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Articles

# Contributing to Content Validity of the Infant-Driven Feeding Scales© through Delphi surveys

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ABSTRACT

The Infant-Driven Feeding Scales© (IDFS) assess a preterm infant's readiness for oral feeding, evaluate the infant's quality of feeding, provide a guide for intervention, and provide a standardized format for documentation (Ludwig and Waitzman, 2007). Since its inception, the IDFS have evolved over time with changes in language and clarity founded on clinical experience, best-practice information from the literature, and knowledge of existing infant feeding assessments. This paper presents additional evidence to support the content validity of the IDFS by reporting opinions collected from neonatal feeding experts by way of the Delphi Technique. Updates to the IDFS are presented.



Oral feeding issues in neonates are not only a developmental concern, but often prolong hospitalization and increase healthcare costs.[1,2] In fact, 40% of the patients seen in feeding disorder clinics are former preterm infants and according to Hawdon et al, long-term feeding problems are a serious and often unrecognized consequence of neonatal conditions.[3,4] Neurodevelopmental maturation is critical to oral feeding behaviors in the premature population.[5–7]

Yet historically feeding preterm infants in the neonatal intensive care unit (NICU) has been based on weight and gestation, rather than feeding behaviors exhibited by the infant. When premature infants do not demonstrate physiological and developmental maturation, they often cry, vomit, aspirate, become apneic, or reject their feedings.[8] Nonetheless, feeding preterm infants in the NICU has been viewed as a routine task among the more lifesaving efforts that surround this level of care.[9] This view is incongruous with the complexities of providing safe oral feeding practices for this fragile population. Therefore, oral feeding is not benign. It requires an attentive, educated caregiver, an engaged infant, intentional human interaction and a system for consistent, safe implementation and documentation.

There is a gap that exists between what literature indicates as best practice and the actual practices that infants endure throughout their NICU stay. Traditional oral feeding practice does not include the neuroprotective and neurodevelopmental care principles, such as individualized assessment or age-appropriate education about feeding the preterm or fragile infant. It does not include identification of feeding techniques that are based on developmental skills or which foster long-term success. Traditional practice lacks an infant-driven structure and is instead staff oriented and volume-driven, while quality is often overlooked.

Nationally, practices surrounding the preterm infant's transition to oral feeding remain inconsistent. These practices vary among institutions and likely between providers and caregivers in the same NICU as a result of subjective assumptions on the part of the team.[10]

In response to this inconsistency and subjectivity, Ludwig and Waitzman published the Infant-Driven Feeding Scales© (IDFS) in 2007. The IDFS are comprised of 3 scales used to assess preterm infants' oral feeding readiness, measure the quality of feeding performance, guide feeding intervention, and provide a standardized format for documentation.[11] They were designed for infants who are medically stable and are 33 weeks gestation.

The IDFS Readiness Scale is a numeric 5-point scale whereby 1 or greater and 2 describe feeding readiness behaviors that may lead to an oral feeding (breast or bottle), and 3-5 describe behaviors and factors that lead to tube feeding. The IDFS Quality Scale is a numeric 5 point scale that describes a range of specific feeding behaviors and factors seen when infants engage in oral feeding. In both the Feeding Readiness and Quality Scales a score of 5 reflects autonomic instability and may raise the caregivers' attention as to the safety of oral feeding. The IDFS Caregiver Technique Scale is presented in alpha characters. This differentiation was made to highlight caregiver behaviors (supportive techniques) during feeding versus behaviors of the infant. This scale describes the caregiver techniques that may be appropriate to use in the NICU, and excludes the array of caregiver habits that are often seen in the traditional NICU practice.

Overall, the IDFS were developed to simplify and objectify documentation while improving caregivers' awareness of infant feeding behaviors, consistency of feeding practice, and autonomy of the beside caregiver, while redefining neonatal feeding success to

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include quality, skill development and safety. The scales are infant-driven, meaning that feeding is based upon observed behaviors and stability of the infant rather than limited to age, weight or other physiologic parameters. The IDFS also provides a standardized format for documentation, which can provide all health care providers with a clearer picture of the infant's feeding abilities and progress toward discharge. In addition, the language and structure of the IDFS is consistent with parameters of electronic medical documentation.[11]

The IDFS are intended to be used within the Infant-Driven Feeding® (IDF) Model of Practice; a comprehensive neurodevelopmental approach to oral feeding that begins at admission, includes breast and bottle feeding, seamless inclusion of the family, and sets the stage for long-term feeding success. The IDF Model of Practice establishes a consistent flow of critical decisions based on individualized infant-driven care.

