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Interactive Breastfeeding Scale: reliability assessment[a]

Escala Interativa de Amamentação: avaliação da confiabilidade
Escala Interactiva de la Lactancia Materna: evaluación de la confiabilidade

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Abstract

Objective: to assess the Interactive Breastfeeding Scale reliability. **Method:** a methodological study that followed the third stage of Pasquali's method for the elaboration of scales, carried out with 216 postpartum women at a university hospital in southeastern Brazil. To assess reliability, percentage of agreement (p_a) above 80%, the weighted Kappa (Kp), Gwet's second-order agreement coefficient (AC2) and Cronbach's alpha were used. **Results:** the percentage of agreement was 83.33%; the overall Cronbach's alpha value was 0.67; the AC2 coefficient with quadratic and linear weights obtained near-perfect reliability. **Conclusion and implication for practice:** the Interactive Breastfeeding Scale reliability assessment was high, and it was confirmed by the results that ensure instrument quality in the population studied, proving to be a reliable and valid instrument to assess factors that interfere in the mother-child interaction while breastfeeding.

Keywords: Breastfeeding; Weaning; Scale; Validation Studies; Nursing Theory.

Resumo

Objetivo: avaliar a confiabilidade da Escala Interativa de Amamentação. **Método:** estudo metodológico, que seguiu a terceira etapa do método de Pasquali para elaboração de escalas, desenvolvido com 216 puérperas, em hospital universitário da região Sudeste do Brasil. Para avaliação da confiabilidade, foram utilizados o percentual de concordância (p_a) acima de 80%, o Kappa ponderado (Kp), a *second-order agreement coefficient* (AC2) de Gwet e o alfa de Cronbach. **Resultados:** o percentual de concordância dos itens foi de 83,33%; o valor global do alfa de Cronbach foi de 0,67; o coeficiente AC2 com ponderações quadrática e linear obteve a confiabilidade quase perfeita. **Conclusão e implicação para a prática:** a avaliação da confiabilidade da Escala Interativa de Amamentação foi alta, e foi confirmada pelos resultados que asseguram a qualidade do instrumento na população estudada, mostrando-se um instrumento confiável e válido para avaliar os fatores que interferem na interação mãe-filho durante a amamentação.

Palavras-chave: Amamentação; Desmame; Escala, Estudos de Validação; Teoria de Enfermagem.

Resumen

Objetivo: evaluar la confiabilidad de la Escala Interactiva de Lactancia Materna. **Método:** estudio metodológico, que siguió el tercer paso del método Pasquali para la elaboración de escalas, desarrollado con 216 puérperas, en un hospital universitario de la región Sureste de Brasil. Para evaluar la confiabilidad, se utilizaron el porcentaje de concordancia (p_a) por encima del 80%, el Kappa ponderado (Kp), el coeficiente de concordancia de segundo orden (AC2) de Gwet y el alfa de Cronbach. **Resultados:** el porcentaje de concordancia fue del 83,33%; el valor global del alfa de Cronbach fue de 0,67; el coeficiente AC2 con pesos cuadráticos y lineales obtuvo una confiabilidad casi perfecta. **Conclusión e implicación para la práctica:** la evaluación de la confiabilidad de la Escala Interactiva de Lactancia Materna fue alta, y fue confirmada por los resultados que aseguran la calidad del instrumento en la población estudiada, demostrando ser un instrumento confiable y válido para evaluar los factores que interfieren en la interacción madre-hijo durante la lactancia.

Palabras clave: Lactancia Materna; Destete; Escala; Estudios de Validación; Teoría de Enfermería.

