Validation of the knowledge breastfeeding scale into brazilian portuguese

Validação para o português da escala de conhecimento acerca do aleitamento materno

Validación al portugués de la escala de conocimiento sobre lactancia materna

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Abstract

Objective: To translate and validate the Knowledge Breastfeeding Scale into Brazilian Portuguese.

Methods: A methodological study of tool validation carried out in six steps: translation, back-translation, judges committee analysis, pretest, review of scores and assessment of psychometric properties. The validation process was performed with 65 postpartum women, in a joint hospital accommodation unit and in the follow-up in a primary care unit, in Western Paraná, between March and July 2018, with descriptive statistical data analysis.

Results: In the assessment of psychometric properties in the pretest, a Cronbach's alpha of 0.78 was obtained and in the test-retest of 0.61. The intra-class correlation between test and retest was 0.756. The tool presented satisfactory internal consistency and perfect agreement.

Conclusion: The translated version of the scale proved to be valid and viable and its use in future research will allow to complement the psychometric analyzes.

Resumo

Objetivo: Traduzir e validar a escala de conhecimento acerca do aleitamento materno - *Knowledge Breastfeeding Scale*, para a língua portuguesa brasileira.

Métodos: Estudo metodológico de validação de instrumento realizado em seis etapas: tradução, retrotradução, análise do comitê de juízes, pré-teste, reexame das pontuações e avaliação das propriedades psicométricas. O processo de validação foi realizado com 65 puérperas, em uma unidade de alojamento conjunto hospitalar e no seguimento em unidade de atenção primária, na região Oeste do Paraná, entre março e julho de 2018, com análise de dados estatística descritiva.

Resultados: Na avaliação das propriedades psicométricas no pré-teste obteve-se um alfa de Cronbach de 0,78 e no teste-reteste de 0,61. A correlação intra-classe entre teste e reteste foi de 0,756. O instrumento apresentou consistência interna satisfatória e concordância perfeita.

Conclusão: A versão traduzida da escala mostrou-se válida e viável e sua utilização em pesquisas futuras permitirá complementar as análises psicométricas.

Resumen

Objetivo: Traducir y validar la escala de conocimiento sobre lactancia materna, *Knowledge Breastfeeding Scale*, al idioma portugués brasileño.

Métodos: Estudio metodológico de validación de instrumento realizado en seis etapas: traducción, retrotraducción, análisis del comité de jueces, prueba piloto, reexaminación de las valoraciones y evaluación de las propiedades psicométricas. El proceso de validación fue realizado con 65 puérperas, en una unidad de alojamiento conjunto de un hospital y en el acompañamiento en una unidad de atención primaria, en la región oeste del estado de Paraná, entre marzo y julio de 2018, con análisis de datos estadístico descriptivo.

Resultados: En la evaluación de las propiedades psicométricas en la prueba piloto se obtuvo un alfa de Cronbach de 0,78 y en el test-retest de 0,61. La correlación intraclase entre test y retest fue de 0,756. El instrumento presentó consistencia interna satisfactoria y concordancia perfecta.

Conclusión: La versión traducida de la escala demostró ser válida y viable y su utilización en investigaciones futuras permitirá complementar los análisis psicométricos.

Introduction

The act of breastfeeding is millennial, has no cost and is essential for human development, determined by natural and biological aspects, but also built by the daily life of families, in their social and cultural relations.[1] Accumulated evidence shows benefits of breast milk for women, such as a reduction in breast and ovarian cancer, as well as long-term effects for children, such as increased intelligence and reduced risk of future obesity and diabetes.[2] Also, if the baby breastfeeds longer, the higher the levels of intelligence, education and financial income as an adult.[3]

In addition, appropriate breastfeeding practices help prevent diarrhea, respiratory infections, otitis media, overweight, diabetes, necrotizing enterocolitis, and sudden newborn death syndrome, and raise human capital by increasing intelligence.[3] The World Health Organization (WHO) recommends Exclusive Breastfeeding (EBF) until the baby's sixth month of life and the introduction of breastfeeding from this age, with complementary breastfeeding up to two years of age or older.[4]

However, in low- and middle-income countries, only 37% of children under six months receive EBF.[3] In Brazil, most mothers begin breastfeeding (BF), but more than half of children are no longer breastfed in the first month of life.[5] According to data from the II Breastfeeding Prevalence Survey, it was found that the prevalence of EBF in children under six months was 41% and the median duration was 54.1 days.[6] A study on the historical series of BF indicators in Brazil showed an upward trend until 2006, with stabilization from that date on three of the four assessed indicators, being EBF in children under six months of life - 36.6%, BF in children under two years - 52.1% and BF continued with one year of life - 45.4%.[7]

