Instrument for measuring maternal attitudes, knowledge and self-confidence towards breastfeeding: Literature review

Hanifatur Rosyidah[1,*], Wardatun Nafisah[2], Endang Surani[3], Hadijah Nakatudde[4]

[1]Midwifery Department, Universitas Islam Sultan Agung, Semarang, Indonesia
[2]Nursing officer Midwifery, Reproductive and Child Health Department, Ministry of Health, Kampala, Uganda
hanifa.r@unissula.ac.id*
*corresponding author

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ABSTRACT

The level of exclusive breastfeeding in Indonesia has still not reached the expected target. According to the World Health Organization (WHO), in 2019 the average rate of exclusive breastfeeding in the world was around 38%. This is far above the target of 50%. The causes of low coverage of exclusive breastfeeding are influenced by lack of awareness of the importance of breastfeeding, lack of maternal self-confidence, and low knowledge about the benefits of breastfeeding for mothers and babies. The research aims to describe and compare breastfeeding assessment instruments which include assessing mothers' attitudes, knowledge and beliefs in exclusive breastfeeding. The method used in this review is identification based on keywords, screening titles and abstracts, and selecting based on inclusion and exclusion criteria. The total of 10 articles were reviewed. According to 10 articles, 7 instruments were obtained, such as NeoEAT-Breastfeeding and IIFAS, which are effective in assessing the attitudes, knowledge, and beliefs of breastfeeding mothers. Overall, the instruments mentioned above can be used by healthcare workers to assess a mother's ability to breastfeed, with the note that validation and adaptation of the instrument into the national language are required.

1. Introduction

According to the WHO, the American Academy of Pediatrics, and the European Society for Pediatric Gastroenterology, Hepatology, and Nutrition (ESPGHAN), breastfeeding is the optimal method for feeding infants and young children (Bień, 2021). Breast Milk (ASI) is recognized worldwide as the ideal nutrition for newborns due to its significant health benefits for both children and mothers. During the first six months of life, exclusive breastfeeding is recommended, followed by the gradual introduction of complementary foods, while continuing breastfeeding until the child is two years old or beyond (Cotelo, 2018).

However, the rate of exclusive breastfeeding in Indonesia still falls short of the desired targets. According to WHO data from 2019, the global average for exclusive breastfeeding was only 38%, well below the target of 50%. The national target for exclusive breastfeeding is 80%, but in 2022, the coverage in Indonesia was recorded at only 67.96%, a decrease from 69.7% in 2021, indicating a need for more intensive support to improve this rate (World Health Organization, 2023).

Exclusive breastfeeding is crucial for optimal physical and mental growth and development in infants. Non-exclusive breastfeeding is often linked to health issues, including an increased risk of stunting, which refers to a child's height being significantly shorter than that of peers. Inadequate

breastfeeding for less than six months can lead to poor nutritional status, hindering a child's growth and development (Janmohamed et al., 2020).

