<table>
<thead>
<tr>
<th>Manuscript Number:</th>
<th>J15-175R2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Title:</td>
<td>Reliability, Validity and reduced Spanish version of the Iowa Infant Feeding Attitude Scale (IIFAS)</td>
</tr>
<tr>
<td>Article Type:</td>
<td>Research</td>
</tr>
<tr>
<td>Keywords:</td>
<td>Breastfeeding; Iowa Infant Feeding Attitude Scale; psychometrics properties; breastfeeding attitudes; validity; reliability.</td>
</tr>
</tbody>
</table>
| Corresponding Author: | Miguel Richart-Martinez, PhD  
University of Alicante  
Alicante, SPAIN |
| Corresponding Author Secondary Information: | |
| Corresponding Author's Institution: | University of Alicante |
| Corresponding Author's Secondary Institution: | |
| First Author:     | Rosa Tomas Almarcha, M.D. |
| First Author Secondary Information: | |
| Order of Authors: | Rosa Tomas Almarcha, M.D.  
Antonio Oliver-Roig, PhD  
Miguel Richart-Martinez, PhD |
| Order of Authors Secondary Information: | |

Antoni Oliver-Roig: *(second author)* Assistant professor, PhD. Department of Nursing, University of Alicante. Alicante. Spain.


Address: Departamento de Enfermería. Campus de Sant Vicent del Raspeig. Ap. 99. 03080. Alacant. Spain; mail: m.richart@ua.es; +0034 965903518.

All the authors submitting the paper do so on the understanding that the manuscript has been read and approved by all authors and that all of them agree to the submission of this manuscript to the journal.

Acknowledgements:

Thanks to Verónica Muñoz-Soler for her assistance in the coordination of follow-up and data transcription, Rosa-María Piñeiro-Albero for her help in translating the scale, Cristina Serra-Martínez and Jezebel Pérez-Ramírez for their assistance in the final preparation of the database.

This paper is part of the doctoral thesis of the first author.

Source of founding

This study was funded by the Spanish Ministry of Science and Innovation (Ref. No. PI09/90899).
“Reliability, Validity and reduced Spanish version of the Iowa Infant Feeding Attitude Scale (IIFAS)”

Abstract

Objective: To translate the Iowa Infant Feeding Scale (IIFAS) into Spanish, to test its psychometric properties and to explore item reduction for the Spanish version.

Design: Instrumental study.

Settings: Six hospitals in eastern Spain.

Participants: A convenience sample of 1354 pregnant women was recruited and data on sociodemographic variables, breastfeeding experience and intention, as well as the Spanish version of the IIFAS was obtained. Also, data on breastfeeding types during the first year was obtained.

Methods: The IIFAS was translated using forward and back translation. Dimensional structure, internal consistency, and construct validity of the Spanish IIFAS version were assessed. Criteria of improving the reliability of the scale and the predictive power of the items were used to reduce the scale.

Results: Statistics on the psychometric properties suggested the need for item reduction. Cronbach’s alpha coefficient of the 9-item final version of the Spanish IIFAS (IIFAS-S) was 0.792. The confirmatory factor analysis showed a unidimensional structure. Demographic response patterns and correlations with IIFAS-S scale provided further evidence of construct validity. Pregnancy IIFAS-S scores significantly predicted breastfeeding rates and exclusivity.
Conclusion: The results of this study indicated that the Spanish translation of the IIFAS is a valid and reliable measure of maternal attitudes toward breastfeeding.

Précis: IIFAS-S can be used to assess the attitudes of the Spanish women towards breastfeeding and is a good predictor of initiation, exclusiveness, and duration of breastfeeding.

Keywords: Breastfeeding, Iowa Infant Feeding Attitude Scale, psychometrics properties, breastfeeding attitudes, validity, reliability.

Callouts

Callout 1. Maternal breastfeeding attitudes are better predictors of infant feeding method during the postpartum period than the mother’s socio-demographic characteristics.

Callout 2. Our study suggested a Spanish adaptation of the Iowa Infant Feeding Attitude Scale (IIFAS-S) is unidimensional with very good reliability and validity data.

Callout 3. Iowa Infant Feeding Attitude Scale-Spain showed good relationship with maternal breastfeeding intention during pregnancy, previous experience, and initiation, exclusiveness, and duration of breastfeeding after delivery.
Introduction

Breastfeeding is promoted as the optimal form of infant feeding due to its unique short and long-term health benefits for both the mother and the infant (Section of Breastfeeding, 2012). Published studies have confirmed and quantified the risks of bottle-feeding, and breastfeeding should not be considered as just another way of feeding the newborn, but rather as a basic health issue, with important implications for the health, both in countries with high or low income (Section of Breastfeeding, 2012; Victora et al., 2016). The WHO recommends that children be exclusively breastfed for 6 months and that breastfeeding should be continued with appropriate complementary food for at least 2 years (World Health Organization, 2013).

