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# Factor Structure and Psychometric Properties of the Neonatal Eating Assessment Tool–Breastfeeding

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## ABSTRACT

The purpose of this study was to identify the factor structure of the Neonatal Eating Assessment Tool–Breastfeeding (NeoEAT–Breastfeeding) and to assess its psychometric properties, including internal consistency reliability, test–retest reliability, and construct validity as measured by concurrent and known-groups validity. Exploratory factor analysis conducted on responses from 402 parents of breastfeeding infants younger than 7 months old showed a 62-item measure with seven subscales and acceptable internal consistency reliability (Cronbach's $\alpha = .92$). Test–retest reliability was also acceptable ($r = .91$). The NeoEAT–Breastfeeding has evidence of concurrent validity with the Infant Gastroesophageal Reflux Questionnaire ($r = .69$) and Infant Gastrointestinal Symptoms Questionnaire ($r = .62$). The NeoEAT–Breastfeeding total score and all subscale scores were higher in infants with feeding problems than in typically feeding infants ($p < .001$, known-groups validity). The NeoEAT–Breastfeeding is a parent-report assessment of breastfeeding in infants from birth to 7 months old with good initial evidence of reliability and validity.

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The American Academy of Pediatrics recommended that all infants be exclusively breastfed for the first 6 months of life (Eidelman et al., 2012). The 2016 Breastfeeding Report Card indicates that although 81.1% of new mothers initiate breastfeeding, only 22.3% exclusively breastfeed at 6 months (Centers for Disease Control and Prevention, 2016). Not all mothers intend to exclusively breastfeed until the recommended 6 months, but research findings indicate that half of mothers are not able to meet their intended goals for breastfeeding and that they supplement with formula or cease breastfeeding earlier than planned (DiGirolamo, Grummer-Strawn, & Fein, 2008; Perrine, Scanlon, Li, Odom, & Grummer-Strawn, 2012). Infant feeding difficulties and difficulties with sucking and latching have been found to be among the greatest infant contributors to discontinuation of breastfeeding in the first several months (Ahluwalia, Morrow, & Hsia, 2005; Li, Fein, Chen, & Grummer-Strawn, 2008; Odom, Li, Scanlon, Perrine, & Grummer-Strawn, 2013; Wagner, Chantry, Dewey, & Nommsen-Rivers, 2013).

Early identification of an infant who experiences difficulty with breastfeeding and referral to a breastfeeding specialist is critical to sustaining breastfeeding. An assessment tool that can be completed by the parent and shared with the health care provider would be useful for the provider, especially one with limited knowledge about breastfeeding. It could be used to identify infants who struggle with breastfeeding and for referrals to breastfeeding specialists. A valid and reliable breastfeeding assessment tool is also needed for use in breastfeeding research.

## Literature Review

We conducted a systematic review of the literature in June 2015 (Pados, Park, Estrem, & Awotwi, 2016) and updated this review in December 2017 to evaluate currently available tools for the assessment of infant feeding behavior during breastfeeding. PubMed and CINAHL were searched using the terms *breastfeeding* or *breast feeding* AND *assessment* or *tool* or *scale* or *instrument*. The following limits were placed on the search: full text, humans, English, and infant (age range = birth–23 months). No limit was placed on publication dates. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) diagram of the results of the

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> **Currently, there is not a comprehensive assessment of infant behavior during breastfeeding that has published evidence of strong psychometric properties.**

December 2017 search is presented in Figure 1. The primary inclusion criterion was that an article contained a discussion of at least one assessment tool for the evaluation of a breastfeeding infant. Articles were excluded if there was no discussion of a formal assessment tool or if the assessment tool discussed was related to some other construct that pertained to breastfeeding. Assessment tools for the evaluation of tongue-tie, maternal attitudes toward breastfeeding, breastfeeding self-efficacy, and mother–infant interactions (e.g., Nursing Child Assessment

Feeding Scale [Barnard, 1978]), for example, were not included. Although these aspects of breastfeeding are very important and breastfeeding is a dyadic experience, it is critical that the infant's behavior be assessed as a unique contribution to the breastfeeding dyad so that breastfeeding intervention is properly targeted.

Forty-six articles included at least one assessment of breastfeeding. From these 46 articles, 20 potential breastfeeding assessment tools were identified. On further investigation, 10 of these tools were excluded because they were used for **Q4** research purposes only: The Child Feeding Checklist (Pridham, Steward, Thoyre, Brown, & Brown, 2007), the Breastfeeding Assessment Tool (Bono, 1992), and the Maternal Rating of Infant Behavior (Mathisen, Worrall, Wall, &
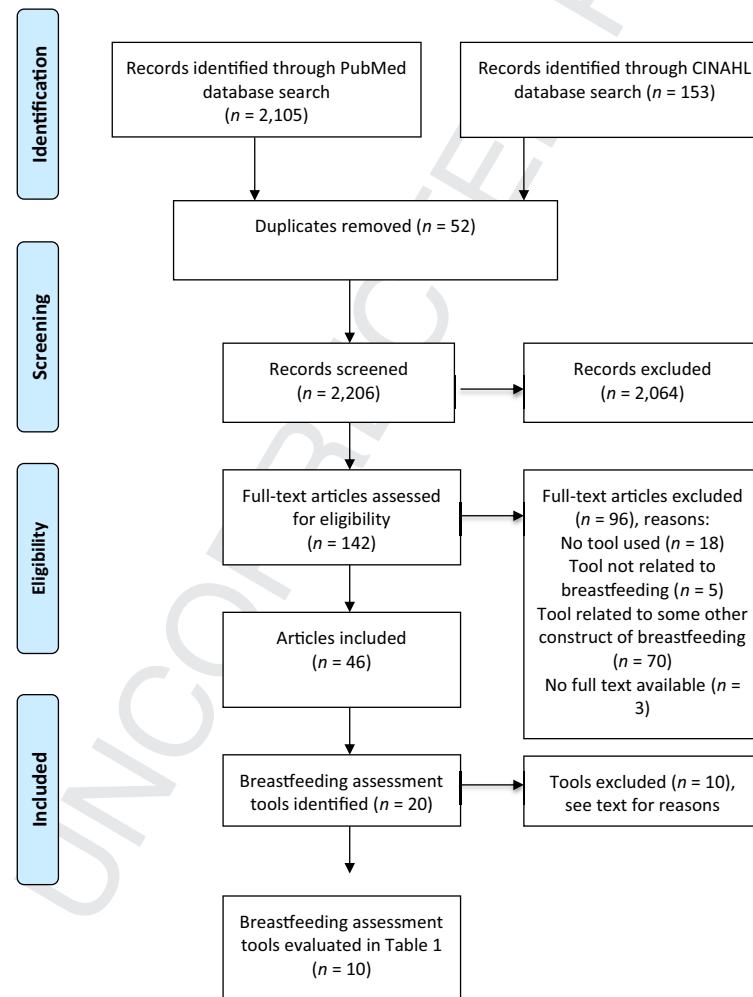


**Figure 1.** Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) diagram of literature search results.

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