Several factors contribute to the low rates of exclusive breastfeeding, including inadequate healthcare support, a lack of awareness regarding the importance of breast milk, low maternal confidence, and limited knowledge about the benefits of breastfeeding (Govoni et al., 2019). Mothers who are well-informed about exclusive breastfeeding are more likely to exhibit positive behaviors regarding breastfeeding than those who lack knowledge. Poor maternal attitudes can be influenced by inadequate knowledge of exclusive breastfeeding and low motivation, often rooted in cultural beliefs that promote introducing complementary foods before six months of age. Additionally, a lack of confidence in the sufficiency of breast milk can negatively impact breastfeeding practices (Bruggemann et al., 2007).
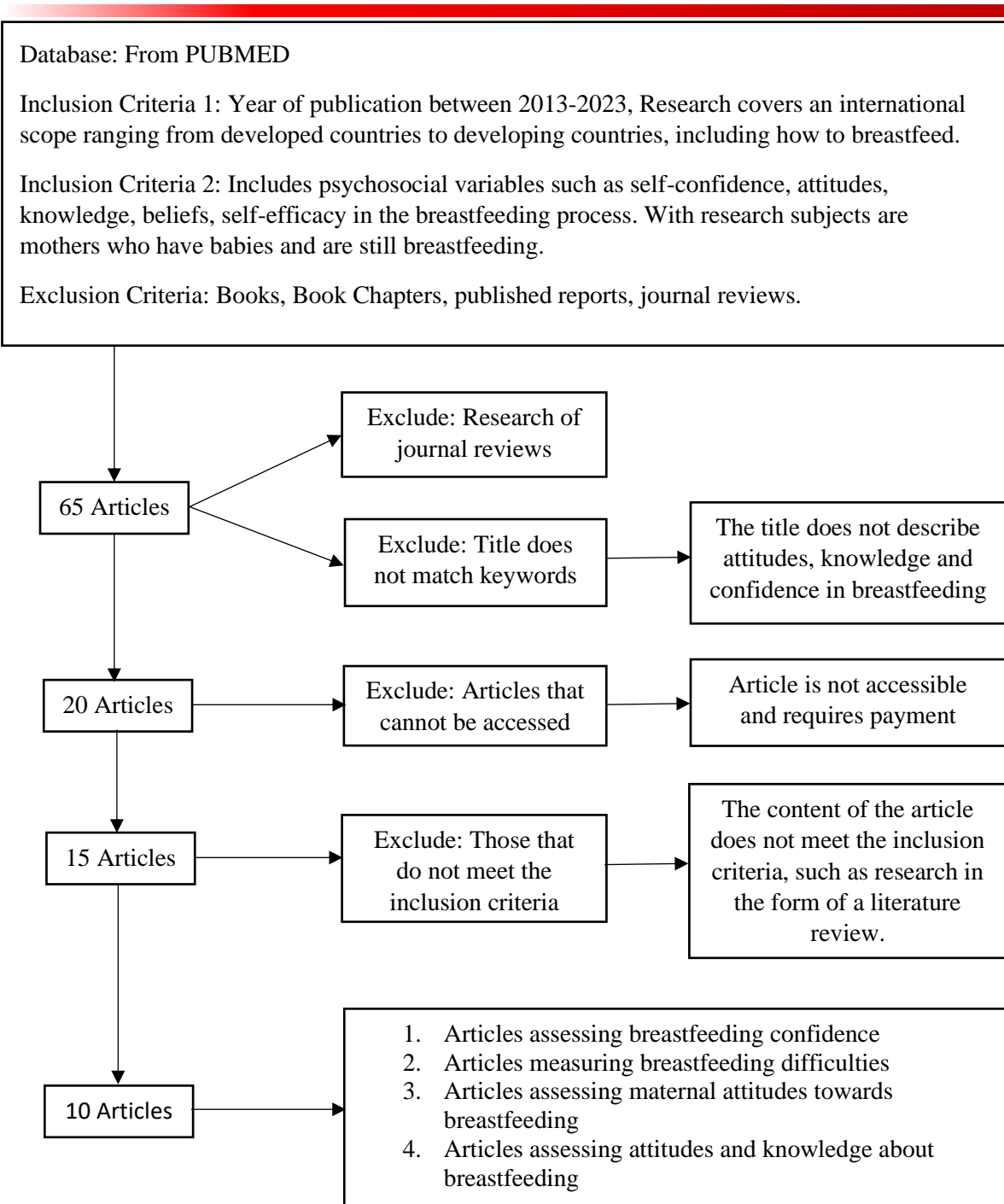
Thus, the purpose of this literature review is to describe and compare various breastfeeding assessment instruments that evaluate mothers' attitudes, knowledge, and beliefs regarding exclusive breastfeeding.

2. Method

This study uses a literature review method with an article search in PubMed during November-December 2023 using keywords related to "breastfeeding instruments", as well as index verification through Scopus. The selected instrument is an instrument that can be used to measure the mother's ability to breastfeed which includes attitudes, knowledge, self-confidence, beliefs, and self-efficacy in the breastfeeding process.

Inclusion criteria were: (1) Publication years between 2013 and 2023, (2) Studies covering both developed and developing countries, (3) Research on breastfeeding methods, and (4) Inclusion of psychosocial variables such as self-confidence, attitudes, knowledge, beliefs, and self-efficacy in the breastfeeding process.

From the last ten years, a total of 65 articles were identified. The initial screening based on relevant titles yielded 20 articles. The second screening, based on accessibility, resulted in 15 articles. The final screening assessed the content against the inclusion criteria, leading to the selection of 10 articles: 1 article assessing self-confidence in breastfeeding, 2 articles measuring breastfeeding difficulties, 4 articles evaluating maternal attitudes toward breastfeeding, and 3 articles analyzing attitudes and knowledge about breastfeeding. Of these 10 articles, all are indexed in Scopus, with 6 in Scopus Q1 and 4 in Scopus Q2.