Despite these recommendations, only a minority of European infants is breastfed (Callen & Pinelli, 2004). In Spain, the rate of initiation of breastfeeding is high, above 80% (Rio et al., 2012). However, only 28% of Spanish women exclusively breastfeed their child, without offering other liquids or foods, at 6 months postpartum, and the median of duration of breastfeeding is 6 months (Directorate General of Public Health, 2011/12). The Spanish National Health System’s Quality Plan urges health professionals to incorporate breastfeeding support intervention into their practices (Spanish Ministry of Health and Social Policy, 2009).

Premature cessation of breastfeeding is usually the result of the combination of various factors on different levels (Hector, King, Webb, & Heywood, 2005). First, factors such as the so-called bottle-feeding culture, with cultural values that have made formula feeding the norm, or cultural norms against breastfeeding in public are linked to the structure of society, and influence the acceptability and expectations of
a woman about breastfeeding (Hector et al., 2005; Oliver-Roig, 2003). Secondly, factors such as the lack of support from significant others, hospital practices that make breastfeeding difficult after delivery, or difficulties after returning to work are linked to the environment in which women and their children relate to others, and affect the amount of energy, time, and ability of the mother to solve breastfeeding problems (Oliver-Roig, 2003; Thulier & Mercer, 2009). Finally, factors such as clinical, psychological, and personal history are linked to the mother-child dyad and directly associated with maternal decisions and breastfeeding practices (Meedya, Fahy, & Kable, 2010; Thulier & Mercer, 2009).

Our study focused on the mother’s attributes that affect breastfeeding decisions in the mother-child dyad level. Self-efficacy, postnatal depression, anxiety, maternal intention to breastfeed, attitudes toward breastfeeding and social support are factors that have been implicated in breastfeeding initiation and duration (de Jager, Skouteris, Broadbent, Amir, & Mellor, 2013; Meedya et al., 2010). One important variable at this individual level is maternal attitude toward breastfeeding, since women’s attitudes are one of the possible modifiable variables related to breastfeeding outcomes. Attitudes are associations between attitudinal objects (practically any aspect of the social world) and evaluations of these objects, and constitute durable assessments of various aspects of the social world that are stored in memory. They are important because they strongly influence social thinking or how we think about and process social information. Attitudes function as schemas, or cognitive frameworks, possessing and organizing information about specific concepts, situations or events. Attitudes have been the focus of research because it is assumed that they always influence behavior; therefore, knowing something about them can help us to predict people’s behavior in many contexts (Baron & Byrne,
Maternal breastfeeding attitudes are better predictors of infant feeding method during the postpartum period than the mother’s socio-demographic characteristics (Dungy, Losch, & Russell, 1994; Scott, Binns, Oddy, & Graham, 2006). Women with positive attitudes are more likely to breastfeed and tend to do so for longer than those with less positive attitudes (Thulier & Mercer, 2009) (de La Mora, Russell, Dungy, & et al., 1999; Scott et al., 2006).

De La Mora and Russell, from the Iowa State University, originally designed in 1999 the Iowa Infant Feeding Attitude Scale (IIFAS), (de La Mora et al., 1999) to assess ten aspects related to women’s attitudes toward breastfeeding, five related to the characteristics of breast milk and formula milk (i.e., cost, mother’s physical shape, sexual pleasure, mental-physical comfort, and nutritional product) and five related to the process of feeding the baby (i.e., parental role, physical closeness, infant food intake, ease of feeding, and nighttime feeding). The scale was developed to predict the choice of infant feeding method as well as duration of breastfeeding; higher scores indicate that women are more likely to breastfeed. The IIFAS included 17 items selected from an initial pool of 26 items to optimize reliability. In the original study, which consists in three substudies conducted at a community hospital in a medium-sized Midwestern city of USA, the reliability of the IIFAS ranged from 0.68 to 0.96. The IIFAS discriminated between women who intended to breastfeed and those who decided to use artificial feeding.

The IIFAS has been tested in various populations (Ho & McGrath, 2010), including prenatal and postpartum women, low-income women (Dungy, McInnes, Tappin, Wallis, & Oprescu, 2008), social networkers (Dungy et al., 2008), fathers (Karande &
The Spanish version of the Iowa Infant Feeding Scale (IIFAS) was developed by Perkar (2012), and students (Kavanagh, Lou, Nicklas, Habibi, & Murphy, 2012). The IIFAS has been used in the USA (de La Mora et al., 1999), Australia, (Scott et al., 2006) Northern Ireland (Sittlington, Stewart-Knox, Wright, Bradbury, & Scott, 2007), Scotland (Dungy et al., 2008), Croatia (Zakarija-Grkovic & Burmaz, 2010), Syria (Al-Akour, Khassawneh, Khader, Ababneh, & Haddad, 2010), India (Karande & Perkar, 2012), and Singapore (Lau, Htun, Lim, Ho-Lim, & Klainin-Yobas, 2015). Besides being used in English, it has been translated into Romanian (Wallis et al., 2008), Chinese (Ho & McGrath, 2011a), Arabic (Charafeddine, Tamim, Soubra, de la Mora, & Nabulsi, 2015; Saied, Mohamed, Suliman, & Al Anazi, 2013), Japanese (Nanishi & Jimba, 2014), and isiZulu (Tuthill et al., 2014).