Among the difficulties in maintaining breastfeeding, there is the need for support and guidance since pregnancy, but especially in the maternity ward. It is in the mother-baby adaptation that the biggest obstacles to the breastfeeding process are found, including the biological ones, such as breast problems; with the handle of the Newborn (NB); with maternal postpartum recovery, but also psychosocial, related to the desire to breastfeed and the conditions necessary for the adoption of this practice,[8] as lack of support from the woman's family and social support network, including health services, return to work,[9] lack of maternal knowledge about breastfeeding process and practice.[10]

In a study of 102 mothers of NB, the main difficulties in maintaining BF were: the introduction of supplementation, insufficient milk, nipple fissures, mastitis, incorrect grip, duration of maternity leave, reflux and low weight of the child. Also, it is noteworthy that at 180 days after the newborn's birth, only 24 (23.53%) of those mothers remained on EBF.[11] In turn, a study conducted in the city of Cuiabá with 60 pregnant women showed that most of them showed knowledge about the main advantages of breastfeeding. However, they could not answer about problems related to BF and the treatment and prevention of these diseases,[12] highlighting a gap to be addressed by the health sector.

Authors have identified that Brazil has the necessary conditions to advance breastfeeding indicators. "Political will, legislation and policies, financial resources, training and capacity building in policies and programs, breastfeeding promotion, research and assessment, advocacy, and central coordination with objectives and monitoring indicate that the success of the Breastfeeding is not the sole responsibility of women, but shared by society".[7,6]

Thus, it is important that health services establish strategies to promote, support and encourage

breastfeeding. The health team and specifically nursing play a major role in breastfeeding, because besides providing assistance in the rooming-in, the nurse acts to stimulate and promote breastfeeding in primary care. Therefore, nurses should actively participate in the promotion of EBF, from prenatal to postpartum, and inform about the introduction of complementary feeding at the appropriate time.

To assist in this process, knowing the support that women receive during pregnancy, childbirth and the puerperium, both health services and family, friends and people close to you, for the success of breastfeeding, tools that support this practice have been used abroad.[13-15] An example is the scale for measuring maternal knowledge about breastfeeding,[16] still unavailable in Brazil for this purpose.

Such tools help health professionals identify problems and disseminate appropriate knowledge for the promotion, protection and support of exclusive breastfeeding. Therefore, this study aimed to translate and validate the Knowledge Breastfeeding Scale into Brazilian Portuguese.

Methods

This is a cross-sectional, methodological study of tool translation and validation for the Brazilian context, integrating the multicenter project "exclusive breastfeeding: sociocultural determinants in Brazil". It was conducted under the coordination of a researcher at *Escola de Enfermagem Anna Nery*, including states from all regions of the country and using six different scales for a comprehensive assessment of breastfeeding in the country, one of which has already been validated for Portuguese,[17] and the other. others in the process of validation by the research team, as presented here. The study, in turn, integrates international research on breastfeeding in the Americas, coordinated by a professor at the University of Kentucky, United States, where the breastfeeding assessment scales proposed for validation are already used and also translated into Spanish, lacking their availability in Portuguese.

The knowledge breastfeeding scale (Annex 1), which stands for English in KBS and Spanish in KNOWL (maintained in Portuguese), with a single dimension, portrays the knowledge of mothers about breastfeeding. It consists of 26 items with true or false answers (scores zero and one), so that a total score of zero to 26 points can be obtained. The closer to 26, the greater the woman's knowledge of breastfeeding. Scale items address characteristics of breastfeeding (1, 2, 3, and 6), colostrum (4, and 5), benefits of breastfeeding (7, 8, and 15), breast milk production (9 to 12), introduction of complementary foods (14), breastfeeding technique (16 to 26) and teething interference (13).

For the translation and cultural adaptation of the scale into Brazilian Portuguese, the following guidelines were followed:[18] direct translation, synthesis of translations, back translation, committee consolidation, pretest and test-retest. For validation, which covered reliability and validity, internal consistency, intra-observational reliability, apparent or logical validity, content, criterion and construct were assessed.

The translation stage was performed by two health professionals with knowledge of the tool. It was later sent to two bilingual professional translators whose mother tongue was the same as the original back translation questionnaire, resulting in the synthesis version of the expert committee assessment scale.

The synthesis version was assessed at a committee of experts composed of nine people, two Portuguese translators, two Spanish translators, one linguist, one health course methodology professor, a health professional with expertise in breastfeeding, a statistician and the principal researcher. One hundred percent agreement was obtained in the synthesis version, resulting in the first translation version of the tool for the applicability and reliability pretest.

