

SCIENTIFIC THEORIES ON BREASTFEEDING AND THEIR LINKS WITH THE NURSING PROCESS: A SCOPING REVIEW

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ABSTRACT

Objective: Map existing scientific theories in the literature on human breastfeeding and their links with the stages of the Nursing Process.

Method: A scoping review guided by the methodological guidelines proposed by the JBI was carried out in two stages. In the first stage, scientific theories on human breastfeeding were identified through MEDLINE/PubMed, CINAHL/EBSCO, Scopus, LILACS, and Embase searches with no time frame. Afterward, a search was made for articles indicating that these theories were linked to the stages of the Nursing Process.

Results: The Breastfeeding Self-Efficacy Theory, the Tri-Core Breastfeeding Model, and the Interactive Breastfeeding Theory were identified. Concerning the links with the Nursing Process, the Breastfeeding Self-Efficacy Theory covers four stages, namely: Assessment, Planning, Implementation, and Evolution. The Tri-Core Breastfeeding Model covered the Planning and Implementation stages. On the other hand, the Interactive Breastfeeding Theory was linked to all the stages of the Nursing Process: Assessment, Nursing Diagnosis, Planning, Implementation, and Evolution.

Conclusion: The study made it possible to map scientific theories about human breastfeeding and their links with the stages of the Nursing Process, broadening the discussion about the potential of theoretical models as references capable of supporting the execution of the different stages of the Nursing Process in clinical care.

DESCRIPTORS: Breastfeeding Theoretical Models. Nursing Process. Nursing theory. Mother and Child Health.

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TEORIAS CIENTÍFICAS SOBRE AMAMENTAÇÃO E ARTICULAÇÕES COM O PROCESSO DE ENFERMAGEM: UMA REVISÃO DE ESCOPO

RESUMO

Objetivo: Mapear as teorias científicas existentes na literatura sobre a amamentação humana e suas articulações com as etapas do Processo de Enfermagem.

Método: Revisão de escopo guiada pela diretiva metodológica proposta pelo JBI, realizada em duas etapas. Na primeira etapa identificaram-se as teorias científicas sobre a amamentação humana por meio de buscas nas bases MEDLINE/PubMed, CINAHL/EBSCO, Scopus, LILACS e Embase, sem recorte temporal. Posteriormente, buscou-se pelos artigos indicativos da articulação destas teorias com as etapas do Processo de Enfermagem.

Resultados: Identificaram-se a Teoria da Autoeficácia na Amamentação, Modelo Tri-Core de Aleitamento Materno e a Teoria Interativa de Amamentação. No que tange às articulações com o Processo de Enfermagem, a Teoria da Autoeficácia na Amamentação contemplou quatro etapas, a saber: Avaliação, Planejamento, Implementação e Evolução. O Modelo Tri-Core de Aleitamento Materno contemplou as etapas de Planejamento e Implementação. Em contrapartida, a Teoria Interativa de Amamentação se articulou com todas as etapas do Processo de Enfermagem: Avaliação, Diagnóstico de Enfermagem, Planejamento, Implementação e Evolução.

Conclusão: O estudo possibilitou mapear as teorias científicas sobre a amamentação humana e suas articulações com as etapas do Processo de Enfermagem, ampliando a discussão acerca das potencialidades dos modelos teóricos como referenciais capazes de subsidiar a execução das diferentes etapas do Processo de Enfermagem no cuidado clínico.

DESCRIPTORES: Aleitamento Materno. Modelos Teóricos. Processo de Enfermagem. Teoria de Enfermagem. Saúde Materno-Infantil.

TEORIAS CIENTÍFICAS SOBRE LACTANCIA MATERNA Y ARTICULACIONES CON EL PROCESO DE ENFERMERÍA: REVISIÓN DE ALCANCE

RESUMEN

Objetivo: Identificar las teorías científicas existentes en la literatura sobre lactancia humana y su articulación con las etapas del Proceso de Enfermería.

Método: Revisión guiada por las directrices metodológicas propuestas por el JBI, realizada en dos etapas. En la primera etapa, se identificaron teorías científicas sobre lactancia humana a través de búsquedas en las bases de datos MEDLINE/PubMed, CINAHL/EBSCO, Scopus, LILACS y Embase, sin marco temporal. Luego se buscaron artículos que indicaran que estas teorías estaban vinculadas a las etapas del Proceso de Enfermería.

Resultados: Se identificaron la Teoría de la Autoeficacia en Lactancia Materna, el Modelo Tri-Core de Lactancia Materna y la Teoría Interactiva de Lactancia Materna. En cuanto a sus vínculos con el Proceso de Enfermería, la Teoría de la Autoeficacia en la Lactancia Materna abarcaba cuatro etapas, a saber: Evaluación, Planificación, Implementación y Evolución. El Modelo *Tri-Core* de Lactancia Materna abarcaba las etapas de Planificación e Implementación. Por otro lado, la Teoría Interactiva de Lactancia Materna se articuló con todas las etapas del Proceso de Enfermería: Evaluación, Diagnóstico de Enfermería, Planificación, Implementación y Evolución.