Many international studies have been conducted on the reliability and validity of the IIFAS. Researches have reported conflicting evidence on reliability, with Cronbach’s $\alpha$ coefficients estimates of internal consistency ranging between 0.50 (Wallis et al., 2008) and 0.89 (Dungy et al., 2008). Moreover, the low internal consistency of the IIFAS found in some previous studies has not been explained.

The factor structure of the IIFAS has been considered unidimensional, and the total IIFAS score has been used in all previous research to provide evidence of validity. However, a discrepancy in results on the structure of the IIFAS among publications was found. Previous findings supported structures with one (Charafeddine et al., 2015; Nanishi & Jimba, 2014), three (Lau et al., 2015) or four (Dai, Guan, Li, You, & Lau, 2013) factors for the IIFAS.

As in the original study (de La Mora et al., 1999), other authors found that the IIFAS discriminated between women who intended to breastfeed and those who decided to use artificial feeding (de La Mora et al., 1999; Lawton, Ashley, Dawson, Waiblinger, &
Conner, 2012). Also IIFAS predicted the initiation and the duration of breastfeeding in women with higher scores (Chen et al., 2013; Ho & McGrath, 2011b; Scott et al., 2006).

The IIFAS has not previously been translated into Spanish and psychometrically tested among mothers in Spain, where a validated version could be useful to identify groups at risk of early breastfeeding cessation or to evaluate interventions. The objectives of this study were (1) to translate the scale into Spanish, and (2) to test its psychometric properties and obtain data on Spanish-speaking mothers in Spain. The conflicting evidence on the factor structure of the IIFAS and the low internal consistency of the scale observed in some previous studies indicated the need to explore item reduction for the Spanish version.

Method

Participants.

We conducted an instrumental study. A convenience sample of 1354 pregnant women in their third trimester was recruited from 6 hospitals in eastern Spain, as part of a larger study on factors related to early breastfeeding cessation. All the hospitals involved were implementing different strategies to improve breastfeeding practices and two of them had been designated as Baby-Friendly Hospitals before the initiation of the study, by taking the steps recommended by the UNICEF/WHO’s Baby-Friendly Hospital Initiative to improve breastfeeding practices in health care (World Health Organization, 2009).

All participants were able to read and speak Spanish and they had no problems that could seriously complicate or contraindicate breastfeeding such as HIV infection,
previous breast surgery, or congenital fetal pathology diagnosed during pregnancy. In the postpartum follow-up, women were excluded if they had preterm deliveries or multiple births, or when medical problems existed that prevented or seriously hampered breastfeeding; these included problems of the newborn such as an Apgar score below 6 at 5 minutes of life, neonatal sepsis, cleft lip, cleft palate, or Down syndrome. All recruited women agreed to participate in the study. The study received approval from the institutional review board.

**Instrument: IIFAS.**

The IIFAS is a 17-item questionnaire that uses a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Nine of the items are worded in a manner favorable to breastfeeding, while the remaining items are favorable to formula feeding. Items favoring artificial feeding are reversed scored and a total score is computed via an equally weighted sum of responses to the individual items. The total attitude scale can range from 17-85; higher scores indicate that the respondent is likely to breastfeed (de La Mora et al., 1999).

**Translation procedures.**

Linguistic validation of the Spanish IIFAS was performed using the standard procedure of translation and blind back-translation with the aim of ensuring content, semantic and technical equivalence. The translators, two for the translation and two for the back-translation, were not otherwise involved in the project and were not experts in maternal breastfeeding. Data were collected on difficulty in translating (1= not at all difficult; 10= maximum difficulty), and on the applicability to the Spanish
cultural context or changes made to each item in order to maintain semantic and
certifcal equivalence.

Once the translated version and data concerning the items were available, the
research team held meetings with the translators to revise the translation and reach a
consensus in order to produce a single version in Spanish. A pilot study was
conducted with 10 pregnant women in order to test comprehensibility and legibility of
the translated IIFAS.

**Data collection**

During a third trimester pregnancy check-up (28-42 weeks), participants completed a
battery of self-report questionnaires, including the translated IIFAS, and provided
data on age, level of maternal education and income, marital status, parity, previous
experience of breastfeeding, breastfeeding duration and assessment, and selected
infant feeding method and decided duration.

In order to obtain follow-up information on breastfeeding, we collected data at
postpartum discharge, 5 months, and one year after birth (*Figure 1*). First, prior to
postpartum discharge from the hospital (2 to 4 days postpartum), participants
completed a self-administered questionnaire on in-hospital initiation of breastfeeding
and supplementation with infant formula or other liquids before discharge. Also, we
obtained data on obstetric variables such as mode of delivery from clinical records. In
addition, at 5 and 12 months after delivery data were obtained concerning the time at
which breastfeed infants was first given additional water-based liquids, breast milk
substitutes and complementary foods at least once a day, and the time of weaning.