The KNOWL scale application sample, for reliability validation, was composed of 65 puerperal women, 20 for the pretest and 45 for the test-retest, according to the statistical calculation determined by the GPower program, assuming a power statistical value of 0.89 and considering α of 0.05. The field steps were performed in a joint housing of a public and teaching hospital, in the postpar-
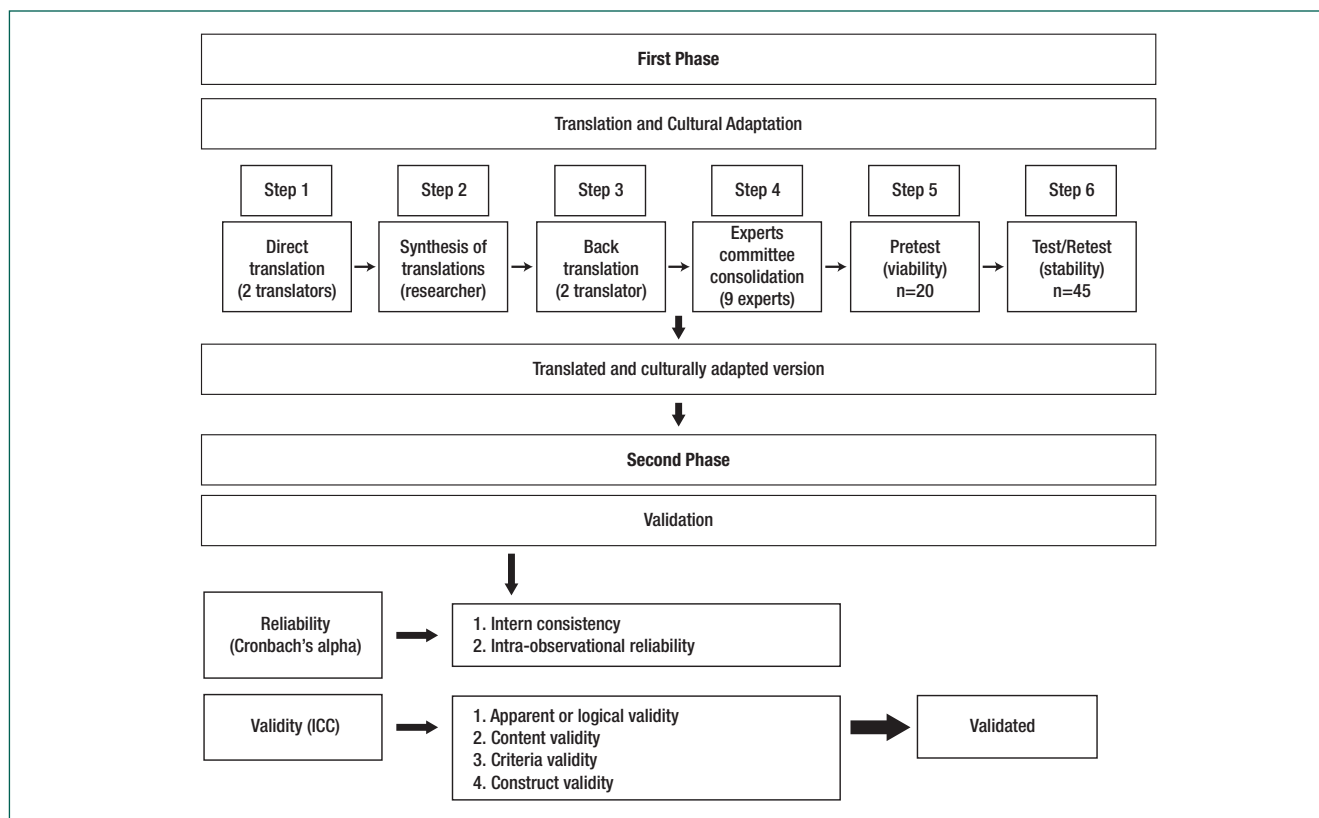
Figure 1. Translation, cultural adaptation and validation processes

tum mediate (up to two days after delivery), for the pretest and in primary care unit, in the postpartum period (up to 40 days after delivery), for the test-retest, from March to July 2018, in a medium-sized municipality in Western Paraná.

Nursing women, literate, because the scale is self-applicable and Portuguese as a first language, were inclusion criteria. History of psychiatric disorders and/or neurological problems reported in hospital or primary care medical records, age below 18 years without the supervision of a guardian were exclusion criteria.

Figure 1 shows the scale validation process diagram.

