ICNP® subset for breastfeeding: validity of operational definitions, diagnoses, outcomes and interventions

Subconjunto CIPE® para amamentação: validação de definições operacionais, diagnósticos, resultados e intervenções

Subconjunto CIPE® para lactancia: validación de definiciones operativas, diagnósticos, resultados e intervenciones

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How to cite:
Albuquerque TR, Caniçali Primo C, Brandão MA, Oliveira DR, Cubas MR, Cruz RS. ICNP® subset for breastfeeding: validity of operational definitions, diagnoses, outcomes and interventions. Acta Paul Enferm. 2023;36:eAPE01461.

DOI
http://dx.doi.org/10.37689/acta-ape/2023AO014611

Keywords
Breastfeeding; Standardized nursing terminology; Validation studies; Nursing diagnosis

Descritores
Aleitamento materno; Terminologia padronizada em enfermagem; Estudos de validação; Diagnósticos de enfermagem; Teorias de enfermagem

Descriptores
Lactancia materna; Terminología normalizada de enfermeira; Estudio de validación; Diagnóstico de enfermería

Submitted
June 3, 2021

Accepted
June 13, 2022

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Abstract

Objective: To describe the construction and content validity of operational definitions and statements of nursing diagnoses, outcomes and interventions contained in an ICNP® subset for woman, child and family care in the breastfeeding process.

Methods: This is a methodological study carried out in two stages: construction of operational definitions, diagnoses and nursing interventions for assistance in the breastfeeding process; validity with 37 judges, selected by snowball sampling and through a search on the *Plataforma Lattes*, who assessed 58 operational definitions, 8 nursing diagnoses/outcomes and 29 nursing interventions. The Concordance Index was used for data analysis.

Results: Only four statements of nursing diagnoses and five interventions of the subset in question are contained in the latest version of ICNP®. Of the 58 operational definitions, 54 were validated (93.1%), 39 with a Concordance Index ≥0.8 (67.2%) and 15 (25.8%) with a Concordance Index between ≥0.70 and <0.80.

Conclusion: A total of 54 operational definitions, 6 nursing diagnoses/outcomes and 29 nursing interventions were validated to compose an ICNP® terminology subset for assistance in the breastfeeding process.

Resumo

Objetivo: Descrever a construção e validação de conteúdo de definições operacionais e de enunciados de diagnósticos, resultados e intervenções de enfermagem contidos no Subconjunto da CIPE® para assistência à mulher, à criança e à família em processo de amamentação.

Métodos: Estudo metodológico realizado em duas etapas: construção de definições operacionais, diagnósticos e intervenções de enfermagem para assistência no processo de amamentação; validação com 37 juízes, selecionados por amostragem em bola de neve e por meio de busca na plataforma Lattes, que avaliaram 58 definições operacionais, 8 diagnósticos/resultados e 29 intervenções de enfermagem. Na análise dos dados utilizou-se o Índice de Concordância.

Resultados: Apenas quatro enunciados de diagnósticos de enfermagem e cinco intervenções do subconjunto em questão estão contidos na última versão da CIPE®. Das 58 definições operacionais, 54 foram validadas (93,1%), sendo 39 com Índice de Concordância ≥0,8 (67,2%); e 15 (25,8%) com Índice de Concordância entre ≥0,70 e <0,80.

Conclusão: Foram validadas 54 definições operacionais, 6 diagnósticos/resultados de enfermagem e 29 intervenções de enfermagem para compor o Subconjunto Terminológico da CIPE® para assistência ao processo de amamentação.

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Conflict of interest: nothing to declare.

Resumen

Objetivo: Describir la construcción y validación de contenido de definiciones operativas y de enunciados de diagnósticos, resultados e intervenciones de enfermería contenidos en el Subconjunto de la CIPE® para la atención a la mujer, a las infancias y a la familia en proceso de lactancia.

Métodos: Estudio metodológico realizado en dos etapas: construcción de definiciones operativas, diagnósticos e intervenciones de enfermería para la atención en el proceso de lactancia; validación por 37 jueces seleccionados por muestreo de bola de nieve y mediante búsqueda en la plataforma Lattes, que evaluaron 58 definiciones operativas, 8 diagnósticos/resultados y 29 intervenciones de enfermería. En el análisis de datos se utilizó el Índice de Concordancia.

Resultados: Solo cuatro enunciados de diagnósticos de enfermería y cinco intervenciones del subconjunto en cuestión están incluidos en la última versión de la CIPE®. De las 58 definiciones operativas, 54 fueron validadas (93,1 %), de las cuales 39 tuvieron Índice de Concordancia ≥0,8 (67,2 %); y 15 (25,8 %) Índice de Concordancia entre ≥0,70 y <0,80.

Conclusión: Fueron validadas 54 definiciones operativas, 6 diagnósticos/resultados de enfermería y 29 intervenciones de enfermería para componer el Subconjunto Terminológico de la CIPE® para atención en el proceso de lactancia.