At 5 months postpartum a self-administered postal questionnaire was sent to
mothers who were breastfeeding their child at discharge or with missing data after delivery. This was sent up to three times to non-responders, with a period of three weeks between each mailing, and included the form to complete, a pen, and a postage paid envelope for submitting responses to the research team. Finally, 12 months after delivery, a telephone survey is conducted by one of the authors not involved in in-hospital attention, of mothers who were breastfeeding their child or with missing data at 5 months postpartum.

The description of the breastfeeding practices is based on the definitions proposed by WHO (World Health Organization, 1991): exclusive breastfeeding, when infants only received breast milk, although rehydration solutions, drops, and syrups were also allowed; and any breastfeeding, when infants received any amount of breast milk with or without other liquids or foods. The duration of exclusive breastfeeding was considered to be the time until the introduction of water based drinks, juices, infant formula, or complementary foods, and the duration of any breastfeeding as the time during which the infants received any quantity of mother’s milk.

**Data analysis**

We calculated the mean and standard deviation of item scores, and the proportion of respondents with the lowest or highest possible score was determined in order to assess normality of the distributions of variables. The median duration and proportion of infants by age for exclusive and any breastfeeding were calculated using the survival table method, including information collected at discharge, 5 months and 12 months postpartum. For data analysis, we only used records in which 100% of IIFAS items had been answered. The Kolmogorov-Smirnov test was used to assess normal distribution of variables. We assessed the association between variables using
Pearson’s or Spearman’s correlation, as appropriate, and the hypotheses were contrasted using parametric (Student’s T test) or non-parametric tests (Mann–Whitney U, χ²) depending on distribution of variables. Reliability of the translated IIFAS was assessed using the following criteria: Cronbach’s α coefficient, estimation of alpha when an item was deleted from the scale, and adjusted item-total correlation.

In order to determine construct validity, we performed a principal component factor analysis, forcing the extraction of one factor. We reduced the scale to obtain a short version by deleting items with an adjusted item-total correlation or factor loading of less than (0.30), in line with the criteria proposed by Nunnally and Bernstein (Nunnally, J., Bernstein, I., 1994). In addition, following the strategy proposed by Smith, Fisher, and Fisher (2003) aimed at assessing the validity of each item in relation to a criterion (Smith, Fischer, & Fister, 2003), the items that presented no relationship with at least 3 of these 5 following variables were removed: initiation of breastfeeding after delivery, exclusive breastfeeding at discharge, at 1 and 6 months postpartum, and any breastfeeding at 12 months postpartum.

Lastly, a confirmatory factor analysis was conducted. We tested 3 models: model 1 tested a one-factor model, in which the 17 IIFAS items were assumed to be indicators of a single latent factor. Model 2 examined the presence of 4 latent variables identified in a previous study (Dai et al., 2013). Finally, model 3 explored the unifactorial solution of the IIFAS-S obtained through the item reduction process explained above. We did not test the Japanese model (Nanishi & Jimba, 2014) because it did not fit for just one dimension, and because it included all the same items as the original except item 17.
As data were ordinal, not normally distributed, there is a ceiling effect in some items, and the sample is large, the weighted least square (WLS) method was used to fit models (Bentler, 2004). The models were assessed using the goodness-of-fit index (GFI) and the comparative fit index (CFI), with values of > 0.9 indicating an acceptable fit and > 0.95 indicating a good fit (Hu, L.T., Bentler, P.M., 1999); the root mean squared error of approximation (RMSEA), which favors more parsimonious models, with a value of 0.06 indicating a good fit and 0.10 representing an acceptable fit (Hu, L.T., Bentler, P.M., 1999); and the standardized root mean square residual (SRMR), with values of < .08 indicating a good fit and < .10 representing an acceptable fit (Hu, L.T., Bentler, P.M., 1999; Kline, 2005). In addition, the $\chi^2$/DF was calculated, considering the fit acceptable if < 4 (Bentler, 2004; Kelloway, 1998).

To further assess construct validity, a known group comparison was conducted with the hypothesis that women who decided to breastfeed during pregnancy and those who intended to breastfeed their babies for more time would have higher total scores than women who did not intend to do so. We also expected that mothers with a higher socioeconomic status, as assessed by annual income or educational status, older mothers, mothers with prior and longer breastfeeding experience, and those who assessed their previous experience positively, would also have higher IIFAS scores.