Conclusión: El estudio posibilitó identificar las teorías científicas sobre lactancia humana y sus vínculos con las etapas del Proceso de Enfermería, ampliando la discusión sobre el potencial de los modelos teóricos como marcos referenciales que contribuyan a la implementación de las diferentes etapas del Proceso de Enfermería.

DESCRIPTORES: Lactancia materna. Modelos Teóricos. Proceso de Enfermería. Teoría de Enfermería. Salud Maternoinfantil.

INTRODUCTION

The link between theories and the Nursing Process (NP) dates back to the twentieth century, possibly taking root in the movement to create nursing theories in the United States of America between the 1960s and 1980s. As a result, academics in the discipline claim that there is a combination of characteristics of the scientific method with desirable elements of the art of nursing and relevant elements of theoretical systems¹.

However, the link between theories and NP is currently moving towards a more limited scope, for example, in the construction of theories to substantiate and develop evidence of nursing diagnoses, outcomes, and interventions^{2,3,4}. Also, the most recent resolution of the Federal Nursing Council that standardizes the NP⁵ reaffirmed the role of theoretical support as conceptual and operational theoretical frameworks that provide descriptive, explanatory, predictive, and prescriptive properties that serve as its basis.

The progressive link between theory and NP points to the alignment of concepts, events, phenomena, or conditions laid out in professional terminologies and classifications with other theories that have already been produced. This requires knowledge of the available theories to move forward with the desired integration⁴. This requirement is no different for explanations and theoretical prescriptions related to the breastfeeding process.

Human breastfeeding is a complex biopsychosocial phenomenon, historically investigated by different areas of knowledge, and the benefits of breastfeeding go beyond the mother-child relationship, benefiting the planet as a whole. Its relevance involves reducing mortality from preventable causes in children under five, reducing the risk of developing breast cancer, reducing treatment costs in health systems, contributing to the fight against hunger and malnutrition, and promoting food security⁶. In addition to being a “renewable” food, produced and supplied without polluting rivers and oceans, without harming marine life, it does not produce packaging or waste, it is not predatory on natural resources, as it saves energy, and water and avoids waste⁷.

Mapping the knowledge contained in theories on breastfeeding can bring advances to explanations of the breastfeeding process, and to verify the extent to which the available theories can establish predictions, for example, between variables related to the mother-baby binomial and adherence to breastfeeding. Theories can specify relevant aspects in the quantification and characterization of the knowledge produced, particularly for nursing, supporting the planning and implementation of care through conceptual and epistemological bases.

Despite the value of theories, the literature has not identified any initiatives to map and link scientific theories on human breastfeeding with the stages of the NP. Therefore, it is justifiable to map knowledge through a scoping review to summarize the evidence on the subject⁸, thus revealing possible theoretical frameworks, theories, and models that can facilitate the necessary theory-process integration regarding human breastfeeding.

Given the above, this study aims to map the scientific theories in the literature on human breastfeeding and their links with the stages of NP.

METHOD

A scoping review was carried out according to the methodological steps of the JBI⁹ and following the recommendations of the international guide PRISMA-ScR¹⁰, developing a search in databases to first identify scientific theories on human breastfeeding, and then to locate articles that had elements indicating the link of theories with the stages of the NP.

Methodological procedures for the scoping review

The methodological procedures for this review were: defining the review question; identifying the relevant studies; selecting the studies; mapping the data and cross-checking, summarizing, and reporting the results⁹. The review question “What are the scientific theories on breastfeeding that are linked with the NP?” was elaborated with the acronym PCC (Population, Concept, Context), being: (P) pregnant women who plan to breastfeed, breastfeeding people and breastfeeding children; (C) scientific theories for or about breastfeeding that are linked with the NP; and, for (C), no specific context was delimited.

The first stage of identifying theories involved searching databases from May to June 2023, using the Rayyan reference manager, without delimiting the time frame, to obtain the largest number of publications on the subject. The search strategies were developed with the help of a librarian with experience in drawing up review protocols. The descriptors from the Medical Subject Headings were used: “Pregnant Women”; “Pregnancy”; “Sexual and Gender Minorities”; “Infant”; “Models, Theoretical”; “Nursing Process” and “Breast Feeding”. The Boolean operators “AND” and “OR” were used for the cross-referencing, constructing the most appropriate search strategies according to the base, according to Chart 1.

Chart 1 – Search strategies according to database. Macaé/Rio de Janeiro, 2024.