Analysis using descriptive statistics was performed using the IBM® SPSS® version 21 program, and the significance level assumed for all statistical tests was 0.05. To obtain the reliability of the scale, Cronbach's alpha was applied, considered almost perfect when it is greater than 0.80, substantial from 0.61 to 0.80 and moderate from 0.41 to 0.60.[19] For stability analysis, the first and second

assessment (test-retest) were compared using the intra-class correlation coefficient (ICC). Values <0.5 = poor reliability; ≥0.5 and ≤0.75 = moderate reliability; > 0.75 and ≤ 0.90 = good reliability and> 0.90 = excellent reliability were adopted as parameters.[20]

All participants responded to the tool only after reading, accepting and signing the Informed Consent Form (ICF). The study was approved by the Research Ethics Committee, under Opinion 2,507,525, CAEE CAAE (*Certificado de Apresentação para Apreciação Ética* - Certificate of Presentation for Ethical Consideration) 80711517.8.1001.5238.

Results

The KNOWL scale was considered culturally adapted from 90% or more understanding of the mothers. It was evident that the items were written in a clear and understandable way, whose understanding was 98.65%. In the pretest, two forms were not completed completely. One was not answered item

9 and the other items 2, 8, 15, 19, 20 and 21 were blank. Also, in item 2, there was doubt in the terminology "antibodies", and its explanation (defense cells of the human body) was added, in parentheses, in the final version of the tool, used for the test-retest, to which it was also applied. sociodemographic questionnaire and clinical record to characterize the participants. The final version of the scale is presented in Table 1, which shows, for each item of the scale, the reliability assessment by Cronbach's alpha.

In the pretest the scale obtained Cronbach's alpha of 0.78 and in the retest test of 0.61, both values in the substantial classification and being validated in their content. In the test-retest, the reproducibility in the intra-class correlation between test and retest was 0.756 (significant p-value of 0.000). F-Test obtained a value of 7.19, p = 4.47e-10, which shows that the correlation is significant, with a confidence interval of 0.598. The mean of the items that make up the scale ranged from

Table 1. Knowledge Breastfeeding Scale Assessment – KNOWL into Brazilian Portuguese (n=45)

Scale Items	Pretest				Test			
	Alpha	Standardized Correlation	Mean	Standard Deviation	Alpha	Standardized Correlation	Mean	Tandard Deviation
1. Formula milk has the same characteristics as breast milk.	--	--	--	--	0,61	0.147	0.956	0.21
2. Breast milk has proteins, sugar and antibodies (defense cells of the human body).	0.78	0.271	0.95	0.22	--	--	--	--
3. Aspirin, cold or flu medicines, and cigarette nicotine are transferred from mother to child through breast milk.	0.77	0.408	0.90	0.31	0,61	0.167	0.933	0.25
4. It is important not to give the baby colostrum (first milk).	0.78	0.303	0.90	0.31	0,56	0.497	0.822	0.39
5. The most important benefit of colostrum is that it provides nutrition and antibodies to the baby.	0.77	0.556	0.95	0.22	--	--	--	--
6. Only half of women can produce breast milk.	0.79	-0.057	0.05	0.22	0,61	0.179	0.822	0.39
7. It has been shown that breast milk helps prevent allergies, infections, obesity and overweight in the baby.	0.78	0.218	0.85	0.37	--	--	--	--
8. A benefit of breastfeeding for the mother is helping the uterus to return to normal size prior to pregnancy.	0.77	0.363	0.80	0.41	0,62	0.056	0.822	0.39
9. The emotional state of the mother can affect the milk drop.	0.78	0.200	0.90	0.31	--	--	--	--
10. The amount of breast milk produced will depend on how much you breastfeed.	0.79	0.128	0.80	0.41	0,61	0.112	0.133	0.34
11. Wearing a tight bra is an important action for the mother to produce breast milk.	0.75	0.721	0.85	0.37	0,60	0.294	0.067	0.25
12. The mother should sleep and rest, drink enough fluid every day, and eat a proper diet to produce breast milk.	0.79	0.020	0.10	0.31	--	--	--	--
13. The mother should stop breastfeeding when her baby's first teeth are born.	0.79	0.078	0.05	0.22	--	--	--	--
14. It is recommended that a breastfed baby begin eating solid foods between 3 and 5 months old.	0.74	0.868	0.85	0.37	0,55	0.582	0.822	0.39
15. Breastfeeding is most beneficial when starting immediately after birth.	0.78	0.271	0.95	0.22	0,59	0.329	0.956	0.21
16. The best way to get your baby to learn to breastfeed is to squeeze his cheeks so that he opens his mouth.	0.79	0.132	0.85	0.37	0,62	0.103	0.267	0.45
17. Stroking the baby's lips and cheeks with the nipple allows him to open his mouth and take the breast to be breastfed.	0.78	0.283	0.80	0.41	0,61	0.181	0.889	0.32
18. The baby should be breastfed in each breast for as long as he wishes.	0.77	0.403	0.80	0.41	0,63	-0.054	0.889	0.32
19. The best way to remove the baby from the breast is to put a finger inside the baby's mouth to stop sucking the breast.	0.78	0.310	0.70	0.47	0,63	0.048	0.378	0.49
20. A nursing mother can prevent nipple irritation by washing them with soap.	0.79	0.138	0.70	0.47	0,57	0.408	0.778	0.42
21. Applying some of your own milk to your nipples after each feed can prevent nipple irritation.	0.77	0.485	0.85	0.37	0,59	0.324	0.911	0.29
22. The baby will want to be fed every 4 or 5 hours in the first weeks.	0.79	0.064	0.95	0.22	0,58	0.334	0.822	0.39
23. If the baby is getting enough milk, she will gain weight, wear 6-8 diapers a day, and be happy.	0.77	0.386	0.75	0.44	0,60	0.242	0.156	0.37
24. The poop of a breastfed baby is the same as a formula-fed baby.	0.77	0.355	0.90	0.31	0,60	0.208	0.111	0.32
25. The poop of a breastfed baby is softer and more frequent than formula-fed babies.	0.76	0.612	0.80	0.41	0,61	0.136	0.156	0.37
26. If the mother feels her breasts uncomfortable, she may apply a damp washcloth with warm water on her breast to get some milk from her breast.	0.77	0.355	0.90	0.31	0,61	0.152	0.422	0.50
	Alpha value = 0.78; 95% Confidence Interval = 0.65 – 0.92				Alpha value = 0,61; 95% Confidence Interval = 0.45 – 0.77			

