

PRELIMINARY FINDINGS OF SENSITIVITY & SPECIFICITY OF THE FEEDING MATTERS INFANT AND CHILD FEEDING QUESTIONNAIRE ©

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INTRODUCTION



- There are approximately 1,000,000 families throughout the nation that have children with severe feeding disorders. Many children with such struggles are not identified at well-child visits.
- Delays in treating feeding and swallowing disorders negatively impact child cognitive, physical, respiratory, gastro-intestinal, emotional and social development, and have an adverse effect on parent - child relationships.
- The web-based Infant and Child Feeding Questionnaire (ICFQ) was created through a consensus-based process by nationally-recognized feeding/swallowing experts representing multiple disciplines, in partnership with a non-profit organization known as Feeding Matters.
- The overall goal of this questionnaire is to improve PCP early identification and referral of children at risk for feeding/swallowing problems and appropriate intervention.
- The questionnaire is web-based for easy access by parents and professionals interested in its use at: www.feedingmatters.org/questionnaire
- Preliminary data collection without control for age group funded by the Dell E Webb Foundation indicated that several of the ICFQ questions showed differences between responses from 64 parents of children 36 months or younger with known feeding/swallowing problems and 54 parents of children without feeding/swallowing problems.

PURPOSE OF THE STUDY

To determine which items, or set of items, from the Feeding Matters ICFQ distinguish children with and without feeding/swallowing problems.

METHODS

Feeding Questionnaire

- Created in partnership with a consortium of nationally-recognized feeding and swallowing experts representing multiple disciplines.
- Automatically calculates a child's adjusted age if born prematurely (Less than 37 weeks gestation).
- Outlines various questions based on a child's age that aligns with well check visit milestones.
- Free and accessible online and can be completed within 10-15 minutes. Provides a printable summary of results to be further discussed between the caregiver and the child's medical professional team.

Subjects

- Parents or caretakers of children aged 36 months or younger were recruited to participate in this study from two study sites:
- A total of 64 parents of children 36 months or younger with known feeding/swallowing problems were recruited from the Children's Hospital of Wisconsin, Milwaukee, WI (MCW).
- A total of 57 parents of children without known feeding/swallowing problems were recruited from the University of California, Davis (UCD) Pediatric Outpatient Clinics; 54 met the inclusion criteria.

Data Collection

- Participants completed the online ICFQ and associated demographic questions.
- Data from research participants at UCD and MCW were anonymous, but tracked via the Feeding Matters web site.

Analysis of Data

- Demographic information was compared between parents from each testing site.
- Statistical comparison of the 12 core questions common across age-based questionnaires was completed to determine:
 - Odds Ratios for feeding behaviors as a sign of problems
 - Multivariable Stepwise Analysis to determine the cluster of behavior distinguishing groups.
 - Sensitivity and Specificity was determined for each question and clusters of questions.

Barkmeier-Kraemer J, Linn C, Thompson H, Silverman A (2014). Preliminary findings of sensitivity and specificity of the feeding matters infant and child feeding questionnaire. Poster session presented at American-Speech-Language-Hearing Association Annual Convention, Orlando, FL.

Silverman, A. H. (2015, June) The Infant and Child Questionnaire: A Method for Early Detection and Treatment of Feeding Problems. Workshop presentation to the 2015 Annual Pediatrics in the Red Rocks meeting of the Arizona Academy of Pediatrics, Sedona, AZ.

Barkmeier-Kraemer J, Silverman, A. H. (2015, February) The Infant and Child Questionnaire: Role as an Engagement Tool and a Potential Screening Tool. Workshop presentation to the Feeding Matters 2015 Pediatric Feeding Conference: It Takes a Village, Phoenix, AZ.

Barkmeier-Kraemer JM¹, Linn C, Thompson HL, Byrd RS, Steinfeld MB, Hoffmann RG, Silverman AH. Preliminary Study of a Caregiver-based Infant and Child Feeding and Swallowing Screening Tool. *J Pediatr Gastroenterol Nutr.* 2017 Jun;64(6):979-983. doi: 10.1097/MPG.0000000000001442.

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RESULTS

Demographic of Comparison Groups

- On average, the parent responses from older children predominated the MCW population compared to UCD.
- The UCD population represented greater ethnic diversity than did MCW's population.
- Marital status also differed between sites as did the income distribution.
- All other demographics appeared comparable between site populations.