Introduction

Undeniable scientific evidence attests to the potential of breastfeeding (BF) to save lives and promote the socioeconomic development of a country. Respiratory and gastrointestinal infections and the number of hospitalizations decrease in children who are breastfed from the first hour of life. Moreover, breast milk is proven to be beneficial for children's cognitive development, reflecting higher levels of education in adulthood. Even so, less than half of newborns have received breast milk in the first hour of life (42%) and remained exclusively breastfed (41%) until 6 months of age, a scenario very far from the global goal for 2030, which is to achieve at least 70% on these indicators. For this reason, many investments have been applied in global policies aimed at increasing rates and encouraging BF.[1,2]

Nursing care is present in the actions of prevention, promotion and encouragement of exclusive BF, accompanying mothers and children during prenatal, postpartum and childcare, and thus positively interferes with the increase of health indicators.[3] For this, the elements described by the Nursing Classifications, and their use is pointed out as a way of giving visibility to the subject as a science that studies human care.[4]

In recent years, the International Classification for Nursing Practice (ICNP®) stood out in terminology subset (TS) production for various health priorities, substantially through theses and dissertations linked to *stricto sensu* graduate programs.[5,6]

TS are composed of a selection of nursing diagnoses (ND), nursing outcomes (NO) and nursing interventions (NI) designed to facilitate direct use of ICNP® in prescribing and documenting nursing care. This tool can be used by researchers and healthcare managers to analyze and compare nursing data around the world, providing best practices and reducing gaps between theory and practice.[7]

This apparatus is of great help to nurses' work, optimizing the time for operationalization of ND, however, it does not exempt their clinical reasoning. To indicate an ND to a patient under their care, nurses need to list the signs and symptoms presented by them and check if the diagnoses' clinical indicators are present.[8] This movement is supported by operational definitions (OD) for ND, which establish a link between observation and scientific investigation, by describing what will be measured and how an empirical indicator will be assessed. Thus, studies to construct and validate OD are vital components in research relevant to ND.[9]

It is known that validity by experts is essential to give robustness to the newly created subsets, being required its accomplishment for proficiency of all the elements contained therein. Validity facilitates the generalization of results and their application in different scenarios; however, it is a complex and lengthy journey. This justifies the fractioning of studies to construct subsets, which often can take years to complete.[6,10]

In accordance with the method for developing ICNP® TS, choosing a theoretical model to structure them is mandatory. In this way, the Interactive Theory of Breastfeeding was the framework for constructing the subset in question and for the current study.

With an eye on the complexity of BF, the Interactive Theory of Breastfeeding defines that "breastfeeding is a process of dynamic interaction in which mother and child interact with each other and

with the environment in order to obtain the benefits of mother's milk, which is directly provided from the breast to the child and which is a unique experience every time".[11] This middle-range theory is composed of eleven interrelated concepts: dynamic mother-child interaction; women's biological conditions; children's biological conditions; women's perception; children's perception, woman's body image; space to breastfeed; mother role; breastfeeding protection, promotion and support organizational systems; family and social authority; women's decision-making.[11]

The relevance of this study lies in its potential to deepen the understanding of nursing phenomena present in women and their children during the BF process. Thus, this research will contribute to making nursing practice safer, more accurate and individualized, due to the clinical indicators observed during BF that, widely discussed here, characterize each phenomenon and can help nurses in planning and conducting their care.

Considering the above, this study aimed to describe the construction and content validity of OD and statements of ND, outcomes and interventions contained in the ICNP® subset for assistance to women, children and families in the BF process.

Methods

This is a methodological study, carried out in two stages: construction and validity of OD. The study was carried out from March to November 2020. The diagnoses/outcomes that make up the ICNP® TS were used as a basis for assistance to women and children in the BF process.[12] This subset has 50 ND/NO and 350 interventions, structured around 8 Interactive Theory of Breastfeeding concepts.

The Interactive Theory of Breastfeeding was applied as a theoretical framework, due to its property of describing, explaining and predicting the events that precede and manifest themselves in the BF process, in accordance with terms used in a standardized nursing language, expanding the bridges between theory and empirical referents.

The subset in its first version[13] had diagnoses and interventions for the 11 concepts of this theory; however, after the content validity process of these statements,[12] three concepts were not contemplated with valid statements, namely: Children's perception of breastfeeding; Woman's body image; and Family and social authority.

Considering that these concepts are relevant to the approach to nursing care during BF, ISO 18.104:2014 and ICNP® 2019 were used to develop new statements that correspond to these concepts, allowing their verification in clinical nursing practice.

The NI elaborated in the first version of the subset, corresponding to non-validated diagnoses, totaled 29, and were included in the present study's validity instrument, since they were not sent to experts in the previous study.[12]

At first, OD were elaborated based on the five steps of the methodological framework of Waltz, Strickland and Lenz:[14] developing a preliminary definition, reviewing the literature, developing or identifying exemplars, mapping the concept meaning, and stating the OD. In order to operationalize the definitions, i.e., the progression from the abstract to the concrete, three stages of this framework were carried out: identification of observable indicators; development of means for measuring indicators; and OD adequacy assessment, which took place through content validity.

The preliminary definitions limit the important aspects for inclusion in a later formulation, and were prepared based on the definitions contained in the ICNP® 2019. For terms that did not have a definition in the ICNP®, these were constructed from the authors' previous knowledge, arising from clinical observations and reading in specific literature. Then, a narrative literature review was performed for each ND/NO in the subset. The literature was consulted without temporal restriction, in the CINAHL and BDENF databases, using descriptors or keywords that make up the spelling of the subset's diagnoses/outcomes statements.[14]

From the reviews, the concept's critical attributes were identified, which express its meaning and help to differentiate it from others. For the mapping of meaning, these attributes were listed in individual tables for each utterance, with lines called A-Z, according to their priority, that is, the order they

should appear in the definition. After that, the theoretical definition statement was elaborated from the union of mapping terms. After the theoretical definition, the theoretical definition was set out for operationalization.[14]

The content validity step was performed in 55 days and occurred virtually. Given the dissension about the requirements for identification and training of an expert group for validity studies[15] and the limitation in finding researchers with BF expertise and ICNP® concomitantly, we adopted two groups as inclusion criteria: 1. having teaching or care experience in the area of women's health, child's health or BF; 2. have teaching or care experience in the area of ICNP® diagnoses, outcomes and interventions. To be included in the study, professional should belong to at least one of the groups.