Lastly, predictive validity was determined by examining the association between the IIFAS score and the variables used to remove items in order to improve criterion validity as described above. Also, receiver operating characteristic (ROC) curves were used to determine predictive validity and utility of IIFAS scores for differentiating between mothers who initiated breastfeeding after delivery from those who did not
initiate breastfeeding. The ROC curves were constructed for the whole sample, primiparous women, and multiparous women. The area under the ROC curve (AUC) was computed. We considered that an AUC greater than 0.9 can be said to be highly accurate, while 0.7 – 0.9 indicates moderate accuracy (Fischer, Bachmann, & Jaeschke, 2003). Youden’s J (J = sensitivity + specificity – 1) was used to identify the optimal cut-off point (Perkins & Schisterman, 2006).

Results

Description of sample.

The mean age of the sample was 31.87 years (SD = 4.77), ranging from 14 to 48 years old. Most of the participants were married, had a high school or higher education, and an annual family income of more than 18000 Euros. Most women wanted to breastfeed and the mean intended breastfeeding duration was 9.24 (SD = 5.97) months. The principal delivery method was vaginal and for most women, this was their first child (Table 1).

At discharge, we excluded for the follow-up sample 68 cases because they met an exclusion criterion or due to lack of information on exclusion criteria (Figure 1). Also, a total of 110 women that did not initiate breastfeeding after delivery were not included in the follow-up after postpartum discharge. For the follow-up sample after postpartum discharge (n = 1176), information on breastfeeding duration was obtained from 986 (84%) women that completed the postal questionnaire, answered the telephone survey, or both. Statistically significant differences were observed between women participating and women not participating in the follow-up after postpartum discharge. Women not participating were younger (t = 4.58, p < .01), with lower
educational status ($\chi^2 = 18.38$, $p < .01$), lower family annual incomes ($\chi^2 = 9.67$, $p < .01$) and lower IIFAS scores ($U = 55173$, $p < .01$), more frequently singles ($\chi^2 = 4.47$, $p = .04$), without previous breastfeeding experience ($\chi^2 = 8.29$, $p < .01$), and more frequently they did not want to breastfeed during the third trimester of pregnancy ($\chi^2 = 36.48$, $p < .01$). No differences were observed for having previous children ($\chi^2 = 1.86$, $p = .17$) or delivery method ($\chi^2 = 2.56$, $p = .11$) between women participating and not participating in the follow-up after discharge.

We obtained complete information referring to the first year postpartum for the whole follow up sample, including women that did not initiate breastfeeding, on duration exclusive breastfeeding for 1075 (84%) cases, and on duration of any breastfeeding for 866 (67%) cases. The median of duration of exclusive breastfeeding and any breastfeeding was 120 and 210 days, respectively.

**Semantic equivalence.**

None of the 17 items on the scale was considered inappropriate for the Spanish context. It was not necessary to make any changes to 14 of the items. Meanwhile, expressions that were more suitable in the Spanish context were introduced in the rest of the items in order to ensure equivalence. For instance, the expression “great joys of motherhood” in item seven was changed to “better experiences of motherhood” (“mejores experiencias de la maternidad”), the expression “less expensive” in item sixteen was changed to “more economic” (“más económica”), and “increases” was changed to “reinforces” (“fortalece”) in item three. According to the translator evaluation, the average difficulty of the translation was 2.1, and in no case did it rise above 3 on the established scale of 1-10. Semantic differences were not
detected in the translated version, and reading and comprehension problems were not encountered during the pilot study (Muñiz, Elosua, & Hambleton, 2013).

Reliability, validity and test information of IIFAS.

Cronbach’s alpha coefficient was 0.726 for the Spanish version of the IIFAS, with a mean total scale score of 66.12 ($SD = 7.68$). The item mean was 3.89, ranging from 2.13 to 4.78. Table 2 shows the item-adjusted test correlations, Cronbach’s alpha if the item was deleted, the means and standard deviation of item responses, and the proportion of extreme value responses and response frequency for each item. The Cronbach’s alpha coefficient for the IIFAS was not increased by more than 0.1 if any of the items were deleted.

Item 1 (“The benefits of breast milk last only as long as the baby is breastfeed”); item 4 (“Breast milk is lacking in iron”); item 8 (“Women should not breast-feed in public places such as restaurants”); item 10 (“Breastfed babies are more likely to be overfed than formula-fed babies”); item 11 (“Fathers feel left out if a mother breastfeeds”); item 17 (“A mother who occasionally drinks alcohol should not breastfeed her baby”), had loadings below .30, and all of them plus item 16 (“Breastmilk is cheaper than formula”) had item-adjusted test correlations below .30 (Table 2). These 7 items, plus item 5 (“Formula-fed babies are more likely to be overfed than breastfed babies”), showed low predictive validity related to breastfeeding (Table 3), and were proposed for elimination.

Table 4 shows the fit indexes obtained from the confirmatory factor analysis of the 3 models tested. Model 3 showed the best-fit indexes and corresponds to the final
version of the 9-item Spanish adaptation of the IIFAS, considering a unifactorial solution (IIFAS-S).

Reliability and validity of the short Spanish version IIFAS-S.

