# Reliability and Validity of a Breastfeeding Attitudes Instrument for Nursing Staff

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**An instrument was designed and validated with the purpose of identifying attitudes towards breastfeeding among nursing professionals. The preliminary instrument contained 19 items which were submitted to experts in the field of human lactation and breastfeeding for content validity. The construct validity was measured through factor analysis and matrix correlation. Four factors were identified in the analysis. Overall internal consistency of the instrument was 0.83, with a subscale's range fluctuating from 0.64 to 0.73. The instrument is valid and reliable, and it is the first of its nature in Puerto Rico.**

Human milk and breastfeeding are recognized as the most important health promotion strategy for maximum development of the genetic potential, and physical and emotional health for children. (1,2). The benefits of human lactation and breastfeeding have been widely recognized in the scientific literature (3-7).

The Reproductive Health Survey done in Puerto Rico (1995-96) showed that while 61.3% of mothers begin breastfeeding, its median duration is only 3 weeks (8). One of the factors which could affect the establishment of breastfeeding in Puerto Rico is the attitude of health professionals. Attitudes of health professionals have been singled out as a barrier to the initiation and establishment of breastfeeding (1,2, 9-11). Nursing professionals are key factors in the implantation of the Baby Friendly Hospital Initiative in all hospitals in Puerto Rico as set forth by the Public Policy for the Promotion of Breastfeeding in Puerto Rico (1,2,12). We have not had heretofore research instruments geared to the exploration of nurses' attitudes towards breastfeeding. A review of the literature does no reveal specific details about premises which described studied attitudes and only general concepts are presented (13).

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In order to create intervention strategies directed at effective promotion of breastfeeding it is vital to identify the attitudes of nursing professionals that can affect breastfeeding among Puerto Rican mothers.

## Methods

The attitude scale towards breastfeeding was developed with the purpose of identifying among nurses attitude which could be barriers towards the promotion of breastfeeding in Puerto Rico's hospital settings. At the same time it tried to create a relatively simple, self-administered instrument with cultural sensitivity for the professional nursing population in Puerto Rico. The premises in the scale (initially 19) were designed by the researchers on the basis of the revised literature (1-14). They were randomly placed in the scale with numbers 1-19, the sequence determined through random numbers.

The instrument utilized a four-point scale with levels of agreement between totally agree (four) and totally disagree (one) (Table 1). Content validity was tested through the use of five experts in the field of breastfeeding who were asked to evaluate each premise in terms of its adequacy with breastfeeding standards, as well as its semantics.

Item analysis was the carried out with the purpose of evaluating the level of association among the premises and in relation to the total grading of the instrument (15). Those premises with an index of discrimination of 0.20 or above were considered for inclusion in the instrument (16).

**Table 1.** Breasfeeding Attitudes Items (Spanish version).

| Premisas | Completamente de acuerdo | De acuerdo | Desacuerdo | Completamente en desacuerdo |
|---|---|---|---|---|
| 1. La lactancia materna establece una relación de apego entre la madre y el bebé. | 4 | 3 | 2 | 1 |
| 2. La leche artificial es un método de alimentación costoso. | 4 | 3 | 2 | 1 |
| 3. La lactancia materna provee la mejor nutrición para el bebé. | 4 | 3 | 2 | 1 |
| 4. La lactancia materna protege al bebé contra infecciones. | 4 | 3 | 2 | 1 |
| 5. La lactancia materna es un método anticonceptivo natural. | 4 | 3 | 2 | 1 |
| 6. La alimentación con leché artificial hace posible que el papá se envuelva en la alimentación del bebé mientras que con la lactancia materna no es posible | 4 | 3 | 2 | 1 |
| 7. La lactancia materna limita la vida social de la madre. | 4 | 3 | 2 | 1 |
| 8. Las mujeres nacen sabiendo cómo amamantar a sus bebés. | 4 | 3 | 2 | 1 |
| 9. La cantidad de leche que produce el seno depende de su tamaño. | 4 | 3 | 2 | 1 |
| 10. La lactancia materna es un proceso difícil y doloroso. | 4 | 3 | 2 | 1 |
| 11. Las madres muy nerviosas no pueden amamantar a sus bebés. | 4 | 3 | 2 | 1 |
| 12. La lactancia materna hace que se caiga el busto. | 4 | 3 | 2 | 1 |
| 13. La lactancia materna hace más difícil la pérdida de peso. | 4 | 3 | 2 | 1 |
| 14. Para lactar al bebé la madre debe llevar una dieta específica. | 4 | 3 | 2 | 1 |
| 15. No es posible amamantar al bebé y además trabajar o estudiar fuera del hogar. | 4 | 3 | 2 | 1 |
| 16. La leche materna debe alternarse con leche artificial. | 4 | 3 | 2 | 1 |
| 17. Los niños alimentados con leche artificial o fórmula son más saludables. | 4 | 3 | 2 | 1 |
| 18. La leche materna no abastece al niño/a. | 4 | 3 | 2 | 1 |
| 19. La leche artificial provee la mejor nutrición para el bebé. | 4 | 3 | 2 | 1 |

Construct validity was evaluated through exploratory factor analysis (extraction method: maximum likelihood and rotation: varimax) to determine the internal and cross structures of the variables. An item was considered to belong to a given factor if its loading was ≥ 0.30 (17). A multiple correlation matrix was used to observe the grade of association and explanation between each subscale (18).