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INTRODUCTION

Breastfeeding is a multifactorial, complex practice that, within the scope of public health, can be considered an intervention capable of saving more than one million lives per year.[1] It involves the dynamic interaction between mother-child and the environment, being influenced by factors that predict onset and continuity, such as maternal intention to breastfeed, lack of knowledge about the lactation process, lack of family and social support, cultural beliefs, socioeconomic context and low mothers' confidence in their abilities.[1-4]

When organized by systems at the personal level, maternal characteristics related to age, education, parity and other biological and behavioral conditions are predictors of breastfeeding.[2,4] In interpersonal and social systems, they interfere with relationships with family members and health professionals, the nature of professional occupation, organizational factors or health system guidelines, especially in support for early initiation of breastfeeding, skin-to-skin contact and rooming-in through the Baby-Friendly Hospital Initiative implementation, as recommended by international organizations.[5] In the multiplicity of predictors, multidimensional scales can be a useful aggregating tool, with support based on theories or constructs to identify mothers at high risk of early weaning and other undesirable conditions related to it.[6]

Scales or tools to measure behaviors, attitudes, knowledge and biological-psychosocial variables that influence breastfeeding have been developed in the last two decades.[6]

It is estimated that a single measure is not capable of referring to the concept of breastfeeding as a whole, when we understand it as a dynamic relationship, making the use of an adequate operational definition challenging.[1] Thus, it may be useful, especially for nurses, to have a conceptual system or theory of reference that supports the verification of empirical references aligned with the dynamic relationships of breastfeeding. Thus, we have the Interactive Breastfeeding Scale (INBS), referenced in a middle-range nursing theory: Interactive Theory of Breastfeeding.[3,7,8]

INBS emphasizes its proximity to the empirical component of knowledge in the form of statements that function as working hypotheses for propositions and other statements of the aforementioned theory, indicating elements of measurement of breastfeeding as an interactive and dynamic process. This scale currently represents the most concrete or empirical level of the Interactive Theory of Breastfeeding.[3]

The first version of INBS, published in 2018, had 58 items.[7] After theoretical and empirical analysis by 40 nurses in Brazil, its conformation was reduced to thirty items, which assess biological-emotional conditions, skills, behaviors, social support, beliefs and knowledge about breastfeeding, being able to indirectly estimate the risk of weaning due to not reaching of interactive breastfeeding.[8] However, INBS has not yet been subjected to the investigation of reliability, so that one can better judge its behavioral assessment, quality and accuracy, which limits its use in professional practice.

Thus, this research aims to assess the INBS reliability.

METHOD

This is a methodological study, which consists of the third stage of INBS elaboration, idealized by Pasquali's method.[9] The method comprises the steps of theoretical, empirical and analytical procedures.

Regarding the INBS, the theoretical procedures were performed by Souza et al.[7] The empirical procedures concerning validity were developed by Primo et al.[8] In the last step, analytical procedures that test reliability are developed in this article.

The manuscript was written according to the Equator Guidelines for Reporting Reliability and Agreement Studies (GRRAS), for better structuring of the text.[10]

The sample was determined for convenience and included 216 postpartum women from a high-risk maternity hospital at a university hospital in southeastern Brazil. We included healthy women and newborns hospitalized in a rooming-in system with at least 12 hours postpartum, and who did not have restrictions to breastfeed. We excluded women who had cognitive, hearing, motor disabilities or who did not speak Portuguese.

The INBS was applied in two moments, the first assessment between 12 and 24 hours after delivery, and the second, up to 48 hours after the first application. Data was collected through a form on Google Forms. Data collection took place in a private room attached to the rooming-in and lasted, on average, 14 minutes. Collection was carried out, from April to June 2018, by two nursing students from the last period, who worked for at least one year in an extension project on breastfeeding. Students participated in a one-hour theoretical-practical training on the scale, given by the main researcher.

To assess inter-rater reliability, the percentage of agreement (p_a), linear weighted Kappa (Kp), Gwet's second-order agreement coefficient (AC2) and Cronbach's alpha were used.[11,12] Alpha was calculated from individual item variance and response sum variance to participant items in the research. Kappa was judged according to the following criteria: <0: lack of agreement; 0.01-0.20: poor agreement; 0.21-0.40: mild agreement; 0.41-0.60: moderate agreement; 0.61-0.80: substantive agreement; and 0.81-1.00: almost perfect agreement.[13] Statistical analyzes were performed by professionals in the field using the R statistical program, version 3.5.3.

From reliability assessment, the items that did not have values that indicated consistency were reformulated or excluded from the scale. During application, the items that presented confusing wording for puerperal women were adjusted. In the end, the scale was reorganized and reformulated, considering these findings.