Database	Search strategy
MEDLINE/PubMed	((("Pregnant Women" OR Pregnancy OR "Sexual and Gender Minorities" OR Infant)) AND (("Models, Theoretical" OR "Nursing Process")) AND ("Breast Feeding"))
CINAHL/EBSCO	((("Pregnant Women" OR Pregnancy OR "Sexual and Gender Minorities" OR Infant)) AND (("Models, Theoretical" OR "Nursing Process")) AND "Breast Feeding")
Scopus	("Pregnant Women" OR pregnancy OR "Sexual and Gender Minorities" OR infant) AND ("Models, Theoretical" OR "Nursing Process") AND "Breast Feeding"
LILACS	((("Pregnant Women" OR Pregnancy OR "Sexual and Gender Minorities" OR Infant)) AND (("Models, Theoretical" OR "Nursing Process")) AND ("Breast Feeding"))
Embase	('pregnant women'/exp OR 'pregnant women' OR 'pregnancy'/exp OR pregnancy OR 'sexual and gender minorities'/exp OR 'sexual and gender minorities' OR 'infant'/exp OR infant) AND ('models, theoretical'/exp OR 'models, theoretical' OR 'nursing process'/exp OR 'nursing process') AND ('breast feeding'/exp OR 'breast feeding')

Original articles, reflections, integrative and systematic reviews on scientific theories about breastfeeding, published in Portuguese, English, or Spanish, were included. The following were excluded: letters to the editors, reviews, and studies that dealt with the phenomenon of breastfeeding without being specifically about breastfeeding theories. Initially, the titles and abstracts of the studies captured in the databases were analyzed (n=599) and, after applying the selection criteria, the potential studies were read in full (n=37). These steps were carried out in a double-independent manner by two reviewers, and disagreements were discussed in a panel of three reviewers.

Methodological procedures for the link with the stages of the Nursing Process

To verify the links between the theories and the stages of NP, research that used these theories as a theoretical reference was analyzed. To capture the studies, articles were selected that cited the original articles that presented, described, or discussed the theories. For this purpose, the Google Scholar Citations platform was accessed in December 2023 and January 2024, and, from the lists of citations of the studies, original articles, reflections, integrative or systematic reviews that used the theories identified as theoretical references were included. The studies selected had to be in Portuguese, English, or Spanish. Letters to the editor, dissertations, theses, and reviews were excluded. This stage was carried out independently by two reviewers and, in cases of disagreement, both discussed until a consensus was reached.

Procedurally, these steps were followed: identification of additional articles on the theory, extraction of relevant information, and summarization of the propositions, products, and contributions of the theory; determination of the descriptive, explanatory, prescriptive, and/or predictive nature of the theory; interpretation of the findings and extrapolation to the context of the NP stages.

To link the theories to the NP stages, the theoretical findings were first attributed to the descriptive, explanatory, prescriptive, and predictive nature of each theory. After this process, the links were made, through a formal and interpretative exercise to analyze the theoretical propositions and their contributions to the research, with the different stages of the NP.

To identify, extract, and summarize the propositions and purposes of the theory, attempts were made to answer the question: "What are the constructs and/or theoretical propositions and/or products and/or contributions pointed out by the scientific theory?". The descriptions of the purposes of the theories¹¹ were used for the second stage. In the interpretative extrapolation, the recent descriptions of the NP stages proposed by COFEN Resolution 736/2024⁵ were used.

As this study was a review, it did not need to be assessed by a Research Ethics Committee. The studies retrieved were identified and duly referenced, maintaining the originality of the primary texts. The protocol for this study was registered on the Open Science Framework Registries platform under registration 10.17605/OSF.IO/EQP4G.

RESULTS

The search in databases to identify scientific theories on human breastfeeding resulted in 689 productions, 77 articles in the Medical Literature Analysis and Retrieval System Online (MEDLINE) database, 129 in CINAHL/EBSCO, 194 in Embase Brazil, 272 in Scopus, and 17 articles in the Latin American Literature in Health Sciences (*Literatura Latino-Americana em Ciências da Saúde*, LILACS). After applying the stages of the PRISMA-ScR methodology, the inclusion and exclusion criteria, three publications were included in the corpus of this study. The publication selection process is shown in Figure 1.

Chart 2 shows the articles retrieved and the descriptions of the scientific theories on human breastfeeding.

In a second instance, aiming to identify the links between these theoretical frameworks and the stages of the NP, research that used these theories as a reference was captured. The original articles of the theories were cited 816 times, with 701 citations of the study of the Breastfeeding Self-Efficacy Theory, 69 of the Interactive Breastfeeding Theory, and 59 of the Tri-Core Breastfeeding Model.

When the selection criteria were applied, 406 citations were excluded for not using the theory as a reference; 168, for being characterized as another type of study (letters to the editor, dissertations, theses, or reviews); 143, for being in other languages; 44, for not addressing the issue