* Items with zero variance are blank and have been excluded from the reliability calculation. This tool was freely translated into English.

0.067 to 0.956 and the standard deviation ranged from 0.21 to 0.50. The tool maintained stability over time between the two assessments.

The study participants were also characterized at the time of the test and retest of the scale, described in Table 2, including the clinical variables of the newborns, the postpartum women and also the sociodemographic data.

Table 2. Clinical characteristics of newborns, postpartum women and sociodemographic

Newborn clinical characteristics (n=45)			
Variables	n(%)	Mean (SD)	Interval
Gestational Age (weeks)		38.3(2.2)	28 – 42
Birth weight (grams)		3.258.2(0.599)	1.105 - 4.270
Height at birth (centimeters)		48.09(2.71)	37 – 53
Apgar 1st minute		7.7(1.6)	2 – 9
Apgar 5th minute		9(0.8)	7 – 10
Head circumference at birth (centimeters)		33.87(2.23)	26 – 38
Sex			
Male	24(53.3)		
Female	21(46.7)		
Intrauterine growth			
Small	7(15.55)		
Adequate	35(77.78)		
Large	3(6.67)		
Newborn feeding at hospital			
EBF	36(80)		
Breastfeeding + Supplement	5(11.12)		
Supplement	4(8.88)		
Maternal clinical characteristics			
Number of Prenatal Consultations		8(3.3)	3 – 17
Maternal Initial BMI		25.39(5.912)	17.55 - 46.29
Gestational Risk			
Yes	13(28.89)		
Not	31(68.89)		
No registry	1(2.22)		
Gestational Risk Type			
Usual	31(68.89)		
Intermediate	2(4.44)		
High risk	11(24.45)		
No registry	1(2.22)		
Type of delivery			
Ceasarian	30(66.67)		
Vaginal	15(33.33)		
Complications during delivery			
Yes	1(2.22)		
No	44(97.78)		
Skin-to-skin contact after delivery			
Yes	20(44.44)		
No	25(55.56)		
Sociodemographic characteristics			
Maternal age (years)		26(6.4)	16 – 43
Maternal Ethnicity			
White	36(80)		
Brown	8(17.78)		
Black	1(2.22%)		

Continue...

Continuation.			
Variables	n(%)	Mean (SD)	Interval
Maternal Schooling			
Elementary School I	2(4.44)		
Elementary School II	12(26.67)		
Incomplete high school	6(13.33)		
Complete high school	21(46.67)		
Incomplete Higher Education	1(2.22)		
Complete Higher Education	3(6.67)		
Marital Status			
Single	24(53.33)		
Married	21(46.67)		
Lives with partner	45(100)		
People living in the house		4(1.4)	3 – 9
Has employment relationship	22(48.88)		
Has no employment relationship	23(51.12)		
Income according to basic needs	39(86.67)		
Higher income basic needs	6(13.33)		
Has health insurance	2(4.44)		
Does not have health insurance	43(95.56)		