Regarding ethical aspects, participants were informed about the study personally. After reading, the women signed the Informed Consent Form. They were also informed of their right to refuse to participate or to refuse to answer any questions, discontinue the interview or withdraw from the study at any time, without providing information or affecting their future assistance/services. The study was approved by the university's Research Ethics Committee, under CAAE (*Certificado de Apresentação*

para Apreciação Ética - Certificate of Presentation for Ethical Consideration) 53610316.8.0000.5060.

RESULTS

Regarding the sociodemographic characterization of the 216 study participants, the mean age of puerperal women was 28 years. As for marital status, 38% were married, 33% were in a stable relationship, 27% were single and 2% were divorced. The predominant race/color was brown (59%), followed by black (23%), white (15%) and indigenous (2%). Only 1% of postpartum women did not want to declare race/color. The Metropolitan Region was home to 96% of postpartum women. As for education, 43% had completed high school, 20% had incomplete high school, 20% had incomplete elementary school, 6% had completed elementary school, 6% had completed higher education and 5% had incomplete higher education. As for family income, 41% received less than one minimum wage, while 31%, 27% and 1% received one minimum wage, two salaries and no fixed income, respectively. In addition, 13% of postpartum women were unemployed, 74% had a steady job, 5% were self-employed and 8% were students.

Of the gestational characteristics, 65% were multiparous and 35% were primiparous. 94% of multiparous women had previously breastfed, and 63% of these had already experienced complications, such as nipple fissures and mastitis. When asked if they received guidance on breastfeeding during prenatal care, 37% reported that they received information about the importance and duration of breastfeeding, baby and breast care, position techniques and correct latching. As for support for breastfeeding, 99% said they received support from family members, especially from their mother, father, siblings and partner.

The percentages of agreement (p_a) for most (83.33%) items assessed were high, exceeding 0.80, however the weighted Kappa values of ten statements were mild, as shown in Table 1.

Items with low linear weighted Kappa values were found to have heterogeneous distribution of categories. Item 22 (I breastfeed because it is the best for my baby) is representative in demonstrating the very high agreement (pa=0.998) for a Kp=0.000. It was found that almost all respondents concentrated their responses in category 5 (always) both in the test and in the retest.

To circumvent the unbalanced weighted Kappa problem, Gwet's AC2 values were calculated. By this measure, agreement percentage values and Gwet's AC2 were aligned, with only the items with lower percentages of agreement with the "moderate" qualifier, namely: 6 (My baby stays awake and relaxed during breastfeeding), 10 (I feel pain when breastfeeding), 15 (My baby has difficulty latching my breast) and 25 (I change my opinion according to the guidance of health professionals). All values are shown in Table 2.

The scale reliability using Cronbach's alpha obtained an overall value of 0.56. After individual analysis of the items, it was observed that questions 12, 15, 22 25, 26 and 27 did not have values that indicated item consistency, being excluded from the

scale. After excluding them, an increase in the overall value of Cronbach's alpha to 0.67 was observed.

After the statistical analysis and considering the postpartum women's comments regarding some statements, there was a reformulation in the wording of the items that expressed feelings of negativity, being replaced by positive statements. Items 1, 2, 5, 6, 7, 8, 9, 10, 16, 17, 18 and 19 remained the same. Items 3, 4, 11, 13, 14, 23, 24 underwent minor wording adjustments. The changes had the consent of the researchers who developed the reference theory and previous versions of INBS.

Statement 3 "I believe that the use of pacifier and nursing bottle harms breastfeeding" was reformulated to "I use a pacifier and nursing bottle during exclusive breastfeeding". Item 4 "I believe breast milk supports the baby" was adjusted to "I believe my milk is strong and supports my baby".

Item 11 "I can produce enough milk to breastfeed my baby" was changed by "I produce enough milk to breastfeed my baby". Item 13 "My baby sucks my breast properly" was corrected to "My baby is sucking properly at my breast". Statement 14 "My baby keeps constantly holding the breast" was suitable for "My baby keeps a correct holding the breast throughout the feeding".