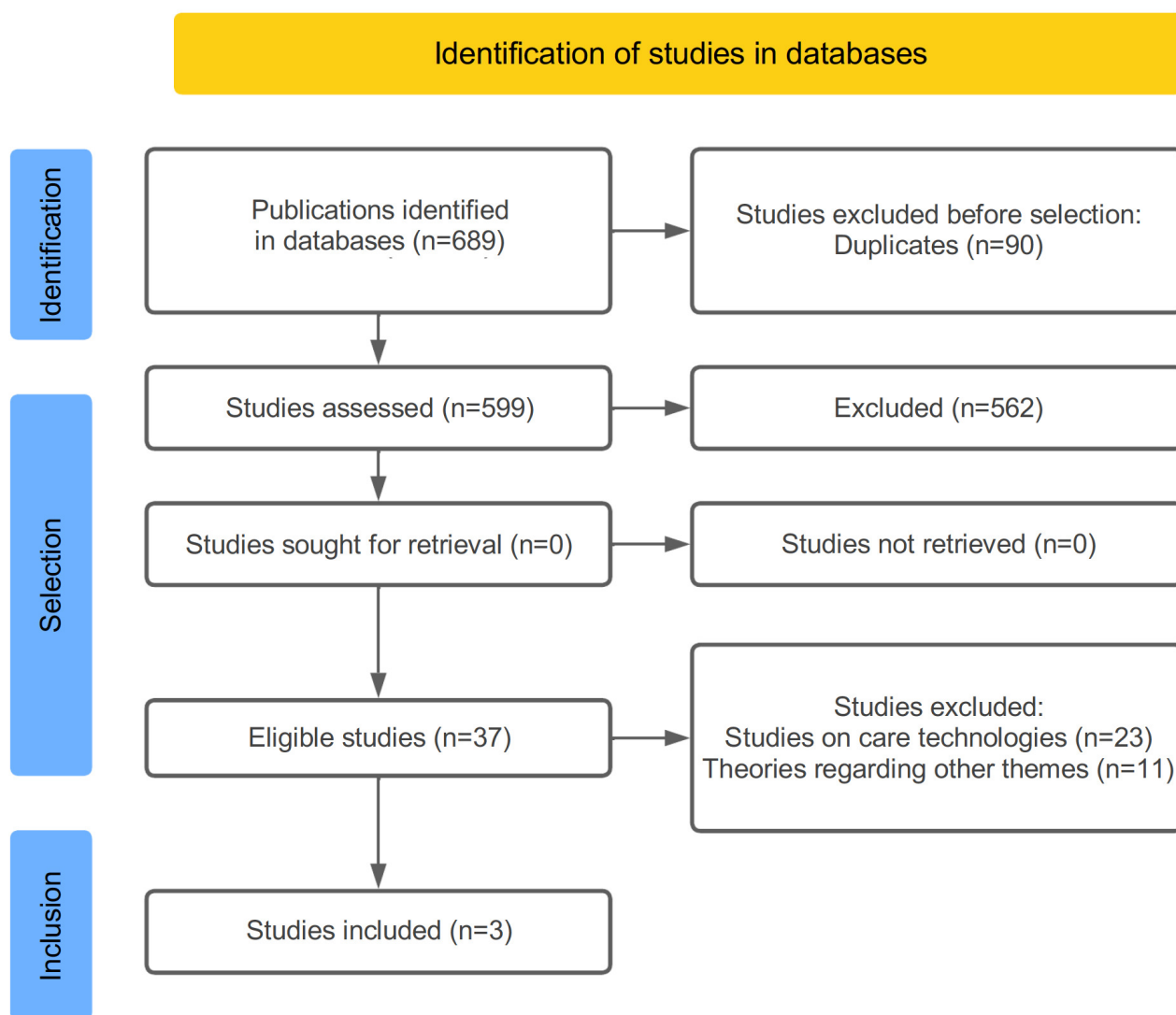


Figure 1 – Selection process of publications in the databases. Macaé/Rio de Janeiro, 2024.

of breastfeeding; and 12, for being unavailable at the time of the search. Thus, ten studies using the Breastfeeding Self-Efficacy Theory, two using the Tri-Core Breastfeeding Model, and 12 using the Interactive Breastfeeding Theory were included, as shown in Chart 3.

After analyzing the studies that used scientific theories on breastfeeding, each theory was assigned a descriptive, explanatory, predictive and/or prescriptive nature, and these frameworks were linked with the stages of the NP, as shown in Chart 4.

The Breastfeeding Self-Efficacy Theory, which is descriptive, explanatory, predictive, and prescriptive, was mentioned by 10 scientific articles, which used it as a reference for the construction of a measuring instrument for nursing assessment, to support the planning, implementation, and evolution of the effectiveness of interventions in the care of the mother-baby binomial. The Tri-Core Breastfeeding Model was understood to be descriptive and prescriptive, based on its use in two captured studies. These studies linked the model of the stages of planning and implementing the NP.

The Interactive Breastfeeding Theory, classified as descriptive, explanatory, predictive, and prescriptive based on its use in 12 investigations, was linked with all the stages of the NP, as it served as the basis for the construction of an assessment scale, directed the identification of human responses presented by the mother or baby and guided the planning, implementation, and evolution of nursing care.

Chart 2 – Captured articles describing the scientific theories identified on human breastfeeding, Macaé/Rio de Janeiro, 2024.