The minimum sample size was calculated using a statistical formula, considering: Z (confidence level) equal to 95%; p (proportion of agreement expected from judges) equal to 85% and (acceptable difference from what is expected) equal to 15%.[15] After that, we reached a minimum number of 22 evaluators.

To select the nursing judges, we used two strategies: 1) network sampling (or snowball) initiated from nursing professors at a public university; 2) search on a resume platform (*Plataforma Lattes*) of the Brazilian National Council for Scientific and Technological Development (CNPq - *Conselho Nacional de Desenvolvimento Científico e Tecnológico*). To search on this platform, we selected the search by subject, using the combination of keywords "ICNP" AND "Woman". Brazilian and foreign nationality filters were also applied.

After identifying 144 eligible nurses, an invitation letter was sent by email containing the presentation of the research, its objectives, the researchers responsible, and the deadline for returning the response. At the end of the text, when accessing the available link, participants were forwarded to the validity questionnaire page.

For data collection, an electronic questionnaire hosted on Google Forms® was elaborated, a free internet platform that allows form construction and availability. The questionnaire contained the Informed Consent Form, professional characterization and a list of 58 OD, 8 new diagnoses and 29 interventions. For each definition, participants could express their opinion through two options: "I AGREE" and "I DON'T AGREE." There was also a space to describe suggestions individually. A pilot test of the questionnaire was conducted, previously sent to three collaborating researchers. As a result, changes were made regarding the reduction of explanatory texts, to optimize the response time by the evaluators. Of the invited participants, 37 accepted the invitation and answered the questionnaire, and all were included.

To analyze the results, we used the percentage of agreement among judges for each item. ND/NO/NI with a Concordance Index (CI) ≥0.80 were considered to be fully applicable to clinical practice. Furthermore, the ND/NO with CI between ≥0.70 and <0.80 were considered "potentially applicable" to practice and were not eliminated, assuming that they "may or may not" be identified. The statements that obtained CVI <0.60 were disregarded.[16]

The study was submitted to the Research Ethics Committee (REC) of the *Universidade Regional do Cariri*, through submission to *Plataforma Brasil*, obtaining approval under Opinion 3.941.027/2020 and CAAE (*Certificado de Apresentação para Apreciação Ética* - Certificate of Presentation for Ethical Consideration 29688220.4.0000.5055). We followed the Brazilian National Research Ethics Commission (CONEP - *Comissão Nacional de Ética em Pesquisa*) precepts, which deals with guidelines for procedures in research with any stage in a virtual environment (circular letter 2/2021/CONEP/SECNS/MoH), aiming to preserve the protection, safety and rights of research participants.

Results

The presentation of the results comprised the exposition of TS statements contained in the ICNP® in chart 1; brief descriptive professional characterization of judges; the new ND/NO and NI that will become the ICNP® TS for BF in table 1; and the synthesis of OD, validated in table 2.

Chart 1. Verification of breastfeeding subset statements in the ICNP®

Diagnoses/outcomes	Nursing interventions
(10001411) Effective Breastfeeding	(10039561) Evaluating Breastfeeding
(10029728) Breast Engorgement	(10039492) Referring to Breastfeeding Support Group
(10027392) Weight Within Normal Limits	(10051253) Examining the Breasts
(10029958) Lack of Knowledge Of Breast Feeding	(10046262) Managing Blood Glucose
	(10032939) Teaching about Fluid Intake

Characterization of judges

Participants had a mean age of 39 years, were predominantly women (86.4%), residing mainly in the Northeast (56.7%) and Southeast (29.7%) regions. As for academic background, most had a master's degree (40.5%) and a PhD (32.4%), followed by specialization (16.2%), undergraduate (8.1%) and postdoctoral (2.7%) degrees. These professionals work mainly in teaching (70.2%), and the time of work varied between 01-10 years (37.8%), 11-20 years (35.1%), 21-30 years (21.6 %) and 31-40 years (5.4%). Most had experience in assistance, teaching or supervision of internships focused on the BF process or women/child health (83.7%), while 75.6% were inserted in groups or research projects involving the ICNP®, considering that the questionnaire allowed the concomitant response in more than one area.

Nursing diagnosis, outcome, intervention and operational definition validity

Of the 8 new ND/NO elaborated for this study, 6 (75.0%) were validated. The two non-validated NDs correspond to the concept of "Children's perception of breastfeeding", and their judgments: altered (CI= 67.5%); and improved (CI=64.8%). As for NI, 100% achieved CI ≥0.8, being presented in chart 1. Of the 58 OD, 54 were validated (93.1%), 39 with CI ≥0.8 (67.2%); and 15 (25.8%) with CI between ≥0.70 and <0.80 (Table 1). It is noteworthy that only the phenomena that obtained validity are presented in the tables below.

Table 1. Synthesis of nursing diagnosis, outcome and interventions structured according to the Interactive Theory of Breastfeeding concepts and respective Concordance Index

