

PSYCHOMETRIC PROPERTIES OF THE INFANT AND CHILD FEEDING QUESTIONNAIRE

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INTRODUCTION

- A child with a pediatric feeding disorder is characterized as not feeding in an expected manner and may have nutritional, medical, and/or psychosocial etiologies and/or sequelae.¹
- Current estimates of pediatric feeding disorder prevalence range from 2% to 29% of children^{2,3} (i.e., 478 000–8.7 million in the US).⁴
- Unidentified and untreated symptoms of pediatric feeding disorder worsen over time, leading to significant health and behavioral complications.⁵
- The aim of the present study was to complete psychometric comparison of responses to the ICFQ from caregivers of children with and without pediatric feeding disorder younger than 4 years of age.

METHODS

Participants

- Caregivers of children with and without pediatric feeding disorder (age: birth to 4-years) were recruited equally from university hospital-based outpatient clinics at the 2 participating institutions.
- Diagnosis of pediatric feeding disorder required that the child be evaluated and diagnosed with pediatric feeding disorder by an interdisciplinary team or physician with special training in feeding and nutrition.
- The no feeding problems group had no feeding difficulties and were recruited from community well-child clinics visits.

Instruments

- Demographic Questionnaire
- Infant Child Feeding Questionnaire (ICFQ)

Procedures

- Participants from both groups completed the ICFQ.
- ICFQ summaries were printed and provided to the participants with a copy maintained by each site to confirm and validate data entries.

Statistical Analyses

- Probit regression was used to identify items from the ICFQ which differentiated group membership.
- Confirmatory factor analysis of the remaining items was conducted to ensure adequate psychometrics (unidimensionality, model fit, etc).
- To create a screening measure from these items, predictor items from the confirmatory factor analysis were summed and the area under the curve, sensitivity, and specificity statistics were calculated.
- To determine a clinical cutoff score the total number of independent screener items that were endorsed by respondents were considered to maximize sensitivity and specificity.

RESULTS

Identifying Screener Questions

- Responses of 989 caregivers (pediatric feeding disorders n = 331; no feeding problems n = 650) were obtained.
- The 11 items of the ICFQ and age were shown to explain 64% of variance for group membership.
- A subset of 6 items, along with child age, significantly distinguished group membership.
- Does your baby/child let you know when he/she is hungry?
- Do you think your baby/child eats enough?
- How long does it usually take to feed your baby/child? (Meal duration less than 5 minutes or greater than 30 minutes indicated problem)
- Do you often have to do anything special to help your baby/child eat?
- Does your child let you know when he/she is full?
- Based on the questions you have answered, do you have concerns about feeding your baby?
- Confirmatory factor analysis of these 6 suggested a good fit to a unidimensional (one factor) model: $\chi^2/df = 32.74/9$, $P < .01$; root mean square error of approximation (90% CI) = 0.048 (0.031–0.067), comparative fit index (CFI) = 0.99; standardized root mean square residual = 0.045.

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RESULTS CONT'D

Finalizing Screener Questions

- To determine whether the sum of the 6 questions identified from the core questions could be used as a screening questionnaire, a second probit regression analysis was conducted using only the 6 core question items identified in the earlier step.
- The total score of these items predicted group membership explaining 60% of variance (SE = 0.25, P < .001).

Determination of Screener Clinical Score

- Sensitivity of the 6 screening items was maximized when any 1 of the 6 question items was endorsed. However, the specificity was reduced, increasing the odds of false-positive screenings.
- When endorsement of 2 items was defined as a clinical threshold, the sensitivity was acceptable, and specificity increased.
- Clinical thresholds defined by 3 or more question items reduced the sensitivity to an unacceptable level.

Numbers of items endorsed	Sensitivity	Specificity
0	1.000	0
1	.910	0.738
2	.729	0.932
3	.539	0.974
4	.283	0.992
5	.100	0.995
6	.019	0.998
7	.000	1

DISCUSSION

- Although Primary Care Providers (PCPs) are best positioned to identify children with pediatric feeding disorder, they lack tools to reliably distinguish these from transient, minor feeding concerns.

