



Feeding and eating problems in children with Down syndrome

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Feeding problems in Down syndrome

- Feeding problems reported in 50-68% of newborns with Down syndrome (Faulks et al., 2008; Lewis & Kritzinger, 2004 Spahis & Wilson, 1999) :
 - Exhaustion
 - Choking
 - Slow sucking reflex
 - Slow swallowing reflex
- Problems persist in early to mid-childhood e.g. 80% of children with Down syndrome below 7 years have problems with eating (Pipes & Holm, 1980; Van Dyke, Peterson, & Hoffman, 1990)
- Eating issues in late childhood and adulthood e.g. chewing, tongue protrusion, food spilling while eating (Hennequin et al., 2000)

Why do children with Down syndrome have feeding problems?

- Cooper-Brown et al. (2008)

Table 2. Feeding Problems in Down syndrome

Cause	Result	Feeding problem
Periodontal disease	Tooth loss	Poor chewing; pain
Reduced saliva Production	Dry mouth	Poor feeding
large tongue	Oral food loss	Difficulties swallowing
small oral cavity	Poor chewing	Incomplete chewing of food choking
narrow, short palate	Nasal aspiration	Pain; sneezing, choking
Severe bruxism	Dental damage	Pain; poor feeding
oral hypotonia	Poor suck	Choking, poor feeding
abnormal tongue movement	Pocketing of food	Retention of food; choking
uncoordinated suck and swallowing	Poor swallowing	Choking; aspiration; emesis

Ref: Van Dyke et al., 1990; Sterling et al., 1992.

Milk feeding in Down syndrome

- Milk feeding can be difficult and time-consuming (Cartwright & Boath, 2018)
- Mothers often attempt breastfeeding but encounter difficulties (Cartwright & Boath, 2018; Lewis & Kritzinger, 2004; Magenis et al., 2018; Sooben, 2012)
 - Hospitalisation of child
 - Insufficient milk supply
 - Sucking problems
 - Sleepiness and lack of feeding cues
 - Delay in establishing feeding
- Breastfeeding was sometimes discounted as an option despite being important to parents (Cartwright & Boath, 2018)



Credit - Maria de Fatima Campos

Introduction of solid food in Down syndrome

- Introduction of solids can be difficult and the period of transition can be prolonged (Faulks et al., 2008; Hopman et al., 1998)
 - Delay in introduction of different food groups
 - Vomiting
 - Food refusal



Feeding problems in early childhood in Down syndrome

- Feeding issues in early childhood (Ooka et al., 2012)
 - Chewing
 - Swallowing
 - Food-capturing
 - Mashing
 - Fewer issues with self-feeding, food selectivity or sensory dysfunction, in contrast to children with ASD or other intellectual disabilities
- Parents of Dutch children aged 1-3 years with Down syndrome did not report more feeding difficulties on a feeding questionnaire compared to typical development (van Dijk & Lipke-Steenbeck 2018)
 - However in a mealtime observation, there was relatively little self-feeding and many instances of tongue protrusion during chewing



Aims

- This study investigated relationships between feeding problems and eating behaviours of young children with Down syndrome.
 - Describe feeding problems and eating behaviours and explore relationships between these.
 - Explore parental experiences of feeding during infancy and the preschool years.

Participants

- 34 parents/carers of children with Down syndrome took part in the study
 - Parents were recruited from support groups online or in person
 - Parents of children aged 6 months to 5 years were invited to take part
 - 15 children were female, 19 were male



Questionnaires

Variable	Questionnaire	
Background information	Demographic questionnaire	Family and child characteristics, including experiences regarding feeding.
Infant Eating Behaviours	Baby Eating Behaviour Questionnaire (Llewellyn et al., 2011)	Reliable and valid parental measure of infant appetite during exclusive milk feeding (can be completed retrospectively).
Child Eating Behaviours	Child Eating Behaviour Questionnaire (Wardle et al., 2001)	Assesses obesogenic (e.g. food enjoyment, food responsiveness) versus obesity-protective (e.g. satiety responsiveness) eating behaviours.
Feeding problems	Montreal Children's Hospital Feeding Scale (Ramsay et al., 2011)	Reliable and valid parental report measure that identifies feeding problems from 6-months to 6-years-of-age.