Title	Authors	Identified theory	Journal and year
Theoretical underpinnings of breastfeeding confidence: a self-efficacy framework ¹²	Dennis CL.	Breastfeeding Self-Efficacy Theory	Journal of Human Lactation, 1999
Theoretical constructs and/or propositions of the theory: Self-efficacy in breastfeeding is related to the mother's perception of her ability to breastfeed her baby and the belief that she has sufficient knowledge and skills to breastfeed the child adequately. Mothers who have a higher level of breastfeeding self-efficacy are more likely to overcome barriers that may arise. The theorist states that self-efficacy is influenced by four main points: (a) personal experience, such as successful personal performance in previous breastfeeding experiences; (b) vicarious experience, such as seeing other women breastfeeding successfully; (c) verbal persuasion, such as encouragement to breastfeed by other influential people, such as family members and health professionals; and (d) emotional and physiological responses, such as coping with depression, anxiety, fatigue and pain during the breastfeeding process. Each of these points can influence how the mother perceives her breastfeeding experience and determine her self-efficacy for breastfeeding.			
Clinical Practice Breastfeeding Recommendations for Primary Care: Applying a Tri-Core Breastfeeding Conceptual Model ¹³	Busch DW; Logan K; Wilkinson A.	Tri-Core Breastfeeding Model	Journal of Pediatric Healthcare, 2014
Theoretical constructs and/or propositions of the theory: The model provides a conceptual framework that emphasizes three fundamental principles for promoting and maintaining breastfeeding. The first principle consists of maternal self-efficacy, which encourages the development of actions to identify barriers that may inhibit the mother's desire or ability to breastfeed, and signaling the need to promote support for the mother involving family and friends. The second principle is lactation support, which involves encouragement, counseling, and guidance from professionals with expertise in breastfeeding for the mother-baby dyad, aiming to initiate and maintain breastfeeding. These actions should be developed based on the best evidence available in scientific literature. The third theoretical construct is lactation education, which encourages educational interventions for the mother-baby binomial and their family, offering instructional materials on the main challenges and problems that may arise during the breastfeeding process. These materials must be culturally appropriate for the target population.			
Interactive Theory of Breastfeeding: creation and application of a middle-range theory ³	Cândida CP; Brandão MG.	Interactive Breastfeeding Theory	<i>Revista Brasileira de Enfermagem</i> , 2017
Theoretical constructs and/or propositions of the theory: Breastfeeding is a dynamic interaction in which mother and child interact with each other and with the environment to achieve the benefits of human milk. This interaction is influenced by, and interferes with, the woman's and child's perception; the woman's and child's biological conditions; the woman's body image; the space for breastfeeding; the mother's role; the organizational systems for protecting, promoting and supporting breastfeeding; family and social authority; and the woman's decision-making. Interaction modulates breastfeeding time and stress. If there is a contrary perception, inadequate biological conditions, and role conflict between the mother, the child, or both, there will be stress in the interaction between them. If there is inadequate space, unsatisfactory body image of the mother, absent or ineffective organizational systems for protection, promotion, and support, and family and social authority that is against breastfeeding, there may be stress in the interaction between mother and child. If the expectations and needs of mother and child are congruent, breastfeeding will occur. If breastfeeding is achieved, there will be satisfaction. The transactional achievement of breastfeeding reduces stress for both mother and child. The perceptions, judgments and actions of mother and child, if congruent, produce a transaction. The achievement of the transaction between mother and child represents the completeness of the breastfeeding process.			

Chart 3 – Description of the studies retrieved and use of scientific theories on human breastfeeding, Macaé/Rio de Janeiro, 2024.

Title	Journal and year	Country	Use of theory
Breastfeeding Self-Efficacy Theory			
Development and psychometric testing of the Breastfeeding Self-Efficacy Scale ¹⁴	<i>Research in Nursing & Health</i> , 1999	Canada	The concepts of the Breastfeeding Self-Efficacy Theory were used to develop the Breastfeeding Self-Efficacy Scale.
The Breastfeeding Self-Efficacy Scale: Psychometric Assessment of the Short Form ¹⁵	<i>Journal of Obstetric, Gynecologic, and Neonatal Nursing</i> , 2003	Canada	The study was based on the concepts of the Breastfeeding Self-Efficacy Theory to develop a shortened version of the Breastfeeding Self-Efficacy Scale.
Effect of Maternal Confidence on Breastfeeding Duration: An Application of Breastfeeding Self-Efficacy Theory ¹⁶	<i>Birth Issues in Perinatal Care</i> , 2008	Australia	The study tested the propositions of the theory, concluding that mothers with greater self-efficacy regarding breastfeeding have greater prospects of initiating and maintaining this process for a longer period.
The effects of a breastfeeding self-efficacy intervention on short-term breastfeeding outcomes among primiparous mothers in Wuhan, China ¹⁷	<i>Journal of Advanced Nursing</i> , 2014	China	The theoretical framework was used to structure the intervention implemented. The Breastfeeding Self-Efficacy Scale was also applied before and after testing the intervention.
Breastfeeding Duration and the Theory of Planned Behavior and Breastfeeding Self-Efficacy Framework: A Systematic Review of Observational Studies ¹⁸	<i>Maternal and Child Health Journal</i> , 2018	Hong Kong	The concepts of the theory were tested for their effectiveness in predicting the start and duration of the breastfeeding process by applying the Breastfeeding Self-Efficacy Scale.
Effects of education and support groups organized by IBCLCs in early postpartum on breastfeeding ¹⁹	<i>Midwifery</i> , 2019	Taiwan	The theoretical framework was used to structure the intervention implemented. The Breastfeeding Self-Efficacy Scale was also applied before and after testing the intervention.
Does breastfeeding self-efficacy theory apply to mothers of moderate and late preterm infants? A qualitative exploration ²⁰	<i>Journal of Clinical Nursing</i> , 2020	Canada	The concepts and propositions of the theory were brought closer to the experience of mothers of premature babies about feeding their children.

