 Dave, Age: 10 Ty, Age: 2	5 x/day 3 meals for 45 min. & 2 meals for 30 min.	Cliff: 55% Dave: 39% Ty: 100%	65%
Food Redistribution (Gulotta et al., 2005)	n= 4 Mary, Age: 5 Devin, Age: 2 Carl, Age: 2 Sarah, Age: 4	3-4 x/day for 30 min.	Mary: 42% Devin: 52% Carl: 0% Sarah: 0%	24%
Food Redistribution (Sevin et al., 2002)	n= 1 Claire, Age: 2.10	6-9 x/day for 1 hr.	Claire: 59%	59%
Food Textures (Patel et al., 2005)	n=3 Dylan, Age: 3 Caden, Age: 4 Jasper, Age: 4	5x/day for 20 min.	Dylan: 43% Caden: 52% Jasper: 52%	49%
Nuk Brush (Sharp et. al, 2010)	n= 1 Kelley, Age: 3	4x/day for 30-45 min	Kelley: 0%	0%
Simultaneous Presentation (Buckley et. al, 2005)	n= 1 Maria, Age: 9	1x/day for 22 min.	Maria: 0%	0%
Upright Spoon (Sharp et al., 2012)	n=3 Joshua, Age: 2.1 Jimmy, Age: 2.1 Greg, Age: 2.9	4 x/day 1 session for 30 min. & 3 sessions 45 min.	Joshua: 0% Jimmy: 31% Greg: 42 %	24%
Upright Spoon (Sharp et. al., 2010)	n= 1 Kelley, Age: 3	4x/day for 30-45 min.	Kelley: 0%	0%
Flipped Spoon (Volkert et al., 2011)	n= 2 Tracey, Age: 4 Jordan, Age: 5	1x/week for 1 hr.	Tracey: 100% Jordan: 33%	67%
Flipped Spoon (Sharp et al., 2012)	n= 3 Joshua, Age: 2.1 Jimmy, Age: 2.1 Greg, Age: 2.9	4 x/day 1 meal for 30 min. & 3 meals for 45 min.	Joshua: 71% Jimmy: 65% Greg: 83%	73%
Flipped Spoon (Sharp et. al., 2010)	n= 1 Kelley, Age: 3	4x/day for 30-45 min.	Kelley: 0%	0%
Flipped Spoon (Stubbs et. al., 2017)	n= 2 Zoe, Age: 3 Noah, Age: 2	4x/day for 40 min.	Zoe: 100% Noah: 88%	49%
Flipped Spoon + Chin Prompt (Dempsey et al., 2011)	n= 1 Brianna, Age:1.3	3x/day for 15 min.	Briana: 28%	28%
Flipped Spoon + Nonremoval of spoon + Pacifier (Rivas et. al., 2011)	n= 1 Jason, Age: 6 m.	1-3 x/day for 20 min.	Jason: 58%	58%
Nonremoval of spoon + Redistribution + Swallow Facilitation + Chaser (Levin, et. al., 2014)	n= 2 Nick, Age: 4 Cara, Age: 4	2-5 x/day for 30-45 min.	Nick: 99% Cara: 85%	92%
Differential Reinforcement + Response Cost (Buckley et. al., 2005)	n= 1 Maria, Age: 9	1x/day for 22 min.	Maria: 0%	0%
Differential Reinforcement + Response Cost + Simultaneous Presentation (Buckley et. al. 2005)	n= 1 Maria, Age: 9	1x/day for 22 min.	Maria: 0%	0%

Same Interventions Across Studies
Food Redistribution
Upright Spoon
Flipped Spoon

Studies with Multiple Interventions
Sharp et al., 2010
Buckley et al., 2005
Sharp et al., 2012

Ineffectiveness <18%
Questionable Effectiveness 18%-54%
Fair Effectiveness 55%-80%
High Effectiveness >80%

Literature Search

Search Terms: packing, feeding, intervention, feeding disorder, flipped spoon, food redistribution, decrease packing, children

Databases: ERIC, ScienceDirect, PsychInfo

Inclusion Criteria:

a) Packing and/or mouth clean were clearly defined and measured
b) Packing was a behavior seen in the child with the feeding disorder
c) Outcome measure determined by visualization of the oral cavity
d) Single subject designs only

Exclusion Criteria:

a) Packing or mouth clean was not defined
b) Packing or mouth clean was not outcome
c) Research designs that were not single subject

24 studies were found→11 were excluded→13 studies assessed→1 group design excluded→12 studies analyzed for review

Clinical Recommendations

• Findings suggest that a multicomponent approach to intervention for packing for children with feeding disorders, specifically involving non-removal of spoon (NRS), redistribution, swallow facilitation, and chaser, represent the best outcomes.

• This is supported by an average PZD score of 92% which correlates to a high effectiveness.

•Three out of the five interventions that were found to have fair effectiveness were included in the multicomponent approach that yielded the best results. Clinicians can draw the conclusion from the provided evidence that these interventions of fair effectiveness are less successful independently, but when implemented together result in increased effectiveness .

• Limitations included small sample sizes, inability to generalize treatments over various populations, and lack of diverse types of research designs.

•Future research should focus on including larger sample sizes and consider condensing the populations to more specific diagnoses.