Item 23 "I have the support of my family/partner to breastfeed" was reorganized into two statements: "I have my partner's support to breastfeed" and "I have the support of my family to breastfeed". Statement 24 "I have professional support for breastfeeding" was adjusted to "I have the support of health professionals to breastfeed".

Items 15, 20, 21, 28 and 29 underwent major reformulations in the wording. Item 15 "My baby has difficulty latching my breast" was reformulated to a positive statement "My baby is able to properly latching my areola and nipple". Item 20 "I feel obligated to breastfeed" was appropriate for "I feel that as a mother, I have a responsibility to breastfeed". Item 21 "I enjoy breastfeeding" was reformulated to "I feel satisfaction when my baby is satisfied after breastfeeding". Statement 28 "I wish to breastfeed" was appropriate for "I feel like continuing to breastfeed". Statement 29 "I believe that having a positive experience influences my decision to breastfeed" was reformulated to "I decided to breastfeed encouraged by mine or my family positive experience". Finally, item 30 was merged into item 5, as they expressed similar ideas.

For items 25, 26 and 27, which were excluded, a new statement was proposed to express the concept "Family and social authority": "Health professionals interfere in my decision to breastfeed" and "My family members and/or partner interfere in my decision to breastfeed".

After removing and reorganizing the items, two new statements were incorporated that proved to be consistent with the qualitative results in filling out the INBS, with the Interactive Theory of Breastfeeding and with evidence from the literature, which are: "I can massage and milk my breast when I need it" and "I feel comfortable breastfeeding in the presence of my family".

At the end of validity and reformulation processes, the INBS continued to have 30 items related to the Interactive Theory of Breastfeeding concepts. However, the items were randomly

Table 1. Percentage of agreement values and linear weighted Kappa for the Interactive Breastfeeding Scale items. Vitória, Espírito Santo, Brazil, 2021.

Scale item	p_a	Kp	Kp in (95%) CI	Interpretation
1. I talk and look at my baby while breastfeeding.	0.927	0.628	0.515 to 0.740	Substantive
2. I can stay relaxed and comfortable to breastfeed.	0.808	0.324	0.218 to 0.430	Mild
3. I believe that the use of pacifier and nursing bottle harms breastfeeding.	0.868	0.711	0.634 to 0.788	Substantive
4. I believe breast milk supports the baby.	0.957	0.414	0.216 to 0.613	Moderate
5. I know the benefits of breastfeeding.	0.858	0.499	0.394 to 0.603	Moderate
6. My baby stays awake and relaxed during breastfeeding.	0.737	0.267	0.169 to 0.364	Mild
7. My baby spontaneously unholds my breast when sated.	0.794	0.240	0.101 to 0.379	Mild
8. I know when my baby is hungry.	0.836	0.254	0.134 to 0.373	Mild
9. My baby is calm and relaxed after breastfeeding.	0.934	0.207	0.046 to 0.368	Mild
10. I feel pain when breastfeeding.	0.777	0.421	0.321 to 0.522	Moderate
11. I can produce enough milk to breastfeed my baby.	0.875	0.404	0.269 to 0.540	Moderate
12. I believe that breast surgery interferes with breastfeeding.	0.818	0.605	0.516 to 0.693	Substantive
13. My baby sucks my breast properly.	0.848	0.301	0.178 to 0.423	Mild
14. My baby keeps constantly holding the breast.	0.824	0.248	0.136 to 0.361	Mild
15. My baby has difficulty latching my breast.	0.763	0.306	0.201 to 0.410	Mild
16. I think breastfeeding makes my breasts flaccid and sag.	0.819	0.619	0.527 to 0.710	Substantive
17. I feel unattractive during the breastfeeding period.	0.895	0.682	0.582 to 0.782	Substantive
18. I feel comfortable breastfeeding in public places.	0.881	0.675	0.580 to 0.770	Substantive
19. I cover my breast when breastfeeding in public places.	0.904	0.791	0.718 to 0.863	Substantive
20. I feel obligated to breastfeed	0.875	0.643	0.527 to 0.760	Substantive
21. I enjoy breastfeeding.	0.978	0.764	0.593 to 0.934	Substantive
22. I breastfeed because it is the best for my baby.	0.998	0.000	0.000 to 0.000	Absence
23. I have the support of my family/partner to breastfeed.	0.983	0.585	0.241 to 0.929	Moderate
24. I have professional support for breastfeeding.	0.918	0.441	0.259 to 0.624	Moderate
25. I change my opinion according to the guidance of health professionals.	0.760	0.460	0.360 to 0.559	Moderate
26. I feel influenced by my family to decide on breastfeeding.	0.838	0.437	0.300 to 0.573	Moderate
27. I feel influenced by my friends to decide on breastfeeding.	0.904	0.378	0.199 to 0.557	Mild
28. I wish to breastfeed.	0.991	0.594	0.172 to 0.001	Moderate
29. I believe that having a positive experience influences my decision to breastfeed.	0.818	0.300	0.143 to 0.456	Mild
30. I think knowing the advantages of breastfeeding helps in the decision to breastfeed.	0.943	0.192	-0.047 to 0.431	Poor