Chart 3 – Cont.

Title	Journal and year	Country	Use of theory
Effectiveness of theory-based educational interventions on breastfeeding self-efficacy and exclusive breastfeeding: A systematic review and meta-analysis ²¹	<i>International Journal of Nursing Studies</i> , 2020	Taiwan	The theory was used by 18 studies to support the planning and implementation of educational interventions to promote positive outcomes in the breastfeeding process.
Impacts of antenatal nursing interventions on mothers' breastfeeding self-efficacy: an experimental study ²²	<i>BMC pregnancy and childbirth</i> , 2020	Iraq	The conceptual framework was used to structure, implement, and assess an educational nursing intervention to promote self-efficacy in breastfeeding.
Determinants of breastfeeding self-efficacy among postpartum women in rural China: A cross-sectional study ²³	<i>PLOS One</i> , 2022	China	The theory was used to identify the determinants of breastfeeding self-efficacy in women living in rural China.
Tri-Core Breastfeeding Model			
The Improving Of Breastfeeding Mother's Satisfaction Models By Using Tri-Core Breastfeeding Models ²⁴	<i>International Journal of Nursing and Midwifery Science</i> , 2022	Indonesia	The concepts and propositions of the Tri-Core Model were used in the planning and implementation of educational interventions.
The Effect of Tri-Core Breastfeeding Models on Mother's Willingness to Breastfeed in COVID-19 Era ²⁵	<i>Babali Nursing Research</i> , 2023	Indonesia	The model was used to support the planning and implementation of the study's interventions, which were carried out through four home visits to the participants.
Interactive Breastfeeding Theory			
ICNP® terminology subset for care of women and children experiencing breastfeeding ²⁶	<i>Revista Gaúcha de Enfermagem</i> , 2018	Brazil	The concepts of the theory were used as references for the elaboration of the nursing diagnoses, outcomes, and interventions of the terminological subset of the International Classification for Nursing Practice.
Interactive breastfeeding scale: proposition based on the middle-range theory of nursing ²⁷	<i>Escola Anna Nery</i> , 2018	Brazil	The theory was used to support the construction of a scale that assesses the dynamic mother-child-environment interaction in the breastfeeding process.

Chart 3 – Cont.

Title	Journal and year	Country	Use of theory
Breastfeeding experience of women after mammoplasty ²⁸	<i>Revista Escola Enfermagem USP</i> , 2018	Brazil	The conceptual framework of the theory served as a theoretical reference for the study, contributing to the construction of empirical categories in the data analysis process.
Women's perception about space for breastfeeding: support in interactive breastfeeding theory ²⁹	<i>Revista Mineira de Enfermagem</i> , 2019	Brazil	The conceptual framework of the theory served as a theoretical reference for the study, contributing to the construction of empirical categories in the data analysis process.
Terminological subset of the International Classification for Nursing practice (ICNP®) for breastfeeding support: content validation study ³⁰	<i>Acta Paulista de Enfermagem</i> , 2019	Brazil	The concepts of the theory were used as references for the elaboration of the nursing diagnoses, outcomes, and interventions of the terminological subset of the International Classification for Nursing Practice.
Validation of the “Interactive Breastfeeding Scale”: theoretical and empirical analysis ³¹	<i>Escola Anna Nery</i> , 2020	Brazil	The theory was used in the process of theoretical analysis of the scale, in which the items were judged on their suitability to the concepts of the theory.
Clinical applicability of Nursing interventions from a given terminology for the assistance provided in the breastfeeding process ³²	<i>Revista de Enfermagem da UFSM</i> , 2022	Brazil	The 11 concepts of the theory were used as a basis for drawing up the data collection instrument and organizing the information obtained.
ICNP® subset for breastfeeding: validity of operational definitions, diagnoses, outcomes and interventions ³³	<i>Acta Paulista de Enfermagem</i> , 2023	Brazil	The concepts of the theory were used as references for the elaboration of the nursing diagnoses, outcomes, and interventions of the terminological subset of the International Classification for Nursing Practice.
Implications of the COVID-19 pandemic on breastfeeding and health promotion: perceptions of breastfeeding women ³⁴	<i>Revista Ciência & Saúde Coletiva</i> , 2023	Brazil	The Interactive Breastfeeding Theory was used as a theoretical reference for the development of the study, and approximations were made between its concepts and the research data.