Parent interviews

- Five parents who took part in the questionnaires also took part in a semi-structured interview to explore their experiences around feeding and eating
 - Milk feeding e.g. feeding plan, difficulties
 - Solid food e.g. weaning method, issues with textures/tastes, mealtimes
 - Support with feeding

Descriptives

	Mean	Standard deviation	Range
Child age	2 years 7 months	1.33 years	7 months – 5 years 4 months
Birth weight percentile	41.34	30.88	0.4 – 91 st
Child weight percentile	49.07	31.72	2nd – 98th
Breastfeeding duration	27.4 weeks	26.07 weeks	2 – 72 weeks
Age introduced to solids	6.25 months	1.77 months	4 – 12 months
Maternal BMI	24.42	5.28	18 – 39
Feeding problems (max. 98)	38.65	14.52	15-71

53% of mothers, and 41% of fathers, had a least one degree.

Feeding problems

- 10 (out of 34) children scored above the clinical cut-off for feeding problems (≥ 45 MCHFS)
- Feeding problems were not associated with:
 - Parental age
 - BMI
 - Education
 - Household income
 - Breastfeeding duration
 - Age of introduction to solid food

Feeding problems and milk feeding behaviours

Partial correlations (one-tailed) between feeding problems and infant eating behaviours (during milk feeding), controlling for infant birth weight.

		BEBQ				
		Food enjoyment	Food responsiveness	Slowness in eating	Satiety responsiveness	General appetite
MCHFS	<i>p</i>	-.38	-.40	.39	.26	-.45
	Sig	.02	.01	.02	.08	.01
	<i>df</i>	29	29	29	29	29

Feeding problems and solid food eating behaviours

Partial correlations (one-tailed) between feeding problems and children's current eating behaviours, controlling for child current weight.

		CEBQ							
		Food enjoyment	Food responsiveness	Emotional overeating	Desire to drink	Emotional undereating	Satiety responsiveness	Slowness in eating	Fussiness
MCHFS	<i>p</i>	-.62	-.48	.06	-.23	.29	.44	.65	.54
	Sig	<.001	.01	.39	.12	.07	.01	<.001	.001
	<i>df</i>	26	26	26	26	26	26	26	26

Parental expectations

Negative expectations of Down syndrome

Hopes of breastfeeding

Previous experience of breastfeeding

Milk feeding

Effect of hospitalisation and illness

Value of breastfeeding

Positive breastfeeding experiences

Challenges of breastfeeding

Challenges of expressing milk

Solid food

Parental feeding practices

1. Responsive and supportive practices
2. Controlling practices and beliefs
3. Practical strategies

Children's eating behaviours

1. Food approach
2. Food avoidant

Introduction of solid food

1. Age of introduction
2. Weaning style
3. Parental experiences

Mealtimes

Mealtimes are enjoyable for family and child

Worry and stress during mealtimes

Child difficulties with feeding and eating

Choking difficulties

Motor function difficulties

Oral difficulties

Tactile defensiveness

Health issues causing difficulties

Intolerances

No difficulties

Mothers' concerns

Support with feeding and eating

Have received support for strategies to promote feeding and eating

Positive about support from a range of professionals

Peer support has been helpful

Negative aspects of information

Would like more support and information

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Conclusions

- Evidence that children with Down syndrome have issues with feeding across the preschool years
- More feeding problems are associated with slower eating, fussier eating, not enjoying food, lower appetite, feeling full sooner, not wanting to eat
 - Similar pattern for milk feeding and solid food
- Mothers value breastfeeding despite challenges
- Parental feeding style is largely supportive and responsive to the child's needs and cues
- Generally, weaning and mealtimes are enjoyable for children and families
- Illness, hospitalisation, motor difficulties, tiredness and choking cause issues in milk feeding and introducing solid food
- Parents would like more support with breastfeeding and weaning

Future research

- More qualitative interviews with parents
- Validation with mealtime observations (van Dijk & Lipke-Steenbeck 2018)
- Exploring the views of health professionals who work with families of children with Down syndrome on feeding issues
 - Health visitors
 - Midwives
 - Speech and language therapists
- A longer-term study to explore longitudinal relationships between feeding, eating and weight

Thank you for listening!

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Any questions?

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