Database: From PUBMED

Inclusion Criteria 1: Year of publication between 2013-2023, Research covers an international scope ranging from developed countries to developing countries, including how to breastfeed.

Inclusion Criteria 2: Includes psychosocial variables such as self-confidence, attitudes, knowledge, beliefs, self-efficacy in the breastfeeding process. With research subjects are mothers who have babies and are still breastfeeding.

Exclusion Criteria: Books, Book Chapters, published reports, journal reviews.

65 Articles

Exclude: Research of journal reviews

Exclude: Title does not match keywords → The title does not describe attitudes, knowledge and confidence in breastfeeding

20 Articles → Exclude: Articles that cannot be accessed → Article is not accessible and requires payment

15 Articles → Exclude: Those that do not meet the inclusion criteria → The content of the article does not meet the inclusion criteria, such as research in the form of a literature review.

10 Articles →
1. Articles assessing breastfeeding confidence
2. Articles measuring breastfeeding difficulties
3. Articles assessing maternal attitudes towards breastfeeding
4. Articles assessing attitudes and knowledge about breastfeeding

3. Results and Discussion

This study focuses on psychosocial variables such as maternal attitudes, knowledge, and self-confidence in breastfeeding, with international coverage from developed to developing countries. From the 10 articles identified, 7 instruments were found to be used for assessing mothers' attitudes, knowledge, and beliefs regarding breastfeeding. These instruments are: Neonatal Eating Assessment Tool-Breastfeeding (NeoEAT-Breastfeeding), Bristol Breastfeeding Assessment Tool (BBAT), Breastfeeding Self-Efficacy Scale-Short Form (BSES-SF), Australian Breastfeeding Knowledge and Attitude Questionnaire (ABKAQ), Iowa Infant Feeding Attitude Scale (IIFAS), Breastfeeding Knowledge Questionnaire (BFKQ), and LATCH.

3.1 Neonatal Eating Assessment Tool-Breastfeeding (NeoEAT-Breastfeeding)

The Neonatal Eating Assessment Tool-Breastfeeding (NeoEAT-Breastfeeding) is a parent-report assessment tool comprising 62 items designed to evaluate problematic breastfeeding behaviors in infants under 7 months of age. This measure has demonstrated validity and reliability (Pados et al., 2018).

What sets NeoEAT-Breastfeeding apart from other breastfeeding assessment tools is its comprehensive focus on the infant's behavior during breastfeeding, rather than on maternal symptoms (such as breast pain) or maternal self-efficacy.

This tool can be utilized by healthcare providers to identify infants experiencing breastfeeding difficulties, determine contributing factors to feeding challenges, and assess responses to breastfeeding interventions. Notably, there is no previously reported reference data on breastfeeding behaviors in Indonesia. Assessments using NeoEAT-Breastfeeding have shown a reduction in problematic breastfeeding behaviors during the first seven months of life in healthy, developing infants (Pados et al., 2020, 2018).

3.2 Bristol Breastfeeding Assessment Tool (BBAT)

The Bristol Breastfeeding Assessment Tool (BBAT) was developed by Jenny Ingram in 2015 to assess postpartum breastfeeding difficulties, and its validity has been established. This tool is effective for identifying issues related to a baby's tongue (Ingram et al., 2015). The Cronbach's alpha value for the BBAT was found to be 0.688. The BBAT employs a Likert scale with four items: positioning, attachment, sucking, and swallowing (Dolgun et al., 2018).

Position : The baby is well-supported, attached to the mother's body, lying on their side with no twisted neck, nose directed toward the nipple, and the mother holding the baby securely.

Attachment : Positive attachment with the mouth wide open, the baby achieving a quick latch with sufficient areola in the mouth and maintaining good attachment during breastfeeding.

Sucking : The baby forms an effective sucking pattern on both breasts (initial quick sucking followed by slow sucking with pauses).

Swallowing : Achieving audible, regular, and gentle suck patterns without clicking sounds.

3.3 Breastfeeding Self-Efficacy Scale-Short Form (BSES-SF)

To evaluate breastfeeding self-efficacy, Dennis and Faux (1999) developed the Breastfeeding Self-Efficacy Scale (BSES) consisting of 31 items. In 2003, Dennis aimed to create a shorter version due to the need for fewer items, ensuring internal consistency and factor loading. The Short Form (BSES-SF) includes 14 items and demonstrates unidimensional factor structure explaining approximately 58% of the total variance, with factor loadings exceeding 0.65.