Diagnosis/outcome	CI	Nursing Interventions	CI
Theory concept - Women's body image			
Positive body image	83.7	Encourage mothers to express feelings.	97,2
		Teach clients to understand the need to take care of themselves.	86,4
Disturbed body image	86.4	Teaching about the physiological changes of pregnancy.	94,5
		Teach about possible changes in sexual response.	89,1
		Identify the factors that interfere with body self-image.	97,2
		Encourage the expression of feelings of dissatisfaction with body image.	94,5
Theory concept - Family and social authority			
Positive attitude towards breastfeeding	83.7	Advise the family to support mothers in breastfeeding.	94,5
		Advise the family to understand mothers' behaviors during breastfeeding.	97,2
Conflicting attitude towards breastfeeding	86.4	Adjust conflicting issues, respecting ethical aspects.	83,7
		Help mothers and families understand the value of talking about mothers' feelings about breastfeeding.	97,2
Risk for conflicting attitude towards breastfeeding	86.4	Assess the understanding/attitude that the family has about breastfeeding.	100
		Assess family history of breastfeeding.	100
		Assess the causes of conflicting attitudes towards breastfeeding.	100
		Encourage the family to support mothers in breastfeeding.	97,2
		Explain the importance of breastfeeding.	97,2
		Identify the conflicting attitudes of family towards breastfeeding.	100
		Identify childhood eating practices practiced by the family.	94,5
Children's perception of breastfeeding			
Children's positive perception of breastfeeding	70.2	Assess newborns' behavior during breastfeeding.	97.2
		Assess newborns' inability to latch on the nipple-areolar region.	94.5
		Assess newborns' position while breastfeeding.	97.2
		Assess newborns' reflexes during breastfeeding.	89.1
		Assess whether newborns' mouths are in the proper position.	91.8
		Assess whether newborns cry when being put to the breast.	86.4
		Assess whether newborns are calm during breastfeeding.	89.1
		Assess whether newborns arch when breastfeeding.	86.4
		Identify anomalies in newborns.	89.1
		Identify signs of irritability in newborns.	94.5
		Reinforce for mothers the importance of being calm during breastfeeding.	97.2
		Supervise newborns behavior while breastfeeding.	97.2

Table 2. Synthesis of operational definitions structured according to the Interactive Theory of Breastfeeding concepts and respective Concordance Index

Diagnoses	Definition	CI
Theory concept - Mother-child dynamic interaction		
Effective breastfeeding	State in which mothers and children effectively experience the breastfeeding process. Children receive breast milk directly from the breast, women perceive breast emptying. Children are satisfied after feeding; spontaneously release the breast after two or three cycles of nutritive sucking, in which breast milk extraction and swallowing are observed; normal elimination patterns and age-appropriate weight of children. There is an effective dynamic interaction between mothers-child, which necessarily involves assessment of position, attachment, effectiveness of breastfeeding, and verbal and non-verbal communication that flow between them.	86.4
Effective exclusive breastfeeding	State in which mothers and children effectively experience the exclusive breastfeeding process in the first four to six months of life. Children exclusively receive breast milk directly from the breast, excluding all other foods, for the first four to six months of life. Women notices breast emptying; children are satisfied after feeding; spontaneously release the breast after two or three cycles of nutritive sucking, in which breast milk extraction and swallowing are observed; normal elimination patterns and age-appropriate weight of children. There is an effective dynamic interaction between mothers-child, which necessarily involves assessment of position, attachment, effectiveness of breastfeeding, and verbal and non-verbal communication that flow between them.	70.2
Improved breastfeeding	State in which mothers and children experience improvement in the breastfeeding process in relation to the state previously assessed. Improved dynamic interaction between mothers-child and environment is observed, observable by the parameters: children suckle more effectively the breast, make proper position and latch on to the extraction of milk from the breast and consequent stimulation.	86,4
Improved exclusive breastfeeding	State in which mothers and children experience an improvement in the exclusive breastfeeding process in relation to the previously assessed state. Improved dynamic interaction between mothers-child and environment is observed, observable by the parameters: children suckle the breast more effectively, position and latch suitable for breast milk extraction and consequent stimulation.	81,0
Impaired breastfeeding	State in which mothers and children experience improvement in the breastfeeding process in relation to the state previously assessed. Improved dynamic interaction between mothers-child and environment is observed, observable by the parameters: children suckle more effectively the breast, make proper position and latch on to breast milk extraction and consequent stimulation.	86,4
Impaired risk for breastfeeding	Potential of mothers and children for the development of dissatisfaction or difficulty with the breastfeeding process, related to personal, behavioral or maternal environmental characteristics, which present evidence in the literature for predisposition to risk.	83,7
Impaired risk for exclusive breastfeeding	Potential of mothers and children for the development of dissatisfaction or difficulty with the exclusive breastfeeding process, related to personal, behavioral or maternal environmental characteristics, which present evidence in the literature for predisposition to risk.	81,0
Impaired exclusive breastfeeding	State in which mothers and children do not effectively experience the exclusive breastfeeding process in the first four to six months of life. Women do not notice breast emptying; children is dissatisfied after feeding; they do not spontaneously release the breast after two or three cycles of nutritive sucking, in which breast milk extraction and swallowing would be observed; decreased elimination patterns and children's weight inappropriate for their age. There is an impaired dynamic interaction between mothers-child, which involves assessment of position, latch on, ineffectiveness of breastfeeding, and verbal and non-verbal communication between them.	75,6
Women's biological conditions		
Breastfeeding pain	Pain perception during the breastfeeding process, reported, observed or measured by scale, due to the presence of local trauma/infection/ inflammation, incorrect latching of newborns or breast engorgement.	97,2
Improved breastfeeding pain	Improvement of pain perception during the breastfeeding process in relation to the state previously assessed, reported, observed or measured by scale.	94,5
Breast pain	Pain perception in one or both breasts of women, reported, observed or measured by scale, as a result of physiological, pathological or traumatic changes.	89,1
Improved breast pain	Improvement of pain perception in one or both breasts of women in relation to the state previously assessed, reported, observed or measured by scale.	91,8
Nipple fissure	Cracking, elongated ulceration or separation of the tissue that surrounds the body surface, accompanied by a decrease in skin elasticity and stretchability, red stretch marks, through which the dermis tissue is shown, on women's nipples.	83,7
Improved nipple fissure	Fissure improvement, elongated ulceration or separation of tissue surrounding the body surface from the previously assessed state. There is an improvement in skin elasticity, and a reduction in the red stretch marks, through which the dermis tissue will show in women's nipples.	81,0
Risk for nipple fissure	Potential for cracking, elongated ulceration or separation of the tissue that surrounds the body surface, accompanied by a decrease in skin elasticity and stretchability, red stretch marks, through which the dermis tissue is shown, in women's nipples.	83.7
Breast engorgement	Breast swelling, with pain and a sensation of heaviness, accompanied by excessive accumulation of milk, after the parturition process. There may be edema, lymphatic and/or vascular congestion, and hyperthermia as a result of inadequate breast emptying.	89.1
Improved breast engorgement	Improvement in the swelling of women's breasts after the parturition process, with relief of pain, heaviness and excessive accumulation of milk in relation to the previously assessed state. There is improvement in the signs of edema, lymphatic and/or vascular congestion and hyperthermia.	86.4
Absent breast engorgement	Absence of swelling, pain, heaviness, hyperthermia, lymphatic and/or vascular congestion in women's breasts after the parturition process.	70.2
Risk for breast engorgement	Potential for the development of swelling of women's breasts after the parturition process, as a result of inadequate breast emptying.	94.5
Effective lactation	Process of adequate synthesis of human milk by breast mammary glands of an adult woman, containing carbohydrates, proteins, suspended fat, vitamins and minerals.	78.3
Decreased lactation	Reduction of the process of adequate synthesis of human milk by the mammary glands of an adult woman, containing carbohydrates, proteins, suspended fat, vitamins and minerals. Observable by the parameters: women perceive the breasts as little turgid or emptied, children's elimination patterns are decreased, and children's weight gain is inappropriate for their age.	78.3
Increased lactation	Increase in the process of synthesis and secretion of human milk by the mammary glands of adult women, containing carbohydrates, proteins, suspended fat, vitamins and minerals.	72.9
Improved lactation	Improvement of the process of synthesis and secretion of human milk by the mammary glands of adult women, containing carbohydrates, proteins, suspended fat, vitamins and minerals, in relation to the previously assessed state. Observable by parameters: women perceive turgid breasts; elimination patterns are normal and children's weight gain is age appropriate.	72.9
Children's biological conditions		
Effective suction	Act of extracting breast milk from the breasts into the mouth, using the stomatognathic device, with coordination between suction, swallowing and breathing of children at the time of breastfeeding.	891
Impaired suction	Decrease, absence or ineffectiveness of the act of extracting milk from the breasts into the mouth, using the stomatognathic apparatus. There may be a lack of coordination between children's sucking, swallowing and breathing at the time of breastfeeding, related to personal, behavioral characteristics or the maternal environment.	91.8