The total score average of the IIFAS-S was 36.15 ($SD = 5.66$), with a non-normal distribution. The Cronbach´s alpha coefficient was 0.79. Table 5 shows the item-adjusted test correlations and Cronbach´s alpha when the item was deleted.

The average score in the IIFAS-S was 36.97 ($SD = 4.77$) for women who wanted to breastfeed their infant during the third trimester of pregnancy, 29.85 ($SD = 6.57$) for those who had not yet decided, and 26.86 ($SD = 6.98$) for those who had decided to give their infant formula milk, reflecting significant differences between the IIFAS-S scores ($H = 167.2; p < .001$). Intended breastfeeding duration during pregnancy correlated positively with IIFAS-S scores ($r_s = 0.31; p < .001$).

Women that initiated breastfeeding and those that were exclusively breastfeeding during postpartum hospitalization, at 1 month postpartum, and at 6 months postpartum, had respectively higher IIFAS-S scores than mothers that did not initiate or did not offer exclusive breastfeeding at discharge or at 1 or 6 months postpartum, respectively. Lastly, women breastfeeding at 12 months postpartum had higher IIFAS-S scores than women that had weaned their babies previously (see Table 3).

Regarding utility to predict the initiation of breastfeeding after delivery, the AUCs were 0.81 (95% CI: [0.76, 0.85]), 0.75 (95% CI: [0.67, 0.82]) and 0.85 (95% CI: [0.80, 0.90]) for the whole sample, primiparous and multiparous women, respectively. For the whole sample, Youden´s J was higher at IIFAS-S score of 31, with a


sensitivity and specificity of 86% and 60%, respectively. For primiparous women, Youden´s J was higher at IIFAS-S score of 32, with a sensitivity and specificity of 83% and 50%, respectively. For multiparous women, Youden´s J was higher at IIFAS-S score of 31, with a sensitivity and specificity of 85% and 71%, respectively.

Several of the demographic variables were found to be significant correlates of attitudes toward infant feeding. Mothers with a primary school or lower education had a significantly ($U = 221851.5; p = .016$) lower IIFAS-S score ($M = 35.84$, $SD = 5.41$) than those with a high school or higher education ($M = 36.36$, $SD = 5.85$). Furthermore, mothers with previous breastfeeding experience ($M = 36.73$, $SD = 5.64$) had higher average of IIFAS-S scores ($U = 9976; p < .001$) than mothers without experience ($M = 30.18$, $SD = 6.57$), while longer duration ($r_s = 0.41; p < .001$) and better assessment ($r_s = 0.32; p < .001$) of that experience correlated positively with IIFAS-S scores. No differences in attitudes toward breastfeeding were found regarding maternal age ($r_s = 0.04; p = 0.17$) or annual family income ($r_s = 0.05; p = 0.08$).

**Discussion**

We are the first investigators to report on use of the IIFAS in Spain and describe the adaptation and psychometric properties of the scale in a large sample of prenatal Spanish women. Data on the psychometric properties of the adapted 17-item Spanish version of the IIFAS, reported in this study, together with the discrepancy in the evidence on the factor structure of the IIFAS and the low internal consistency of the scale observed in some previous studies, indicated the need to explore item reduction for the Spanish version. Our findings provided a shorter version than the
original IIFAS (9 items) and presented evidence of reliability and validity in our sample.

The translation process was systematic and rigorously conducted to ensure that equivalence was established. The pilot test showed that none of the items required special attention or modification.

The evidence of reliability obtained for the adapted Spanish scale was high for the 17-item version and higher still for the short 9-item version (the IIFAS-S). Although the IIFAS-S has fewer items than the original, we nevertheless obtained better Cronbach’s alpha values (0.792) than most previous studies. The reliability of the IIFAS scale has been variable in previous studies. Findings from nearly half of the studies showed values close to or below 0.60 (Charafeddine et al., 2015; Dai et al., 2013; Nanishi & Jimba, 2014; Wallis et al., 2008), while the other half demonstrated acceptable reliability, above 0.70 (de La Mora et al., 1999; Dungy et al., 2008; Ho & McGrath, 2011a; Lau et al., 2015; Sittlington et al., 2007; Twells et al., 2014). It is difficult to assess whether the reliability of some of these earlier versions could have been improved by eliminating items, as done in our study, since most authors only mentioned correlation ranges, with a lower limit well below 0.30 in some of them (Dai et al., 2013; de La Mora et al., 1999; Twells et al., 2014). However, in those studies that did provide data, the items with lower adjusted item-test correlations coincided with those that we have removed (Charafeddine et al., 2015; Dai et al., 2013; Ho & McGrath, 2011a; Twells et al., 2014). It is noteworthy that item 17 was not adjusted in any of the versions analyzed, and was only removed in two studies (Lau et al., 2015; Nanishi & Jimba, 2014).
The reduced number of items in the proposed IIFAS-S scale decreases respondent burden. In addition, since an attitude scale can be useful for predicting a behavioral criterion such as breastfeeding behavior (Smith et al., 2003), one of our study’s novel contributions, besides using the classic strategy of reducing the number of items, has been to propose predictive validity criteria. All items with poor reliability or structural validity according to standard criteria also showed the worst predictive ability, although this criterion made it possible to eliminate an additional item (item 5).