The Cronbach's alpha coefficient for the BSES-SF is 0.94, showing expected correlational patterns with self-esteem, postpartum depression, and perceived stress. It also distinguishes between multiparous mothers, who have higher self-efficacy in breastfeeding, and primiparous mothers. Predictive validity has been confirmed, indicating significant differences between breastfeeding and bottle-feeding mothers (Asgarian et al., 2020).

BSES-SF has been validated among mothers in Italy on days two or three postpartum (Petrozzi & Gagliardi, 2016), Mandarin-speaking mothers on the third day postpartum (Ip et al., 2016), and mothers in Sweden during the first week postpartum (Gerhardsson et al., 2014). Researchers consistently report adequate reliability for BSES-SF (Cronbach's alpha > 0.90 in many cases) and acceptable construct and predictive validity (Asgarian et al., 2020).

Family support is essential for encouraging mothers and enhancing their confidence, thereby increasing their motivation to provide exclusive breastfeeding (Asgarian et al., 2020; Bruggemann et al., 2007; Victora et al., 2016).

3.4 Australian Breastfeeding Knowledge and Attitude Questionnaire (ABKAQ)

The Australian Breastfeeding Knowledge and Attitude Questionnaire (ABKAQ) was designed to measure the knowledge and attitudes of healthcare professionals regarding breastfeeding (Yang et al., 2018). The ABKAQ consists of 60 items, including 20 attitude items and 40 knowledge items. The knowledge subscale includes an additional "don't know" category, while the attitude subscale employs a 5-point Likert scale ranging from strongly disagree (1) to strongly agree (5).

Content validity for this 60-item scale was assessed by three medical professionals with breastfeeding expertise in primary care and a researcher with educational experience in breastfeeding. The reliability of this tool in assessing breastfeeding knowledge and attitudes is high, with Cronbach's alpha values of 0.83 and 0.84, respectively (Grover-Baltazar et al., 2021). The ABKAQ has been utilized in various studies to assess the breastfeeding knowledge and attitudes of healthcare professionals or nursing students (Yang, 2018).

3.5 Iowa Infant Feeding Attitude Scale (IIFAS)

The Iowa Infant Feeding Attitude Scale (IIFAS) was developed by de la Mora et al. in the late 1990s to assess mothers' attitudes toward breastfeeding to explain low breastfeeding rates in the United States at that time. Since its development, IIFAS has proven to be a strong predictor of intentions, initiation, and duration of breastfeeding. The scale has been adapted and validated in several countries, demonstrating good predictive validity and excellent internal consistency with Cronbach's alpha ranging from 0.79 to 0.86 (Abdulahi, Fretheim, & Argaw, 2021).

IIFAS consists of 17 items validated to assess mothers' attitudes toward infant feeding, specifically within the Canadian population in 2014, showing strong internal consistency with a Cronbach's alpha of 0.87 (Twells et al., 2016). Two systematic reviews published in 2007 and 2010 addressed breastfeeding assessment tools and ultimately recommended the use of IIFAS as the best tool for measuring infant feeding attitudes in clinical settings (Alkusayer et al., 2018).

3.6 Breastfeeding Knowledge Questionnaire (BFKQ)

The Breastfeeding Knowledge Questionnaire (BFKQ) was developed in Malaysia to assess breastfeeding knowledge. It consists of a total of 47 questions covering various domains related to breast milk, including its benefits for mothers and infants, colostrum, effective feeding methods, breastfeeding duration, expressed milk, breast engorgement, breastfeeding issues, and practical aspects of breastfeeding. Each item offers categorical responses: 'true,' 'false,' or 'not sure.'

A study in Ethiopia indicated that the overall Cronbach's alpha for the BFKQ was 0.79, demonstrating good internal consistency reliability. For specific domains, the Cronbach's alpha coefficients were satisfactory (> 0.7) for expressed milk and colostrum, breastfeeding duration, benefits for mothers and effective feeding, benefits for infants, breastfeeding issues, breast engorgement, and practical aspects of breastfeeding (Abdulahi, Fretheim, Argaw, et al., 2021).

3.7 LATCH

The LATCH tool was developed in 1994 in the U.S. by nurses Deborah Jensen and Sheila Wallace to document breastfeeding assessments during individual sessions. Each letter of the LATCH acronym represents a characteristic:

L – Latch : Refers to the quality of the baby's attachment to the breast.

A – Audible Swallowing : Refers to the sound of swallowing heard during breastfeeding.

T – Type : Evaluates the type of nipple.