NICU - Neonatal Intensive Care Unit; EBF - Exclusive Breastfeeding; SD: Standard Deviation; BMI - Body Mass Index

The characteristics of the study newborns include the mean Gestational Age (GA), which was 38.2 weeks, the mean birth weight, which was 3,258.2, the mean height at birth, 48.09 cm, Apgar score above seven in the first minute (mean 7.7), mean head circumference at birth of 33.87 cm, adequate intrauterine growth (77.78%). Male newborns predominated (53.3%). Regarding newborn feeding during hospital stay, the prevalence of EBF was observed (80%). Regarding the clinical data of pregnancy, the median prenatal consultations was 8. Maternal BMI had a median of 25.39. In the stratification of the type of gestational risk, the usual prevailed (68.89%). Cesarean deliveries were the majority (66.67%) although uncomplicated at delivery (97.78%). In the immediate postpartum period, 55.56% of the mothers had no skin-to-skin contact with NB. Regarding maternal sociodemographic data, the median age was 26 years, 80% of participants considered themselves white, 46.67% had completed high school, 53.33% were single, but 100% lived with their partner. More than half had no employment relationship (51.12%). However, they reported that family income was sufficient for the basic needs of the family (86.67%). Regarding health insurance, 95.56% did not have.

Discussion

While knowledge about the main social and health benefits of breastfeeding is abundant and includes how to protect, promote and support breastfeeding, it is still surprising that recommended BF behaviors remain inconsistent in the 21st century among large segments of the population, globally.[21] Thus, among other investments needed to increase breastfeeding, it is essential to enable the workforce to encourage breastfeeding practices in both primary care and the hospital. It should take place through actions such as offering practical and easy-to-use tools to identify women's knowledge of breastfeeding and to intervene quickly and efficiently to provide relevant information in accordance with the demands of each woman or group in the community.

The literature recommends prioritizing already available tools with good performance in the original context and stable in different population groups, so the validation of a tool already used in other realities.[13] Thus, the KBS/KNOWL scale was translated and validated after verifying the absence of tools to identify the pregnant woman's knowledge about breastfeeding in Brazil. Although there are other tools and scales available that address the theme, they do not measure women's knowledge of breastfeeding practice.[22]

The KBS scale, in its original version, was mentioned in a prospective, randomized study[16] conducted in prenatal clinics and schools to evidence knowledge of breastfeeding by applying two tests: Knowledge breastfeeding Scale. Knowledge of Breastfeeding Scale (KBS) and Knowledge breastfeeding Questionnaire (BKQ). The KBS was initially developed for use with adolescent girls to measure lay knowledge about breastfeeding. It was applied in two moments, before and after the development of educational activity on the subject, with the purpose of measuring the knowledge obtained in the second moment, after the educational practice. The study reported a positive outcome of interventions, educational actions and support given to women and suggested that such efforts may increase the duration of breastfeeding among vulnerable populations.

The use of breastfeeding assessment tools was mentioned in two integrative reviews. The first[23] identified 25 studies to predict the likelihood of early interruption of breastfeeding. It mentions only one study that, in addition to other scales, applied a 14-item knowledge breastfeeding test to measure this knowledge, which found as significantly related to breastfeeding duration, maternal knowledge, mother's educational level and attitudes towards breastfeeding and bottle feeding.

The second[22] identified 19 breastfeeding assessment tools and their application in clinical practice, validation and cross-cultural adaptation. The tools were grouped into four categories: early assessment, assessment of women's breastfeeding perception and behavior, assessment of maternal behavior/condition and newborn breastfeeding competencies, and assessment of newborn breastfeeding competencies. It is evident that none of the tools found in this review assesses maternal knowledge about breastfeeding, supporting our intention to validate and present the scale on screen.

Other studies of different realities, such as the one conducted in Lima, Peru, with 256 participants, focusing on maternal knowledge about breastfeeding, reported that women reported receiving breastfeeding information and found a positive correlation (62.5%) with postpartum lactation attitudes and practices. However, one aspect that was negatively correlated was that women received guidance from people other than health professionals.[24] In addition, a study that verified maternal knowledge about EBF found that 45% of mothers could not answer about this practice and only 35% were aware that water, teas and/or other foods should not be offered during EBF and that this should occur until six months of age.[25]

To analyze knowledge breastfeeding and intention to breastfeed in secondary school students from four schools in a country that includes a breastfeeding education program in secondary schools, a study[26] was conducted with 252 third year students. children who completed an online questionnaire about knowledge breastfeeding and intention. The results showed that breastfeeding information is insufficient in schools and does not provide a

basis for students to make an informed decision about breastfeeding in adulthood. More evidence has been added on the need to identify knowledge breastfeeding to propose consistent interventions.