Reliability of an instrument is defined as the consistency which exists in the results it provides (19). The alpha Cronbach tecnique was used in this study. Reliability of the instrument was determined through its application in a non-probabilistic sample of 186 nurses of three hospitals in Puerto Rico. Subjects of both sexes were considered and adequate internal consistency was accepted at 0.60 or above.

## Results

*Participants profile.* Females made up 97.3% of the sample, 47.8% were married, 33.3% had some post-baccalaureate training, and 71.2% had children. Median age of the sample was 35 years, with a range of 22-68 years. Exclusive breastfeeding was used by 3.1%, 56.5% had breastfed and given formula and 40.5% had used only formula with their children.

*Content validity.* The panel of experts consulted were in agreement that all the premises were related to some attitude identified in the literature which can affect breastfeeding. The language used was likewise felt to be culturally sensitive to the Puerto Rican population, especially the nursing profession.

*Items analysis.* The discrimination indexes obtained for the premises in the instrument of attitudes are presented in Table 2. The average discrimination index was 0.39. Only premise #8 failed to reach the desired index of 0.20, having obtained only 0.02.

*Construct validity.* Construct validity was assessed by factor analysis. A maximum likelihood extraction method was used followed by varimax rotation. Four factors were identified during the analysis (Table 3). The first factor contained seven attitudinal items. It was labeled "Attitude towards Women Breastfeeding Myths (AWBM)" because the items focused on myths associated with breastfeeding and mothers. The AWBM had an eigenvalue of 4.9, accounted for 25.8% of the variance and had item loadings ranging from 0.34 to 0.73. The "natural contraceptive" had an unacceptable factor loading of 0.23. The second factor, which contained six attitudinal items, was labeled "Attitudes towards Other Myths Related to Breastfeeding (AOMB)". The AOMB had an eigenvalue of 1.8, accounted for 9.4% of the variance, and had factor

loadings ranging from 0.31 to 0.66. The third factor, which contained three attitudinal items and was labeled "Attitudes towards Myths Related to Breastfeeding and Child (AMBC)". The AMBC had an eigenvalue of 1.6, accounted for 8.3% of the variance, and had factor loadings ranging from 0.45 to 0.77. The fourth factor, which contained two attitudinal items and was labeled "Attitudes towards Myths Related to Daily Formula and Child (AMFC)". The AMFC had an eigenvalue of 1.3, accounted for 6.6% of the variance, and had factor loadings ranging from 0.65 to 0.74. The total variance explained (all factors) was 50.1%.

**Table 2.** Discrimination Indexes for Breastfedding Attitudes Instruments

| Item | Discrimination Index |
|---|---|
| 1 | 0.25 |
| 2 | 0.30 |
| 3 | 0.30 |
| 4 | 0.29 |
| 5 | 0.23 |
| 6 | 0.39 |
| 7 | 0.46 |
| ***8*** | ***0.02*** |
| 9 | 0.45 |
| 10 | 0.53 |
| 11 | 0.50 |
| 12 | 0.48 |
| 13 | 0.34 |
| 14 | 0.41 |
| 15 | 0.55 |
| 16 | 0.54 |
| 17 | 0.45 |
| 18 | 0.65 |
| 19 | 0.35 |

Mean index=0.39

**Table 3.** Factor Loading of the Breastfeeding Attitudes Instrument Items

| Item | AWBM | AOMB | AMBC | AMFC |
|---|---|---|---|---|
| 05 | 0.23* | | | |
| 07 | 0.50 | | | |
| 10 | 0.58 | | | |
| 11 | 0.73 | | | |
| 12 | 0.46 | | | |
| 13 | 0.49 | | | |
| 14 | 0.34 | | | |
| 02 | | 0.32 | | |
| 06 | | 0.32 | | |
| 09 | | 0.62 | | |
| 15 | | 0.66 | | |
| 16 | | 0.52 | | |
| 18 | | 0.53 | | |
| 01 | | | 0.45 | |
| 03 | | | 0.64 | |
| 05 | | | 0.77 | |
| 17 | | | | 0.66 |
| 19 | | | | 0.74 |

* Failed to load at the 0.30 level

*Correlation matrix.* Table 4 presents the correlation matrix for the instrument's subscales. All subscale correlations are observed to be significant ($p \leq 0.01$) and present a direct relation among themselves (all coefficients were positive). The minimal correlation was 0.20 and the highest was 0.57. The average correlation was 0.28.