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Continuation.

Diagnoses	Definition	CI
Improved suction	Improvement in the act of extracting milk from the breasts into the mouth, using the stomatognathic apparatus, in relation to the previously assessed state. There is coordination between children's sucking, swallowing and breathing during breastfeeding.	89.1
Effective suction reflex	Establishment of adequate affective bonding of newborns with their mothers, while sucking mothers' breast and being nourished. The following parameters are observed in children: search and suck reflex, lip sealing, proper positioning of the tongue and jaws, coordinated rhythm between sucking, swallowing and breathing, audible swallowing for at least 5 to 10 minutes per breast, releasing areolar latch when satisfied.	81.0
Impaired sucking reflex	Impaired affective bonding between newborn and mothers, while sucking mothers' breast and being nourished. The following parameters can be observed in children: decrease or absence of search and suck reflex, partial or absent lip seal, inadequate positioning of the tongue and jaws, incoordination of rhythm between sucking, swallowing and breathing, little or inaudible swallowing, less than 5 to 10 minutes per breast, and areolar latch release before satisfaction. It may be related to changes in the children's stomatognathic system.	78.3
Improved suction reflex	Improved affective bonding between newborns and mothers, while sucking mothers' breast and being nourished, compared to the state previously assessed. The following parameters can be observed in children: increased search and sucking reflex, effective lip sealing, proper positioning of the tongue and jaws, rhythm coordination between sucking, swallowing and breathing, audible swallowing, at least 5 to 10 minutes per breast, and areolar latch release when satisfied.	78.3
Weight within normal limits	Adequate body weight in relation to height, resulting in satisfactory levels of body mass index.	75.6
Impaired weight	Inadequate body weight in relation to height, resulting in unsatisfactory levels of body mass index.	81.0
Improved weight	Improvement of the situation of inadequate body weight in relation to height.	78.3
Newborn sleepiness	Intermediate state between sleep and wakefulness in newborns, observable by signs of little or no interactivity, yawning, blinking and semi-opening of the eyes.	89.1
Improved newborn sleepiness	Improvement of the intermediate state between newborn sleep and wakefulness in relation to the state previously assessed.	89.1
Children's perception of breastfeeding		
Positive children's perception of breastfeeding	Conscious mental recording of sensory stimulus; awareness (or cognition) of breastfeeding sensations by children, given through the senses. Mothers sense when children are hungry; children seek the breast when smelling their mothers; stay awake and relaxed during breastfeeding; spontaneously release the breast when satiated; and remain calm and relaxed after breastfeeding.	75.6
Improved children's perception of breastfeeding	Improvement of the mental record previously assessed and sensorial stimulus; awareness (or cognition) of breastfeeding sensations by children, given through the senses. Mothers notice when children are hungry; children seek the breast when smelling its scent; children stay awake and relaxed during breastfeeding; spontaneously release the breast when satiated; and remain calm and relaxed after breastfeeding.	72.9
Women's perception of breastfeeding		
Effective capacity for breastfeeding	Mothers' ability to offer breast milk directly from the breast, in adequate amounts to meet children's needs, in order to ensure effective breastfeeding.	86.4
Impaired ability to breastfeed	Mothers' inability to offer breast milk directly from the breast, in adequate amounts to meet children's needs.	86.4
Improved breastfeeding ability	Improvement of mothers' ability to offer breast milk directly from the breast, in an adequate amount to meet children's needs in relation to the previously assessed state.	83.7
Decreased knowledge about breastfeeding	Women's behavior, which presents insufficient information to deal with breastfeeding practice, and to understand the signs and symptoms involved in this act.	81.0
Women's body image		
Positive body image	Positive mental image of women about their own body, in whole or in part, or their own physical appearance. It can be observed by the parameters: women report body satisfaction, have confidence in breastfeeding in public, do not show concern about breast appearance after breastfeeding and feel attractive during the breastfeeding period.	91.8
Disturbed body image	Disturbed mental image of women about their own body, in whole or in part, or their own physical appearance. It can be observed by the parameters: women report body dissatisfaction, embarrassment in breastfeeding in public, express the idea that breastfeeding makes their breasts saggy and sagging, and feel unattractive during the breastfeeding period.	89.1
Family and social authority		
Positive attitude towards breastfeeding	Positive opinion about breastfeeding and the care provided to mothers and their child during this period. It is noticed that the values, background and perceptions of each member who participates in the breastfeeding process, positively influence to direct, control and change the behavior of women in relation to breastfeeding.	94.5
Conflicting attitude towards breastfeeding	Divergent opinion about breastfeeding and the care provided to mothers and their child during this period. It is noticed that the values, background and perceptions of each member who participates in the breastfeeding process, influence women in a conflicting way, to direct, control and change their behavior in relation to breastfeeding.	94.5
Risk for conflicting attitude towards breastfeeding	Potential for divergent opinions about breastfeeding and the care provided to mothers and their children during this period, related to the maternal environment characteristics that predispose to risk. It can be seen that values, background and perceptions of each member who participates in the breastfeeding process, influence women in a conflicting way, to direct, control and change their behavior in relation to breastfeeding.	91.8
Space for breastfeeding		
Effective privacy for breastfeeding	Existence of adequate and comfortable space/environment for women at the time of breastfeeding.	83.7
Lack of privacy for breastfeeding	Lack of adequate and comfortable space/environment for women at the time of breastfeeding.	86.4
Mother role		
Effective mother role performance in breastfeeding	Behavior of women when they become mothers, in relation to children, for the purpose of breastfeeding. Thus, it acquires the rights and obligations of this new social position	75.6
Improved mother role performance in breastfeeding	Improvement of the previously assessed behavior of women when they become mothers, in relation to children, for the purpose of breastfeeding.	78.3
Breastfeeding protection, promotion and support organizational systems		
Positive family support for breastfeeding	Presence of a support network composed of family members who positively influence breastfeeding.	89.1
Impaired family support for breastfeeding	Presence of a support network composed of family members who negatively influence breastfeeding.	89.1
Improved family support for breastfeeding	Improved support given to women during breastfeeding, by the support network made up of family members, in relation to the previously assessed state.	89.1