Caption: p_a: percentage of agreement; Kp: linear weighted kappa; CI: confidence interval.
Source: prepared by the authors.

Table 2. Percentage of agreement and AC2 coefficient values for each item of the Interactive Breastfeeding Scale. Vitória, ES, Brazil, 2021.

Scale item	p_a	Linear AC2	AC2 in (95%) CI	Interpretation
1	0.927	0.897	0.859 to 0.934	Almost perfect
2	0.808	0.684	0.613 to 0.755	Substantive
3	0.868	0.749	0.677 to 0.820	Substantive
4	0.957	0.952	0.928 to 0.976	Almost perfect
5	0.858	0.778	0.716 to 0.840	Substantive
6	0.737	0.453	0.364 to 0.542	Moderate
7	0.794	0.712	0.634 to 0.791	Substantive
8	0.836	0.777	0.714 to 0.841	Substantive
9	0.934	0.925	0.894 to 0.956	Almost perfect
10	0.777	0.550	0.460 to 0.640	Moderate
11	0.875	0.831	0.776 to 0.886	Almost perfect
12	0.818	0.643	0.559 to 0.728	Substantive
13	0.848	0.780	0.720 to 0.840	Substantive
14	0.824	0.748	0.682 to 0.814	Substantive
15	0.763	0.548	0.456 to 0.641	Moderate
16	0.819	0.661	0.575 to 0.747	Substantive
17	0.895	0.846	0.790 to 0.901	Almost perfect
18	0.881	0.813	0.750 to 0.876	Almost perfect
19	0.904	0.829	0.767 to 0.890	Almost perfect
20	0.875	0.824	0.761 to 0.887	Almost perfect
21	0.978	0.975	0.958 to 0.993	Almost perfect
22	0.998	0.998	0.994 a 1,000	Almost perfect
23	0.983	0.984	0.971 to 0.998	Almost perfect
24	0.918	0.902	0.862 to 0.943	Almost perfect
25	0.760	0.491	0.392 to 0.590	Moderate
26	0.838	0.771	0.701 to 0.841	Substantive
27	0.904	0.884	0.837 to 0.931	Almost perfect
28	0.991	0.990	0.982 to 0.999	Almost perfect
29	0.818	0.767	0.695 to 0.838	Substantive
30	0.943	0.939	0.907 to 0.972	Almost perfect

Caption: CI: confidence interval.
Source: prepared by the authors.

distributed so that the concepts were not in sequence, as shown in Chart 1. They are operational statements, presented in sentences formulated in a positive way. Item compliance is measured by applying scores ranging from 1 to 5, where 1 means never, 2, rarely, 3, sometimes, 4, often, and 5, always.

After application, the values are summed up and can range from 30 to 150, and the closer to 150, the greater the mother-child-environment interaction in breastfeeding. When the value is close to 30, less interaction is indicated, allowing professionals to intervene in the identified factors, with low scores, to help the woman to achieve success in breastfeeding.

Items 5, 9, 11, 13, 19, 23 and 27 are statements with inverted scores, because the answers "always" and "never" receive the values 1 and 5, respectively, for the items.