**Table 4.** Correlation Matrix Results

| Subscale | AWBM | AOMB | AMBC | AMFC |
|---|---|---|---|---|
| AWBM | - | 0.57* | 0.22* | 0.28* |
| AOMB | 0.57* | - | 0.29* | 0.41* |
| AMBC | 0.22* | 0.29* | - | 0.20*- |
| AMFC | 0.28* | 0.41* | 0.20* | - |

(*) Correlation is significant at the 0.01 level (2-tailed)

*Reliability.* The instrument's overall reliability was 0.83 (17 items) (Cronbach's alpha). Individual subscale reliabilities ranged from 0.64 to 0.73 (Table 5). It should be mentioned that all instrument subscales presented an adequate internal consistency, as defined for this study.

## Discussion

The instrument was subjected to several validation procedures and it was concluded that it has validity from the perspective of content. The premises which make up the scale describe attitudes which serve as barriers to breastfeeding and were based on the scientific literature for their construction (1-14). The premises were likewise evaluated and unanimously approved by the panel of experts in the field of breastfeeding. The scale can be widely used. Requisites for administration are simple: persons of either sex who can read and write. Simple language is used.

After items analysis, we found that only one premise did not reach the desired discrimination index. This suggests that premise #8 ("Women are born knowing how to breastfeed their baby") was not associated with the other premises. The idea that breastfeeding is a natural process and that women know how to do it is a common one,

**Table 5.** Cronbach's Alpha Coefficients for Total Scale and Subscales

| Item* | AWBM | AOMB | AMFC | AMFC |
|---|---|---|---|---|
| 05 | - | | | |
| 07 | 0.65 | | | |
| 10 | 0.64 | | | |
| 11 | 0.61 | | | |
| 12 | 0.67 | | | |
| 13 | 0.67 | | | |
| 14 | 0.66 | | | |
| | alpha=0.70 | | | |
| 02 | | 0.72 | | |
| 06 | | 0.69 | | |
| 09 | | 0.66 | | |
| 15 | | 0.65 | | |
| 16 | | 0.66 | | |
| 18 | | 0.71 | | |
| | | alpha= 0.73 | | |
| 01 | | | 0.58 | |
| 03 | | | 0.52 | |
| 04 | | | 0.54 | |
| | | | alpha=0.64 | |
| 17 | | | | NC |
| 19 | | | | NC |
| | | | | alpha=0.69 |
| Overall Scale (17 items)=0.83 | | | | |

* Alpha if item deleted
NC = not calculated
-means failed to load at the 0.30 level

although it has been explained in the literature as incorrect (14). This particular attitude should be dealt with in future revisions of the instrument that will work with a different subscale related to cultural issues.

On observing the premises' congruence and internal consistency, one can conclude that internal consistency is moderately high (alpha=0.83) and congruence is acceptable, since the final premises of the instrument presented factor loadings ≥0.30. Only premise #5 was eliminated from the subscale regarding myths related to breastfeeding and the mother, since it did not reach an factor loadings of ≥0.30. This premise dealt with breastfeeding as a contraceptive method. The result obtained is possibly due to the fact that the majority of study participants did not practice exclusive breastfeeding, and thus ignored this benefit of breastfeeding for the woman. Premise #8 was likewise eliminated since its discrimination index was too low. This means, by definition, that this premise does not associate with the other premises in the instrument.

The results of the correlation matrix showed that all subscales were significantly associated and that the majority of the correlations were moderate, which suggests that each subscale measures a different dimension within the attitudes towards breastfeeding. It was observed, nevertheless, that subscales on attitudes related to breastfeeding and the mother, as well as other myths related to breastfeeding, had a moderately high correlation. This suggests that these two subscales be treated as one dimension in future revisions of the instrument.

On observing the different subscales, these presented an adequate internal consistency. The subscales on myths related to breastfeeding and the woman, as well as those related to other myths, showed the highest internal consistency. Subscales related to myths about breastfeeding and the baby, as well as those related to myths about formula, showed the lowest internal consistency. This could be secondary to the relatively few premises on each scale. This suggests that more premises be added in both subscales to future revisions of the instrument in an effort to improve its internal consistency.

The validation of this instrument is a first step towards future validations. Its stability (test-retest) through time should be proven. It should also be tested in other populations with different professions and social strata as well as in its capacity to distinguish groups with different characteristics, that is, discriminant analysis.

## Resumen

Se diseñó y validó un instrumento con el propósito de identificar actitudes hacia la lactancia materna en los profesionales de la enfermería. El instrumento preliminar constó de 19 premisas que se sometieron al juicio de *expertos (validez de contenido). La validez de constructo* se midió a través del análisis de factores y una matriz de correlación. Cuatro factores fueron identificados en el análisis. La consistencia interna general del instrumento fue de 0.83, con un rango por escala que fluctuó de 0.64 a 0.73. El instrumento es válido y confiable, siendo el primero de esta naturaleza en Puerto Rico.

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