Continue...

Continuation.

Diagnoses	Definition	CI
	Women's decision-making	
Effective breastfeeding decision-making	Dynamic and systematic process through which women choose to breastfeed among alternatives. Constructed during pregnancy and/or at each feeding.	89.1
Improved breastfeeding decision-making	Improvement of the dynamic and systematic process through which women choose to breastfeed among the alternatives, in relation to the previously observed state. Constructed during pregnancy and/or at each feeding.	86.4

Discussion

It is believed that the evidence contained in the OD of ND, combined with the profession's theoretical models, are pillars for overcoming the medical-centered model, considering that the observable clinical indicators that define a nurse's judgment about human responses to a problem, limit the phenomena that concern nursing performance.

The elaboration of OD for ND is a work that requires care, attention and rigor, given the responsibility of communicating a concept that is used for clinical reasoning and has an impact on people's lives. The OD developed in this study are permeated by concepts arising from the Interactive Theory of Breastfeeding, i.e., they represent phenomena explained by the theory from ICNP® terms.

That said, the central concept of the theory, "other-child dynamic interaction", which determines the success of BF, derived from the DO that discuss how women, their child and interpersonal and social systems relate to, thus, result in the act of BF.[11] Among them, OD validated for "effective breastfeeding", "improved breastfeeding" and "improved exclusive breastfeeding" ND. In this case, interaction can be perceived by nurses through the reactions between mothers and children, such as the correct position and latch, verbal and non-verbal communication, and the effectiveness of BF.

Women's and children's biological conditions include anatomical and physiological attributes that influence biological functions necessary for BF; therefore, breast anatomy, lactation, and children's stomatognathic system are included.[11]

From this meaning, it is known that "women's biological conditions" precede the success and failure outcomes of exclusive BF, because the modification or reduction of breast tissue, such as what occurs after a mammoplasty, is associated with interference in the BF process.[17] From the validated definitions for this concept, nurses can identify biological needs that are altered in women and are amenable to NI, such as pain, nipple fissures and breast engorgement. Some clinical indicators for the presence of pain diagnosis are the presence of trauma, infection or local inflammation. To confirm the nipple fissure diagnosis, a crack or elongated ulceration through which the dermis can be observed can be observed in the woman. In order to diagnose breast engorgement, it is necessary to observe excessive accumulation of milk in the breasts, through the swelling and pain reported by infants.

In the concept of "children's biological conditions", the OD for ND that address children's sucking, the sucking reflex, their weight and sleepiness were validated. The literature points out that premature newborns are at risk for delays in sucking and feeding[18] Nurses can identify this condition by observing the lack of coordination between children's sucking, swallowing and breathing at the time of BF, planning interventions to achieve exclusive BF.