Since its inception in 2000, the Infant-Driven Feeding Scales © have evolved with changes in language and clarity founded on clinical experience, best-practice information from the literature, and knowledge of existing infant feeding assessments. These three approaches all contribute to the content validity of the IDFS. Content validity investigates how well the items contained within an assessment represent the domain that is being assessed.[12] Content validity is a systematic process which may include review of the literature, review of existing instruments associated with the domain, and collection of opinions from domain experts.[13]

This paper presents additional evidence to support the content validity of the Infant-Driven Feeding Scales © by reporting opinions collected from neonatal feeding experts by way of the Delphi Technique. The Delphi Technique utilizes opinions of experts to come to a consensus of professional opinion.[14] Three steps are associated with the Delphi method: (1) clarification of the topic, (2) development of questions of interest, and (3) identification of a panel of experts.[15] Opinions are commonly collected from the expert panel via surveys or questionnaires. The researchers collect the opinions, analyze the results, and make revisions to the survey. After revisions are made, the participants provide opinions again. The steps of analyzing the responses, re-writing the survey, and re-distributing the survey continue until the professional participants come to consensus.

The Delphi technique does not have a set size for the panel of experts. A wide range of panel size has been reported. Linstone and Turoff who helped develop this technique, stated that the Delphi technique can be used "anywhere from 10 to 50 people."[16] The sample sizes in Delphi studies are typically situation specific. For smaller more specialized topics the sample size tends to be smaller, whereas with more general topics the sample sizes tend to be larger.[17]

Also, there is no agreement regarding the operational definition of consensus. Some state that consensus should be defined as 100% agreement among participants; while others maintain that 100% is unrealistic suggesting that 55% agreement would be adequate.[15] Ultimately, the percentage chosen is based on the panel size and the specificity of topic being studied.[15]

## Methods

The participants for this project were purposefully selected neonatal experts from the fields of nursing, occupational therapy, speech language-pathology, and physical therapy. In order to ensure that a range of opinions was represented, the project investigators identified thirty-five clinicians from the eight United States Census Bureau divisions. Individuals were considered to be an expert based on one or more of following: (a) provision of care to infants in a highly ranked neonatal intensive care unit, (b) publications on the topic of infant feeding, (c) presentations at national conferences on the topic of infant feeding, and/or (d) recognition by colleagues for their extensive practice experience with premature infants.

Following IRB approval, the thirty-five clinicians were contacted by email and directed to a secured internet site to provide consent. In addition, information relating to professional discipline, type of clinical practice, level of education, and specialty credentials was collected. Participants agreeing to participate were then contacted again by email and directed to a secured internet site to begin Round-1 of the project. Ten was the minimum of number of initial participants established for this project.

'SelectSurvey' (an internet-based survey software)[18] was used to collect opinions. Round-1 of the survey focused on opinions relating to content, wording, and order of the items on each of the three scales (Feeding Readiness, Quality of Nippling, and Caregiver Techniques). The level of acceptable consensus was set at 65% agreement. Items that did not reach this level of agreement were rewritten by the authors of the IDFS and redistributed as Round-2.

Opinions obtained from the panel members were known only to the third member of the research team. The authors of the Infant-Driven Feeding Scales© were blinded to the participants and their individual opinions.

## Results

### *Participants*

Twelve experts consented to participate in the study; however, only ten completed Round-1 and eight completed Round-2. The initial ten participants represented four disciplines: five occupational therapists, three speech/language pathologists, one physical therapist, and one neonatal nurse practitioner. Five participants possessed a baccalaureate degree, four a master degree, and one held a doctoral degree. All participants reported direct involvement in feeding infants in neonatal intensive care nurseries within the past five years. The majority of the participants (70%) had participated in scholarly presentations on the topic of infant feeding at conferences or workshops. In addition, 30% had published on the topic of infant feeding (2–5 publications) and 30% had been involved in infant feeding research.

### *Infant-Driven Feeding Scales – Readiness*

Participants were asked a series of questions relating to the content of the IDFS-Readiness Scale, with a specific focus on important considerations, appropriate items to assess, wording of items, and hierarchical ranking.

Regarding important factors to consider, participants were asked to respond to the question "Which of the following are important considerations when assessing an infant's readiness to oral feed?" Complete consensus (100%) was reached for each of the readiness factors presented (alertness, hunger behavior, muscle tone, oxygen saturation, heart rate, respiratory rate, and work-of-breathing).

As shown in Table 1, consensus of opinion (more than 65% consensus) was reached regarding items that are appropriate to assess infant feeding readiness.

Opinions regarding two options for wording of Item 5 of the IDFS-Readiness Scale were also collected. Wording options of item 5 failed to meet the 65% consensus requirement. Five participants (50%) selected the first option ("significant changes in HR, RR, O2, WOB over baseline with care"). The other five participants (50%) selected the second option ("apnea/bradycardia/desaturation/tachypnea/work-of-breathing over baseline with care"). This question was rewritten by the authors of the IDFS, based on comments from the participants, and resubmitted to the panel as Round-2 with the wording: "Significant autonomic changes outside safe parameters – HR, RR, O2, or work of breathing". Seven of the eight panel members that participated in Round-2 indicated that the wording of the item was now appropriate (87.5%).