As mentioned previously, although a total IIFAS score has been used in all previous research to provide evidence of validity, only 2 validation studies reported a unifactorial structure of the scale. However, one of these, a Japanese study, tested the IIFAS structure using principal components analysis without rotation, forcing the extraction of 1 factor, although this was not adjusted properly (Hu, L.T., Bentler, P.M., 1999; Nanishi & Jimba, 2014). In the second study, the authors based the result of a one-dimensional structure not on the principal components analysis, which revealed a 6 factors structure, but on the scree plot, even though there were items with a very low corrected item-total correlations (less than 0.2) when a unifactorial model was tested, indicating a poor adjustment of this model (Charafeddine et al., 2015). Our proposed short version of the IIFAS fits a one-dimensional model, achieving very good fit indexes in confirmatory factor analysis.

Regarding predictive validity, given that the items retained individually predicted at least 3 of the breastfeeding behaviors proposed, it was not surprising that the scale as a whole showed statistically significant associations with initiation of breastfeeding, exclusive breastfeeding at discharge, at 1 month and 6 months
postpartum and any breastfeeding at 12 months postpartum. Other researches (de La Mora et al., 1999; Scott, Shaker, & Reid, 2004; Sittlington et al., 2007) had reported that mothers who initiated breastfeeding in hospital present higher total scores on the IIFAS scale than those using artificial feeding (Dungy et al., 2008; Holbrook, White, Heyman, & Wojcicki, 2013) or longer duration of breastfeeding in other studies (Chen et al., 2013; Donnan et al., 2013; Ho & McGrath, 2011b; Scott et al., 2006).

Also, the IIFAS-S showed a good AUC and good sensitivity and specificity properties to discriminate women initiating or not breastfeeding after delivery for the entire sample, the primiparous and the multiparous women. The cut-off points were similar between these groups. However, the IIFAS-S had slightly better sensitivity and specificity properties for multiparous women. These results are novel since only one previous research group showed the IIFAS ROC results, but for intended breastfeeding during pregnancy instead of the initiation of breastfeeding after delivery (Twells et al., 2014).

As in previous studies, we found other variables related to breastfeeding were associated with higher scores for the total IIFAS scale score, such as the mother's previous experience (Holbrook et al., 2013; Wilkins, Ryan, Green, & Thomas, 2012) and intended breastfeeding (de La Mora et al., 1999; Donnan et al., 2013; Dungy et al., 2008; Nanishi & Jimba, 2014; Scott et al., 2004; Twells et al., 2014). Our findings provided additional understanding of prenatal breastfeeding attitude. First, higher IIFAS-S scale scores were associated with longer duration of a previous breastfeeding experience and with its positive assessment, showing that not only previous experience but also its success, influence in maternal attitude. Finally, the
IIFAS-S scale scores were associated with intended breastfeeding duration, as expected, since attitudes are a good predictor of behavioral intention (Dick et al., 2002).

As expected, IIFAS-S scale scores were positively associated with a higher educational level (Chen et al., 2013; de La Mora et al., 1999; Sittlington et al., 2007; Wilkins et al., 2012). However similar to previous findings, IIFAS-S scores were not related to age (Saied et al., 2013; Scott et al., 2004; Sittlington et al., 2007; Wallis et al., 2008), marital status (Chen et al., 2013; Scott et al., 2006), or a higher level of family income. It is possible that the use of a short version of the IIFAS scale, differences inherent in the Spanish context compared to previous studies, or the self-selection of mothers to participate in this study may explain the absence of differences in IIFAS-S scores for these variables. Moreover, given the economic crisis underway at the time of this study, family income is perhaps not as good an indicator of socioeconomic status as the mother’s educational level that did explain differences in IIFAS-S scores.

Implications

The IIFAS has been validated for use in Spanish women. Since Spanish is one of the most frequently spoken languages around the world, our version facilitates the adjusted linguistic validation (Acquadro, Conway, Girourdet, & Mear, 2004) for other countries with Spanish-speaking populations. Moreover, our shorter version decreases respondent burden, has a structure that enhances the simplicity of the theoretical model, good metric properties, high reliability, and good evidences of
validity in relation to sociodemographic and experiential variables, intention of breastfeeding, and breastfeeding behavior. Thus, the IIFAS-S shortened version improves the usability in research on breastfeeding attitudes.

Lastly, from the perspective of the clinical utility, the scale can be used to assess maternal attitudes to infant feeding, to discriminate women at risk of not initiate breastfeeding after delivery, and to evaluate the effectiveness of health interventions to promote breastfeeding. Nearby scores, less than or equal to 32 for primiparous women and less than or equal to 31 for multiparous women, can be taken as indicators of a need for interventions to promote breastfeeding.