"Women's perception of breastfeeding" is a construction of knowledge and skill in BF that women acquire throughout their lives, arising from their own experiences with BF or family and social experiences, and from perceptions to which they were exposed, such as the social environment or information vehicles.[11] These statements can be verified in the validated OD for the BF capacity (effective/impaired/improved) diagnoses, which can be listed in the presence of indicators of women's ability to offer breast milk directly from the breast to meet children's needs, or changes in this pattern.

The OD was also validated for the "decreased knowledge about breastfeeding" ND, represented by the behavior of women who present insufficient information to deal with BF practice. Women's lack of knowledge about the benefits and techniques for BF negatively influence child nutrition and health outcomes as well as cognitive development.[19]

The main limitation of content validity studies is the difficulty in forming the group of judges, since there is no consensus on the necessary profile and compliance with the remote validity instrument is a challenge, due to the volume of attributions of judges with a PhD.[20,21] The profile of intermediate level judges in this study confirms this finding.

Even though PhD is the highest degree, the assessment of clinical indicators depends on how much a judge considers that item relevant or appropriate for the ND, based on their practical skills, clinical and scientific experience on the subject, and intuition, which is constructed up over time in practice.[20]

Despite this result, it was expected that some definitions for relevant diagnoses that could measure the Interactive Theory of Breastfeeding concepts in practice would obtain validity as fully applicable to clinical practice, such as "effective exclusive breastfeeding" and "impaired exclusive breastfeeding", which differ from definitions to represent effective BF, and produce different outcomes in practice. Among the 25 comments made by judges, the rewriting as defined by the Ministry of Health for BF stood out.

It is necessary to consider that nursing theories are constructions of authors, and thus, they are permeated by their views of the world, time and culture where they were produced.[22] That said, it is reiterated that the Interactive Theory of Breastfeeding distinguishes the phenomenon of BF from providing milk, which refers to all forms of breastfeeding a child. In this case, BF involves offering milk directly from the breast to children.[23]

A similar case occurred with the concept of "Children's perception of breastfeeding", where only "Children's positive perception of breastfeeding" was successful in validating the ND and its definition. The statements with "changed/improved" judgments were not fully validated (statement and definition), making it impossible for nurses to document them based on change in children's responses.

The judges made 17 comments on the definitions developed, and predominantly stated that there was no possibility of measuring children's perception. Other assessments suggested that the perception is only of mothers, or that newborns do not have the perception developed, making these definitions and diagnoses impossible.

In the Interactive Theory of Breastfeeding, "Children's perception of breastfeeding" consists of sensations perceived by newborns during BF that allow them to interact with their mothers and with the environment, to achieve their effectiveness.[11] Related to this, there is scientific evidence that describes the spontaneous instinct of neonates to orally attach to mothers' nipple for evolutionary survival. "Imprinting" is initiated by children's perception when they recognize their mothers through oral tactile memory, and thus, develops the emotional dimension. This knowledge has clinical outcomes in recognizing adequate latching mechanisms and supporting mothers' choice to breastfeed.[24]

"Impaired mother role performance" also did not obtain a validated OD. In the suggestions made by judges, it was summarily indicated that the definition could reduce mother role to the act of breastfeeding. In fact, by comprehensively reflecting on the transformations in women's lives when they start to be mothers, [25] it is agreed that the presence of the term BF in diagnoses' titles can delimit the spectrum of BF and avoid dubiousness. Thus, this suggestion was incorporated.

There is a professional contradiction regarding health care focused on the biological sphere, especially that related to women's health.[26] In this path, it is considered that nurses need to go beyond static and limited definitions, appropriating more of nursing's own concepts and theories, to increasingly seek its solidification as a science.

After that, most subset OD obtained validity and can be applied in clinical practice. The importance of constructing OD and describing this study is endorsed, as this can help to avoid misinterpretations in patient assessment.[27]

As a study limitation, the authors point to the heterogeneity of judges' perspectives of action, resulting from the recruitment strategy, which focused on the academic area, which may have limited the reach of the findings in the aspect of care practice.

Conclusion

This study enabled developing 54 OD, 6 diagnoses and 29 NI, which will form an ICNP® TS for assistance to women, children and families in the BF process. The subset ND, definitions and interventions are considered applicable to clinical nursing practice with a focus on BF during prenatal, postpartum, human milk bank and childcare. Due to its plasticity, the subset combines practicality, scientific evidence and comprises a technology that can be incorporated into health services at all levels of care, adding to the practical skills and abilities of nurses for the advancement of nursing. The OD aligned with the Interactive Theory of Breastfeeding concepts enable the description and prediction of aspects that precede and influence BF. Moreover, they can become a teaching, practice and research instrument in the field of women's, children's and families' health.

Acknowledgments

The present work was carried out with the support (Master's Scholarship granted to Albuquerque TR) of the Coordination for the Improvement of Higher Education Personnel - Brazil (CAPES - *Coordenação de Aperfeiçoamento de Pessoal de Nível Superior*) - Financing Code 001.

Collaborations

Albuquerque TR contributed to article writing, data collection, data analysis and interpretation. Cruz RSBLC and Caniçali Primo C collaborated with project design, study supervision and final approval of the version to be published. Brandão MAG, Oliveira DR and Cubas, MR cooperated with the relevant critical review of the intellectual content.