A study[27] to assess the effectiveness of an educational prenatal breastfeeding program on knowledge breastfeeding and self-efficacy, attitudes to breastfeeding and perceived barriers to breastfeeding in Athens, Greece, with 203 nulliparous pregnant women, used breastfeeding self-efficacy scale, the Iowa newborn feeding attitude scale, the knowledge breastfeeding scale, and the perceived breastfeeding barriers questionnaire. The results showed that, after participating in the program, women showed a more positive attitude towards breastfeeding (73.5%), greater knowledge (14.6%) and more self-efficacy for breastfeeding (51.4%). In addition, they had significantly fewer perceived barriers to breastfeeding (27.4%), demonstrating the importance of assessing knowledge and proposing alternatives to increase it, when insufficient.

A descriptive study[28] that investigated mothers' knowledge of maternal practices before breastfeeding found 21.2% of them with knowledge considered good, 66.7% fair and 12.1% insufficient. However, another survey of 384 women in northwestern Ethiopia reported that 69.8% of participants had good knowledge.[29] These studies demonstrate the importance of assessing the knowledge of pregnant and postpartum women about breastfeeding, identifying the problems and possible interventions needed to support the guidance in primary care and maternity.

In order to identify factors that favor or prevent breastfeeding in a group of pregnant women who were attending prenatal care at two health institutions, one in Bogota and one in Cundinamarca, a study assessed, among other aspects, the knowledge about breastfeeding through the use of KNOWL scale, in its Spanish version. The results regarding knowledge breastfeeding and beliefs showed that they were adequate regarding nutritional properties and denied negative beliefs about breastfeeding. They concluded that the support network, socioeconomic status and psychological factors may determine the intention to breastfeed. These factors were directly proportional to the knowledge and mystification of BF in the group of pregnant women in Bogota and Cundinamarca.[30]

In addition to scale validation, the study participants were characterized, seeking convergent elements to maintain breastfeeding and intervening factors for EBF. The clinical data of the newborns demonstrated good conditions of birth, with adequate weight, gestational age, height, apgar and head circumference, which favors breastfeeding. Similarly, maternal clinical conditions were adequate, with the number of prenatal consultations above the minimum recommended in the country and women at usual risk, considered protective factors for BF. However, a factor that interferes with breastfeeding is the type of delivery, with a high number of caesarean sections, above the recommended by WHO, whose ideal cesarean section should be between 10% and 15%, and should not exceed 30%, a goal considered reasonable.[31]

Another aspect, skin-to-skin contact, was low in this study, similar to research results, which indicate that more than half of women (55.56%) had no skin-to-skin contact with NB. The condition of being born with adequate or full weight favors the practice of skin-to-skin contact with NB and immediate postpartum breastfeeding, which should be encouraged and favored by the health team.[32]

In addition, the participants' socio-demographic characterization data were verified, as they are known to influence EBF. The mean age of the women was 26 years old, most with complete high school (32.5%) and more than half (85%) living with their partner, data consistent with another study.[25] However, low maternal education may reveal an association with non-continuity of EBF. Mothers with more years of schooling are better aware of access to information on the importance of EBF and its benefits for the baby, developing greater confidence in breastfeeding.[28]

It was observed in this study that postpartum EBF was 80%, similar to a study that found 94% breastfeeding in the same condition. Later, however, at two and four months after delivery, respectively, the EBF rate dropped to 26% and 22%.[33] Results such as these alert to the need to identify

maternal knowledge about the theme, so that the health team can intervene with actions to promote and maintain EBF over time.

In the health area, there are a growing number of tools and scales that verify and assess phenomena in different areas. Support can be provided for planning new research, enabling comparisons between different cultures and applying knowledge in different care, management and teaching contexts.[34]

Conclusion

The KNOWL scale is presented as a tool to be used, along with other available options, in promoting breastfeeding. As it has only been tested with the population of the validation stage so far, a limitation of the study, it is essential that it continues to be tested for its reliability and validity properties. The research team is already doing this in order to confirm their adaptation to the Brazilian context. The validated scale will allow health professionals to assess and measure women's knowledge about breastfeeding, enabling the direction of clinical practice and providing guidance on what actions will be needed to assist mothers in effective breastfeeding practice.

Collaborations

Minosso KC, Toso BRGO, Piva EK and Christoffel MM declare that they contributed to the manuscript design, analysis and interpretation of the data, writing of the article, relevant critical review of the intellectual content and approval of the final version to be published.