Chart 3 – Cont.

Title	Journal and year	Country	Use of theory
Body image of women during breastfeeding: analysis supported by nursing theory ³⁵	<i>Revista Gaúcha de Enfermagem</i> , 2023	Brazil	The conceptual framework and, above all, the relational statements of the theory were used as references during the data analysis stage.
The theoretical concept of “Breastfeeding space” portrayed in the World Breastfeeding Week campaigns ³⁶	<i>Revista de Enfermagem da UFSM</i> , 2023	Brazil	The concept of “space for breastfeeding” from the theory was used as a reference during the analysis and discussion of the research data.
Interactive Breastfeeding Scale: reliability assessment ³⁷	<i>Escola Anna Nery</i> , 2023	Brazil	The theory was used in the process of assessing the reliability of the Interactive Breastfeeding Scale.

Chart 4 – Determining the descriptive, explanatory, prescriptive and/or predictive nature of the theory and its links with the stages of the NP, Macaé/Rio de Janeiro, 2024.

Theory	Nature of the theory	Links with the stages of the NP
Breastfeeding Self-Efficacy Theory ¹²	Descriptive, Explanatory, Predictive, and Prescriptive	Nursing Assessment, Nursing Planning, Nursing Implementation, and Nursing Evolution
Tri-Core Breastfeeding Model ¹³	Descriptive and Prescriptive	Nursing Planning and Nursing Implementation
Interactive Breastfeeding Theory ³	Descriptive, Explanatory, and Predictive, and Prescriptive	Nursing Assessment, Nursing Diagnosis, Nursing Planning, Nursing Implementation and Nursing Evolution

DISCUSSION

A philosophical review highlighted the diversity of theories applied to breastfeeding³⁸, but few theories that describe, explain, prescribe, or predict breastfeeding as a central phenomenon. Demonstrating a scientific trend towards the derivation of related theoretical constructs applied to the breastfeeding process, such as the social cognitive perspective, decision-making competence, the territory of birth, change, the strength of weak ties, the maternal role, and adolescent support. As the aim of this research was to identify only scientific theories of breastfeeding, only three theories had these characteristics: Breastfeeding Self-Efficacy Theory¹², Tri-Core Breastfeeding Model¹³, and Interactive Breastfeeding Theory³.

From the perspective of theorizing self-efficacy in breastfeeding, the self-efficacy construct is situated within Bandura’s Social Cognitive Theory, which states that there is a reciprocal and dynamic relationship between behavior, environmental, and interpersonal factors, which involve cognitive, emotional, and biological factors³⁹. Bandura defined self-efficacy as the belief in a person’s ability to organize and carry out actions necessary to manage prospective situations, which influences thinking

and decision-making, effort and persistence, and choice. He identified primary sources of information that affect the sense of self-efficacy: performance achievement, as the most powerful source of self-efficacy; vicarious experience; verbal persuasion; and emotional arousal⁴⁰.

Dennis explained how women's breastfeeding self-efficacy can influence their thoughts and actions to initiate breastfeeding, in addition to being an important variable in the duration of breastfeeding. He said that women with high breastfeeding self-efficacy are more likely to think positively, find solutions to overcome breastfeeding obstacles and control their anxiety and emotional disturbances to keep calm and ask for support when needed⁴⁰.

The Tri-Core Breastfeeding Model provides a conceptual framework emphasizing crucial principles for promoting breastfeeding, which foster the development of actions that promote maternal breastfeeding self-efficacy, support, and education about the lactation process. These actions should involve the mother-baby binomial, the partner, and other significant people¹³. The Interactive Breastfeeding Theory conceptualizes breastfeeding in the systemic, dynamic, and procedural dimensions and translates it into a care technology to identify factors that influence the breastfeeding process. Therefore, it can guide health professionals on the aspects that should be addressed during care for women, children, and families who are breastfeeding or intend to start it³.

Regarding the scientific developments in the production of the Breastfeeding Self-Efficacy Theory, the following stand out: the development of a measurement scale¹⁴⁻¹⁵; the assessment of its predictive capacity for the initiation and duration of breastfeeding^{16,18}; the basis for planning and implementing educational interventions with positive effects on increasing breastfeeding self-efficacy, duration and maintenance of exclusive breastfeeding^{17,19,21,22}; the understanding of the maternal experience of breastfeeding in situations of prematurity²⁰; and the characterization of determinants for breastfeeding in specific groups, such as women living in rural areas in China²³. The Tri-Core Breastfeeding Model was tested for the planning and implementation of educational actions, which proved to be capable of promoting mothers' satisfaction with the breastfeeding process²⁴, and increasing mothers' willingness to breastfeed in the home context²⁵.