References

1. United Nations Children's Fund (UNICEF). World Health Organization (WHO). Global Breastfeeding Collective. Nova York: UNICEF, Geneva: WHO; 2021 [cited 2020 Dec 4]. Available from: https://www.globalbreastfeedingcollective.org/about-collective
2. United Nations Children's Fund (UNICEF). World Health Organization (WHO). Global breastfeeding scorecard, 2018: Enabling women to breastfeed through better policies and programmes. Nova York: UNICEF, Geneva: WHO; 2018 [cited 2020 Dec 4]. Available from: https://apps.who.int/nutrition/publications/infantfeeding/global-bf-scorecard-2018/en/index.html
3. Mesquita AL, Souza VA, Santos TN, Santos OP. O papel da enfermagem na orientação das mães sobre aleitamento materno. Rev Divulg Científica Sena Aires. 2016;5(2):158–70.
4. Monteiro DR, Pedroso ML, Lucena AF, Almeida MA, Motta MG. Studies on content validation in interface with the nursing classification systems: literature review. J Nurs UFPE On Line. 2013;7(5):1508–15. Review
5. Clares JW, Guedes MV, Freitas MC. Classificação Internacional para a Prática de Enfermagem em Dissertações e Teses Brasileiras. Rev Eletr Enferm. 2020;22:e56262.
6. Querido DL, Christoffel MM, Nóbrega MM, Almeida VS, Andrade M, Esteves AP. Terminological subsets of the International Classification for Nursing Practice: an integrative literature review. Rev Esc Enferm USP. 2019;53:e03522. Review.
7. Cho I, Kim J, Chae JS, Jung M, Kim YH. Development of ICNP-based inpatient falls prevention catalogue. Int Nurs Rev. 2020;67(2):239-48.
8. Correia MD, Duran EC. Conceptual and operational definitions of the components of the nursing diagnosis Acute Pain (00132). Rev Lat Am Enfermagem. 2017;25:e2973.
9. Carneiro CS, Lopes CT, Lopes JL, Santos VB, Bachion MM, Barros AL. Conceptual and operational definitions of the defining characteristics and related factors of the diagnosis ineffective health management in people with heart failure. Int J Nurs Knowl. 2017;28(2):76-87.
10. Nobrega MM, Cubas MR, Medeiros AC, Carvalho MW. Reflections on the validation of CIPE® terminology subsets. In: Cubas MR, Nóbrega MM. Atenção primária à saúde: diagnósticos, resultados e intervenções de enfermagem. Rio de Janeiro: Elsevier; 2015. p. 25–36.
11. Primo CC, Brandão MA. Interactive Theory of Breastfeeding: creation and application of a middle-range theory. Rev Bras Enferm. 2017;70(6):1191–8.
12. Resende FZ, Almeida MV, Leite FM, Brandão MA, Cubas MR, Araújo JL, et al. Terminological subset of the International Classification for Nursing practice (ICNP®) for breastfeeding support: content validation study. Acta Paul Enferm. 2019;32(1):35–45.
13. Primo CC, Resende FZ, Garcia TR, Duran EC, Brandão MA. ICNP® terminology subset for care of women and children experiencing breastfeeding. Rev Gaúcha Enferm. 2018;39:e20170010.
14. Waltz CF, Strickland OL, Lenz ER. Measurement in nursing and health research. 5a ed. New York: Springer publishing company; 2017. 632 p.
15. Lopes MV, Silva VM, Araujo TL. Validação de diagnósticos de enfermagem: desafios e alternativas. Rev Bras Enferm. 2013;66(5):649–55.
16. Alexandre NM, Coluci MZ. Validade de conteúdo nos processos de construção e adaptação de instrumentos de medidas. Cien Saude Colet. 2011;16(7):3061–8. Review.
17. Camargo JF, Modenesi TS, Brandão MA, Cabral IE, Pontes MB, Primo CC. Breastfeeding experience of women after mammoplasty. Rev Esc Enferm USP. 2018;52:e03350.
18. Zimmerman E. Pacifier and bottle nipples: the targets for poor breastfeeding outcomes. J Pediatr (Rio J). 2018;94(6):571–3.

19. Mapesa J, Meme J, Muthamia O. Effect of community-based nutrition on infant nutrition and associated health practices in Narok, Kenya. Afr Health Sci. 2020;20(2):724-34.

20. Diniz CM, Lopes MV, Nunes MM, Menezes AP, Silva VM, Leal LP. A Content Analysis of Clinical Indicators and Etiological Factors of Ineffective Infant Feeding Patterns. J Pediatr Nurs. 2020;52:e70-6.

21. Cubas MR, Nóbrega MM. Atenção Primária à Saúde: diagnósticos, resultados e intervenções de enfermagem. Rio de Janeiro: Elsevier; 2015.

22. Brandão MA, Barros AL, Primo CC, Bispo GS, Lopes RO. Nursing theories in the conceptual expansion of good practices in nursing. Rev Bras Enferm. 2019;72(2):577-81.

23. Primo CC. Teoria de médio alcance da amamentação: tecnologia para o cuidado [tese]. Rio Janeiro: Universidade Federal do Rio de Janeiro; 2015.

24. Mobbs EJ, Mobbs GA, Mobbs AE. Imprinting, latchment and displacement: a mini review of early instinctual behaviour in newborn infants influencing breastfeeding success. Acta Paediatr. 2016;105(1):24-30. Review.

25. Giordani RC, Piccoli D, Bezerra I, Almeida CC. Maternity and breastfeeding: identity, body and gender. Cien Saude Colet. 2018;23:2731-9.

26. Amorim TV, Souza ÍE, Salimena AM, Padoin SM, Melo RC. Operationality of concepts in Heideggerian phenomenological investigation: epistemological reflection on Nursing. Rev Bras Enferm. 2019;72(1):304-8.

27. Souza Neto VL, Costa RT, Santos WN, Fernandes SF, Lima DM, Silva RA. Validation of the definitions of nursing diagnoses for individuals with Aids. Rev Bras Enferm. 2020;73(4):e20180915.