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Annex 1. Breastfeeding Maternal Knowledge Scale (KNOWL) into Brazilian portuguese

1. *O leite de fórmula tem as mesmas características que o leite materno.*	0 ( ) *Verdadeiro* 1 ( ) *Falso*
2. *O leite materno tem proteínas, açúcar e anticorpos (células de defesa do corpo humano).*	1 ( ) *Verdadeiro* 0 ( ) *Falso*
3. *Aspirina, medicamentos para a gripe ou resfriado, e a nicotina dos cigarros são transferidas de mãe para o filho (a) pelo leite materno.*	1 ( ) *Verdadeiro* 0 ( ) *Falso*
4. *É importante não dar ao bebê o colostro (primeiro leite).*	0 ( ) *Verdadeiro* 1 ( ) *Falso*
5. *O benefício mais importante do colostro é que fornece nutrição e anticorpos para o bebê.*	1.( ) *Verdadeiro* 0.( ) *Falso*
6. *Só a metade das mulheres pode produzir leite materno.*	0 ( ) *Verdadeiro* 1 ( ) *Falso*
7. *Tem sido demonstrado que o leite materno ajuda a prevenir alergias, infecções, obesidade e sobrepeso no bebê.*	1 ( ) *Verdadeiro* 0 ( ) *Falso*
8. *Um benefício de amamentar, para a mãe, é ajudar o útero a voltar ao tamanho normal anterior a gestação.*	1 ( ) *Verdadeiro* 0 ( ) *Falso*
9. *O estado emocional da mãe pode afetar a descida do leite.*	1 ( ) *Verdadeiro* 0 ( ) *Falso*
10. *A quantidade de leite materno produzido dependerá do quanto mame o bebê.*	1 ( ) *Verdadeiro* 0 ( ) *Falso*
11. *Usar um sutiã apertado é uma ação importante para que a mãe produza leite materno.*	0 ( ) *Verdadeiro* 1 ( ) *Falso*
12. *A mãe deve dormir e descansar, tomar líquido suficiente todos os dias, e comer uma dieta adequada para produzir leite materno.*	1 ( ) *Verdadeiro* 0 ( ) *Falso*
13. *A mãe deve deixar de amamentar quando nascerem os primeiros dentes de seu bebê.*	0 ( ) *Verdadeiro* 1 ( ) *Falso*
14. *Recomenda-se que um bebê que está sendo amamentado comece a comer alimentos sólidos entre 3 a 5 meses de idade.*	0 ( ) *Verdadeiro* 1 ( ) *Falso*
15. *Amamentar tem mais benefício quando se começa imediatamente depois do parto.*	1 ( ) *Verdadeiro* 0 ( ) *Falso*
16. *A melhor maneira para conseguir que o bebê aprenda a pegar o peito para ser amamentado é apertar suas bochechas para que ele abra a boca.*	0 ( ) *Verdadeiro* 1 ( ) *Falso*
17. *Acariciando sobre os lábios e bochechas do bebê com o mamilo se consegue que ele abra a boca e pegue o peito para ser amamentado.*	1 ( ) *Verdadeiro* 0 ( ) *Falso*
18. *O bebê deve ser amamentado em cada seio pelo tempo que ele desejar.*	1 ( ) *Verdadeiro* 0 ( ) *Falso*
19. *A melhor maneira de retirar o bebê do seio é colocar um dedo dentro da boca do bebê para que ele pare de sugar o peito.*	1 ( ) *Verdadeiro* 0 ( ) *Falso*
20. *A mãe que está amamentando pode prevenir irritação nos mamilos lavando-os com muito sabão.*	0 ( ) *Verdadeiro* 1 ( ) *Falso*
21. *Aplicar um pouco de seu próprio leite nos mamilos depois de cada mamada pode prevenir irritações nos mamilos.*	1 ( ) *Verdadeiro* 0 ( ) *Falso*
22. *O bebê vai querer ser alimentado a cada 4 ou 5 horas nas primeiras semanas.*	0 ( ) *Verdadeiro* 1 ( ) *Falso*
23. *Se o bebê estiver recebendo leite suficiente ganhará peso, usará de 6 a 8 fraldas por dia, e estará contente.*	1 ( ) *Verdadeiro* 0 ( ) *Falso*
24. *O cocô de um bebê que está sendo amamentado é igual ao do bebê alimentado com leite de fórmula.*	0 ( ) *Verdadeiro* 1 ( ) *Falso*
25. *O cocô do bebê que está sendo amamentado é mais suave e mais frequente que o dos bebês alimentados com leite de fórmula.*	1 ( ) *Verdadeiro* 0 ( ) *Falso*
26. *Se a mãe sente seus seios desconfortáveis, ela pode aplicar uma toalhinha úmida com água quente sobre o peito, para tirar um pouco de leite do seio.*	1 ( ) *Verdadeiro* 0 ( ) *Falso*