The scale can be applied with healthy women and newborns in a rooming-in system with at least 12 hours postpartum who

Chart 1. Interactive Breastfeeding Scale, version 3, after validity. Vitória, Espírito Santo, Brazil, 2021.

Interactive Breastfeeding Scale	Never	Rarely	Sometimes	Often	Always
1. I feel satisfaction when my baby is satisfied after breastfeeding.					
2. I can correctly place my baby on my breast.					
3. I can massage and milk my breast when I need it.					
4. I have my partner's support to breastfeed.					
5. I think breastfeeding makes my breasts flaccid and sag.					
6. My baby stays awake and relaxed during breastfeeding.					
7. I feel comfortable breastfeeding in the presence of my family.					
8. I produce enough milk to breastfeed my baby.					
9. I cover my breast when breastfeeding in public places.					
10. I have the support of health professionals to breastfeed.					
11. I feel pain or burning when breastfeeding.					
12. My baby keeps a correct holding the breast throughout the feeding.					
13. I use a pacifier and nursing bottle during exclusive breastfeeding.					
14. My baby is able to properly latching my areola and nipple.					
15. I believe that my milk is strong and supports my baby.					
16. I feel like continuing to breastfeed.					
17. I feel that as a mother, I have a responsibility to breastfeed.					
18. I know when my baby is hungry.					
19. Health professionals interfere with my decision to breastfeed.					
20. My baby spontaneously unholds my breast when sated.					
21. I decided to breastfeed encouraged by mine or my family positive experience.					
22. I talk to, touch or feel, and look at my baby while breastfeeding.					
23. I feel unattractive during the breastfeeding period.					
24. My baby is sucking properly at my breast.					
25. I feel relaxed and comfortable to breastfeed.					
26. I have the support of my family to breastfeed.					
27. My family and / or partner interfere with my decision to breastfeed.					
28. I know the benefits of breastfeeding.					
29. I feel comfortable breastfeeding in public places.					
30. My baby is calm and relaxed in the first hour after breastfeeding.					

Source: prepared by the authors.

have no restrictions on breastfeeding, and healthy women and children who have no restrictions on breastfeeding anywhere.

DISCUSSION

The central concept of the interactive breastfeeding scale and its different characteristics and properties, assessed through statements that express behaviors, beliefs, attitudes, knowledge, conditions and social support, can be used to understand Cronbach's alpha moderate values. The Interactive Breastfeeding Theory postulates a complex and multidimensional breastfeeding construct,[3] which can lead to a multiplicity of perspectives on the process, dependent on a system of participants' experiences, knowledge and beliefs in validity.

On the other hand, the percentage of agreement values were high, and the Gwet AC2 values of items indicated a high probability of not having occurred at random.[11,12] The application test and retest application with the maintenance of the scores expressed the scale's stability with the possibility of application at different times of the breastfeeding process. Thus, the scale can demonstrate an acceptable internal consistency for application in a population with such characteristics.

As expressed in the results, the concentration of responses in category 5 produced an unbalanced kappa value calculated for this population. Thus, for the low weighted Kappa value of some items, the measurement statistical behavior in the Kappa Paradox may be an adequate explanation. This phenomenon occurs when the coefficient is influenced by the presence of unbalanced marginal totals.[11-14] Because of this, the AC2 coefficient application is justified, regardless of the weighting considered to correct the paradox, and, therefore, INBS reliability (test-retest) was quite high.

The adequacy in the wording of statements 3, 4, 11, 13, 14, 23, 24 was observed during the application of the scale, with women referring doubts or making suggestions for a better understanding of the items. It is understood that this qualitative adequacy, with the adoption of the authors of the scale, guarantees the convergence of constructs to the empirical reference[15] and the scientific evidence observed in several studies. These items address issues related to pacifier and bottle use, women's confidence in producing and sustaining human milk, newborn latch on and suction, and support from partners, family members, and health professionals.[2,4,16-18]

On the effects of pacifier and/or bottle use during breastfeeding practice, despite the lack of consensus, an observational cross-sectional study with 427 binomials showed the association of using bottles and pacifiers with negative behaviors, mainly related to positioning and sucking pattern.[16]