The scientific productions that used the Interactive Breastfeeding Theory addressed the development of an assessment scale of the interaction in the breastfeeding process^{27,31,37}; the elaboration, validation, and clinical applicability of a terminological subset of the ICNP for the assistance to women and children in breastfeeding based on the concepts of the theory and that brings the elements of diagnoses, outcomes and nursing interventions^{26,30,32,33}; the assessment of the empirical experience of women regarding the concepts of the theory "biological condition of women"²⁸, "space for breastfeeding"^{29,36} and "body image"³⁵; and understanding the empirical experience of the implications of the COVID-19 pandemic on breastfeeding³⁴.

The links of the Interactive Breastfeeding Theory with the NP contemplate the five stages of this method, since the Interactive Breastfeeding Scale constitutes an instrument for the nursing assessment stage, and the ICNP terminology subset brings the elements of nursing practice capable of subsidizing the accomplishment of the stages of diagnosis, planning, implementation, and nursing evolution. Furthermore, this subset brings the clinical indicators and operational definitions to support the nurse in the nursing assessment stage and the confirmation of the sensitive outcomes achieved by the nurse.

Of the theories analyzed, the Interactive Theory of Breastfeeding stands out as the only one to integrate a standardized language system into its theorizing process³. It is important to emphasize that nursing theories contribute to explaining the complexity of concepts associated with the phenomena that define and delimit their field of interest, while taxonomies have scientifically validated terms that are useful for representing the situation of patients that nurses deal with in health care. The existence

of a possible gap between theoretical development and taxonomies may favor the construction of concepts that are difficult to operationalize in clinical practice, resulting in the idea that the professional and theoretical fields are conflicting dimensions⁴.

Scientific theories can provide support for the development and improvement of standardized language systems, just as these can provide terms from practice to be investigated and explained at a theoretical level. The theory-taxonomy association helps clinical nurses to visualize and apply theoretical concepts and propositions in their care practice, culminating in the reduction of the gap between the theoretical and professional levels⁴. In the context of breastfeeding, this association can contribute to a better understanding of the human responses presented by the mother-baby binomial in their interactive process, promote the translation of scientific knowledge in the area into practice, favor the documentation of care, in addition to assisting the nurse in making decisions about the most appropriate interventions to be implemented to obtain positive outcomes^{27,31,37}.

In the scientific developments of the Tri-core Breastfeeding Model, links were observed only with the planning and implementation stages of the NP. This observation may be related to the theoretical framework and the character of the model, which was classified as descriptive and prescriptive. Thus, its content mainly includes actions considered fundamental for the promotion and maintenance of breastfeeding, supporting the application of health care, but neglecting the understanding of human responses, the explanation of phenomena related to breastfeeding, and the assessment of the assistance offered to the mother-baby binomial¹³. These characteristics may make the model less applicable as a supporting reference for the stages of assessment, diagnosis, and nursing evolution.

Overall, the contributions of the development of these theories can be observed in the production of measuring instruments, development of educational interventions, scientific measurement of the experience of central concepts of the theories, development of technologies, and empirical assessment of specific contexts, groups, and situations. These findings follow the trend of technological and scientific production of applied disciplines, especially by contributing to the changes necessary for a sustainable future through the application of their fundamental discoveries⁴¹.

The limitations of this study include the fact that only scientific articles were retrieved in Portuguese, English, and Spanish and the lack of access to gray literature in the process of identifying scientific theories. It is suggested that studies be carried out to identify the links between scientific theories on breastfeeding and nursing diagnoses, outcomes, and interventions described in standardized language systems, given that this process may result in the approximation of theoretical knowledge with the terminologies implemented in clinical practice, narrowing the gap between theoretical and practical knowledge. This connection may provide support for the improvement and development of the elements contained in nursing terminologies, and the identification of concepts and terms that have not been explored much and that require explanations at a theoretical level.

CONCLUSION

The study made it possible to map the scientific theories existing in the literature on human breastfeeding and their links with the stages of the Nursing Process. Three scientific theories on the subject were identified, namely: Breastfeeding Self-Efficacy Theory, Tri-Core Breastfeeding Model, and Interactive Breastfeeding Theory. From the studies that used these theories as a reference, it was possible to identify that the Breastfeeding Self-Efficacy Theory was linked with four stages of the NP, namely: Assessment, Planning, Implementation, and Evolution. The Tri-Core Breastfeeding Model was linked only with the Planning and Implementation stages, while the Interactive Breastfeeding Theory supported all stages of the NP. It is believed that the links between theories on breastfeeding and the stages of the NP are associated with the conceptual framework, content and nature of each model, making the theories have different potentialities to support the application of each stage of the NP.

Mapping scientific theories about human breastfeeding can favor the theoretical improvement of the phenomenon, consolidating knowledge necessary for the advancement of the epistemological field of nursing in the care of the mother-baby binomial in the breastfeeding process and, thus, contribute to the improvement in decision-making and assistance offered by nurses. The results of this research also encourage discussions and reflections about the application and potential of theoretical models as references capable of supporting the execution of the different stages of NP in clinical care.

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NOTES

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