DISCUSSION CONT'D

- Our results demonstrate that the questionnaire items of the ICFQ are psychometrically sound distinguishing children with pediatric feeding disorders from those without pediatric feeding disorder.
- This study demonstrated that 6 items of the original ICFQ may be used to develop a screening tool that shows similar discriminatory properties to the full ICFQ. When any 2 or more of the 6 screening questions are endorsed, the sensitivity (likelihood of detecting the greatest number of children with pediatric feeding disorder) in relation to the specificity (likelihood of detecting a true positive screening) are maximized.
- This may be a useful tool for healthcare providers who currently lack such clinical tools and may expedite the identification of individuals who have pediatric feeding disorder.
- Additional psychometric testing is needed to finalize the validity, reliability, and psychometric characteristics of the current screening tool items among clinical populations.

APPENDIX: DRAFT-SCREENING TOOL

INFANT & CHILD FEEDING AND SWALLOWING DISORDER SCREENING TOOL			
Does your baby/child let you know when he is hungry?	Yes	No	
Do you think your baby/child eats enough?	Yes	No	
How many minutes does it usually take to feed your baby (child)?	<5	5-30	>30
Do you often have to do anything special to help your baby (child) eat?	Yes	No	
Does your child let you know when he is full?	Yes	No	
Based on the questions you have answered, do you have concerns about feeding your baby?	Yes	No	
Total Score			
<p>Scores ≥ 2 are clinically significant Fit Statistics: $\chi^2/df = 32.74/9$, $p < 0.01$; Root Mean Square Error of Approximation (90% C.I.) = 0.048 (0.031 to 0.067), CFI = 0.99; Standardized Root Mean Square Residual = 0.045xt</p>			

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THE INFANT AND CHILD FEEDING QUESTIONNAIRE SCREENING TOOL

Feeding Matters' innovative Infant and Child Feeding Questionnaire® (ICFQ®) was authored in partnership with internationally renowned thought leaders representing multiple disciplines related to feeding. The ICFQ® is an age specific tool designed to identify potential feeding concerns and facilitate discussion with all members of the child's healthcare team.

According to a seminal study published in the 2020 Journal of Pediatrics*, the ICFQ® has been shown to accurately identify and differentiate pediatric feeding disorder (PFD) from typical feeding development in children 0-4 years of age based on caregiver responses to 6 specific questions. This 6-question quick screener continues to undergo research as Feeding Matters strives to promote the early identification of PFD.

6-QUESTION SUBSET

Does your baby/child let you know when he is hungry?	YES	NO	
Do you think your baby/child eats enough?	YES	NO	
How many minutes does it usually take to feed your baby/child?	<5	5-30	>30
Do you have to do anything special to help your baby/child eat?	YES	NO	
Does your baby/child let you know when he is full?	YES	NO	
Based on the questions above, do you have concerns about your baby/child's feeding?	YES	NO	

Red flag answers are in orange. If 2 or more of your answers are orange please contact your pediatrician.

Concerned? Take the full questionnaire:
feedingmatters.org/questionnaire



feeding matters

WHO IS FEEDING MATTERS

Feeding Matters, a 501c3 nonprofit, is the first organization in the world uniting families, healthcare professionals, and the broader community to improve the system of care for children with PFD through advocacy, education, support, and research. Use of this screener tool brings us one step closer to a world where children with PFD will thrive.

EARLY IDENTIFICATION

Expediting the identification of PFD may prevent the development of conditions that negatively impact a child's cognitive, physical, emotional and social development. Feeding is an intricate and complex skill that develops within a feeding relationship. Earlier detection and treatment of PFD also may reduce adverse effects on caregiver- child relationships. By completing the ICFQ[®] screening, children can be directed to appropriate specialists for more formal assessments and management. The first step in reducing the risk of increased symptom severity is identification.

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