A qualitative study showed that the exchanges and interaction between mother and child during breastfeeding strengthened self-confidence and brought women satisfaction. On the other hand, the main negative experiences were the child's constant demand for the breast and insecurity regarding the ability to produce enough milk.[17]

The experiences related to breastfeeding experienced by the mother in her family context directly influence breastfeeding incidence and duration. Research indicates that negative experiences and difficulties negatively affect the chances of breastfeeding for success. Counseling and support from health professionals on how to recognize the signs of hunger in the newborn are important facilitators of breastfeeding.[2]

The participation of the father in the entire process of breastfeeding and of family members has a fundamental role in promotion and continuity of exclusive breastfeeding.[3,4,18]

This study is aligned with the Interactive Breastfeeding Theory development.[3] The statements present in the different versions of the scale have followed an interactive process that applies deduction and induction reasoning. The changes made to the INBS statements were triggered by the empirical evidence from the test with women, however the adjustments in semantics and wording are driven by the structure provided by the theory.

Useful theories remain in constant development, in order to incorporate predictions for heterogeneous situations, as well as maintain the presumed usefulness in its original conformation.[15,19] Anchoring in the theoretical and operational terms of the Interactive Theory of Breastfeeding ensured that the process of adjusting the statements was carried out without dismantling the theory's central construct, which is interactive breastfeeding. There are different perspectives to conceptualize breastfeeding, but the studies that have validated the INBS follow processes of a comprehensive substruction and inductive construction, maintaining as a premise the definition of breastfeeding as a dynamic and interactive process.

Field validity has unquestionable relevance to produce empirical referents useful to use, and statistical procedures produce encouraging results for this enterprise. However, in a paradigm perspective guided by theories,[19] the referencing of theoretical terms to elements of the phenomenon requires continuous vigilance in the processes of reconceptualization or redefinition of statements. From this perspective, a good statement on a given scale is not just one with adequate statistical values, it is also one that remains congruent with the theory's predictive or explanatory purposes.

CONCLUSION AND IMPLICATIONS FOR PRACTICE

The INBS reliability (test-retest) assessment was quite high, having been confirmed by the results that assure the quality of instrument stability in the population studied. The value just adequate for Cronbach's alpha and the qualitative changes in the scale indicate the need for new validity studies, based on the new format proposed in other populations of women, for the tool continuous evolution.

As a contribution to clinical practice, the use of a reliable and validated scale helps in the assessment of the various factors involved in the mother-child interaction during breastfeeding, and it is extremely important for health professionals to identify

early the factors involved in the risk of breastfeeding failure and that can lead to early weaning.

As a limitation, the participation of a unicentric population can expand more particular aspects of a given group, minimizing the power of indirect generalization of the middle-range theory that supported the scale construction. However, because it is a middle-range theory, the Interactive Breastfeeding Theory operates precisely at the middle level, i.e., between the singular focus on breastfeeding interaction and breastfeeding process generalization. These theoretical characteristics preserve the value of the findings of this research. Therefore, other validity studies with different populations may increase the inductive power of replication, bringing greater support in the recurrence of empirical patterns.

AUTHOR'S CONTRIBUTIONS

Study design. Cândida Caniçali Primo. Julia Marina Siman Dias. Fabiola Zanetti Resende. Eliane de Fátima Almeida Lima. Marcos Antônio Gomes Brandão.

Data analysis. Cândida Caniçali Primo. Luciana Graziela de Godoi. Julia Marina Siman Dias. Marcos Antônio Gomes Brandão.

Article writing and critical review. Cândida Caniçali Primo. Marcos Antônio Gomes Brandão. Julia Marina Siman Dias. Luciana Graziela de Godoi. Nátaly Jiménez Monroy. Fabiola Zanetti Resende. Eliane de Fátima Almeida Lima.

Responsibility for all aspects of the content and the integrity of the published article. Cândida Caniçali Primo. Marcos Antônio Gomes Brandão. Julia Marina Siman Dias. Luciana Graziela de Godoi. Nátaly Jiménez Monroy. Fabiola Zanetti Resende. Eliane de Fátima Almeida Lima.

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