C – Comfort : Refers to the mother's comfort regarding her breast and nipple.

H – Hold/Help : Refers to the need for assistance in positioning the baby.

Each item is scored from 0 to 2 points, with a maximum score of 10; higher scores indicate more effective breastfeeding. The original version of this instrument had a Cronbach's alpha of 0.93, while the Turkish adaptation had a coefficient of 0.95. The tool has been published in English and validated in Spanish, Italian, and Turkish (Da Conceição et al., 2017).

Table 1. Summary of Findings

No	Article Title	Country/ Year	Design	Respondents	Measurement	Research Findings
1	Neonatal Eating Assessment Tool-Breastfeeding: Reference Values for Infants Less Than 7 Months old	USA, 2019 .	Quantitative, cross-sectional	N=457 (Parents of healthy infants under 7 months)	NeoEAT-Breastfeeding	Highest problematic breastfeeding symptoms at 0–2 months, decreasing in older age groups
2	Reliability and Validity of the Bristol Breastfeeding Assessment Tool in the Turkish Population	Turkey, 2017	Quantitative, methodological	N=127 (Healthy mothers and infants)	Kappa model evaluation	Good internal consistency (Cronbach's alpha = 0.77) and high ICC (0.89).
3	Translation, Validation, and Psychometric Properties of Breastfeeding Self-Efficacy Scale—Short Form Among Iranian Women	Iran, 2019	Quantitative, cross-sectional	N=174 (Mothers on postpartum day 1)	BSES-SF (14 items)	No significant self-efficacy score difference between primiparous and multiparous women.
4	Validation of the Spanish-Mexican Version of the Australian Breastfeeding Attitude Questionnaire in Higher Education Health Students	Mexico, 2021	Quantitative, cross-sectional	N=200 (Health students)	ABKAQ (20 attitude items, 40 knowledge items)	Instrument is reliable and valid for evaluating attitudes toward breastfeeding.
5	Adaptation and validation of the Iowa Infant Feeding Attitude Scale and the Breastfeeding Knowledge Questionnaire for use in an Ethiopian setting	Ethiopia, 2020	Quantitative, cross-sectional	N=468 (Pregnant women)	BFKQ and IIFAS	Both instruments are reliable and valid for assessing knowledge and attitudes in the study population.
6	Attitudes, Perceptions, and Knowledge of Breastfeeding Among Professional Caregivers in a Community Hospital	USA (New Jersey), 2020	Quantitative, cross-sectional	N=196 (Healthcare providers)	IIFAS	Pediatricians scored lower in attitudes towards breastfeeding; overall positive perceptions among providers.
7	Determinants of Knowledge and Attitude towards Breastfeeding in Rural Pregnant Women Using Validated Instruments in Ethiopia	Ethiopia, 2021	Quantitative, cross-sectional	N=468 (Rural pregnant women)	BFKQ and IIFAS	60.9% neutral attitude; 52.4% showed increased knowledge.
8	Validation of the Chinese Version of the Australian Breastfeeding Attitude Questionnaire	Taiwan, 2018	Quantitative, prospective survey	N=205 (Nursing students)	ABKAQ-SF	No sociodemographic differences in scores; those breastfed as infants had higher scores.
9	Psychometric Assessment and Precision Remodeling of the Iowa Infant Feeding Attitude Scale to Improve Clinical Use and Efficacy Among Prenatal Women in Canada	Canada, 2017	Quantitative, cross-sectional	N=1,283 (Pregnant women)	IIFAS	Higher total scores correlated positively with breastfeeding intention ($p<0.001$).
10	Validity and Reliability of the Infant Breastfeeding Assessment Tool, the Mother Baby Assessment Tool, and the LATCH Scoring System	Brazil, 2017	Quantitative, cross-sectional	N=46 (Nurses)	LATCH	Strong positive correlation between evaluator scores and total IBFAT score.

4. Conclusion

Based on the literature review regarding the measurement of knowledge, attitudes, self-efficacy, and/or satisfaction among breastfeeding mothers, it can be concluded that several of the instruments mentioned above are suitable options for healthcare professionals to assess mothers' breastfeeding capabilities. However, there are still some instruments that have not yet been adapted and validated in Bahasa Indonesia, one of which is the IIFAS. The use of IIFAS is considered the best tool for measuring mothers' attitudes toward breastfeeding and meets the criteria for an ideal measurement for the population in Indonesia. This presents an opportunity for researchers to utilize existing tools and modify them according to specific needs or populations.

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