Parent Group	Age of Child (mos)	Relationship to child	Marital Status	First Child	Size of Household	Education Level	Ethnicity	Income Level
Feeding Problems	27 (± 11)	88% Mother; 11% Father; 1% Grandmother	Single = 13%; Married = 73%; Divorced = 11%	47% = YES; 52% = NO	N=2 (8%); N=3 (27%); N=4 (42%); N=5 (17%); N=6 (5%)	Some HS = 3%; HS = 10%; Technical = 5%; Some Coll = 11%; College = 51%; Post Grad = 21%	Caucasian = 75%; Hispanic = 6%; Afr Amer = 3%; Asian = 8%; Other = 2%; Multi Racial = 2%	<\$15,000 = 9%; \$15-20,000 = 11%; \$21-50,000 = 19%; \$51-75,000 = 11%; \$76-100,000 = 19%; >\$100,000 = 23%
No Feeding Problems	8.6 (± 9)	89% Mother; 9% Father; 2% Grandmother	Single = 38%; Married = 58%; Divorced = 2%	55% = YES; 45% = NO	N=2 (7%); N=3 (31%); N=4 (24%); N=5 (18%); N=6 (20%)	Some HS = 7%; HS = 20%; Technical = 9%; Some Coll = 17%; College = 31%; Post Grad = 15%	Caucasian = 35%; Hispanic = 18%; Afr Amer = 20%; Asian = 15%; Other = 4%; Multi Racial = 7%	<\$15,000 = 24%; \$15-20,000 = 7%; \$21-50,000 = 15%; \$51-75,000 = 25%; \$76-100,000 = 5%; >\$100,000 = 16%
P Value	<.0001*	0.853	0.053	0.635	0.109	0.015*	0.0001*	0.114

* Indicates demographic variables that were significantly different between study groups.

ODDS RATIOS FOR FEEDING BEHAVIOR PROBLEMS

1. Coughs (OR=25.2)
2. **Falls asleep before the end of feedings** (OR=23.8)
3. Chokes (OR=20.5)
4. **Refuses to eat** (OR=18.6)
5. **Does not swallow** (OR=10.8)
6. Makes loud breathing noises (OR=9.49)
7. Gags (OR=6.7)
8. Turns away from the breast or bottle or cup (OR=5.33)
9. Arches his body (OR=2.59)

R² = 62.7% for presence of feeding/swallowing problems for the combined presence of the bold and underlined items above.

SENSITIVITY & SPECIFICITY RESULTS

Multivariable Analysis

- Stepwise analysis gave ROC curve = .97 - .98:
- **Q12: Based on the questions you have answered, do you have concerns about feeding your baby?**
- **Q4: Do you think your baby eats enough?**
- **Q1: Does your baby like to be fed?**
- **Q6: Do you often have to do anything special to help your baby eat?**

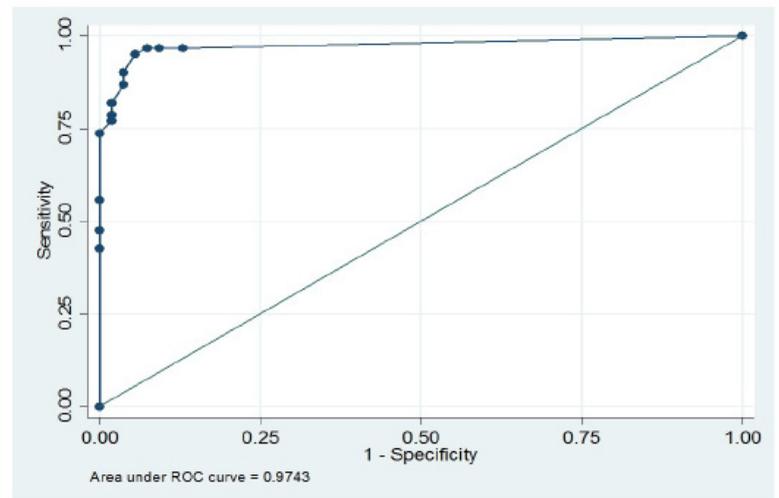
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CONCLUSION

Comparison of parent responses to 12 core questions on the ICFQ from those with children having known versus absent feeding and swallowing problems identified:

- Feeding behaviors differentiating children from each group.
- A cluster of 4 questions that highly distinguished those with and without feeding/swallowing problems.

Additional investigation of age-based differences is needed.