**Limitations**

The use of a convenience sample was a limitation of our study. The follow-up sample after postpartum discharge had characteristics that positively influence breastfeeding duration, including older age, higher educational level, higher economic status, being married, having previous breastfeeding experience, and having decided to breastfeed during pregnancy (Thulier & Mercer, 2009). These characteristics, besides the higher average IIFAS scores of the follow-up sample, and the characteristics of the hospitals involved in the study explained the longer duration of breastfeeding of the sample compared with the Spanish average. The proposed cut-off points can be used as a normative reference, in similar samples may be lower if the IIFAS-S is used with women at higher risk of early breastfeeding cessation.

Future research is needed to obtain data on more representative samples, evidence of the structural validity of IIFAS-S versions in other countries, and data on the responsiveness of the scale to health promotion interventions. The scale was
adapted to Spanish as spoken in Spain, and not to the Spanish variants spoken in other countries; thus, an adjusted linguistic validation would be required for studies involving Spanish speakers from other countries.

**Conclusion**

This is the first prenatal breastfeeding attitudes survey to be conducted using the Spanish version of the IIFAS (IIFAS-S). A 9-item Spanish version was obtained by applying the criteria of improving the reliability and predictive power of the items. The scale had a one-dimensional structure and showed optimal evidence of reliability and validity. The scale also showed a good relationship with maternal intention to breastfeed, discriminated women according to their previous experience, and was a good predictor of initiation, exclusiveness, and duration of breastfeeding.
“Spanish version of the Iowa Infant Feeding Scale (IIFAS-S)”

References


“Spanish version of the Iowa Infant Feeding Scale (IIFAS-S)"


www.msc.es/organizacion/sns/planCalidadSNS/docs/AHP.pdf


doi:10.1111/j.1552-6909.2009.01021.x


Figure 1. Flow Chart of the study.

Self-report questionnaires at third trimester of pregnancy: Translated IIFAS, infant feeding intention and experience, socio-demographic data

1,504 pregnant women met inclusion criteria and were recruited.

Clinical records and Self-report questionnaires at postpartum discharge: Obstetric variables, breastfeeding status.

68 cases excluded

54 women with incomplete data on breastfeeding at discharge

1,122 breastfeeding women completed the questionnaire

110 women did not initiate breastfeeding

Self-report postal questionnaire at 5 months postpartum: Time of introduction of liquids, breast milk substitutes, complementary foods, and weaning

375 women did not return the completed postal questionnaire

661 breastfeeding women returned the completed postal questionnaire

247 women completing the postal questionnaire did not breastfeed

Telephone survey at 12 months postpartum: Time of introduction of liquids, breast milk substitutes, complementary foods, and weaning

420 women did not answer the telephone survey

29 cases with no information on breastfeeding initiation

161 cases with no information on breastfeeding duration

230 cases with incomplete data on any breastfeeding duration

201 cases continued breastfeeding at 12 months postpartum survey

500 women answered the telephone survey

306 cases did not breastfeed at 12 months postpartum survey
Table 1.

Characteristics of the study sample.

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Educational status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary school or lower</td>
<td>641</td>
<td>47.3</td>
</tr>
<tr>
<td>High school or more</td>
<td>703</td>
<td>51.9</td>
</tr>
<tr>
<td>Missing data</td>
<td>10</td>
<td>.7</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>De facto or Married</td>
<td>1186</td>
<td>87.6</td>
</tr>
<tr>
<td>Single</td>
<td>127</td>
<td>9.4</td>
</tr>
<tr>
<td>Divorced</td>
<td>33</td>
<td>2.4</td>
</tr>
<tr>
<td>Missing data</td>
<td>8</td>
<td>.6</td>
</tr>
<tr>
<td><strong>Family annual incomes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 18,000 Euros</td>
<td>734</td>
<td>54.2</td>
</tr>
<tr>
<td>More than 18,000 Euros</td>
<td>510</td>
<td>37.7</td>
</tr>
<tr>
<td>Missing data</td>
<td>110</td>
<td>8.1</td>
</tr>
<tr>
<td><strong>First child</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>725</td>
<td>53.5</td>
</tr>
<tr>
<td>No</td>
<td>623</td>
<td>46.1</td>
</tr>
<tr>
<td>Missing data</td>
<td>6</td>
<td>.4</td>
</tr>
<tr>
<td><strong>Previous breastfeeding experience</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>523</td>
<td>38.6</td>
</tr>
<tr>
<td>No or first birth</td>
<td>824</td>
<td>60.9</td>
</tr>
<tr>
<td>Missing data</td>
<td>7</td>
<td>.5</td>
</tr>
<tr>
<td><strong>Duration of previous breastfeeding</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 months or less</td>
<td>167</td>
<td>31.9</td>
</tr>
<tr>
<td>More than 4 months</td>
<td>353</td>
<td>67.5</td>
</tr>
<tr>
<td>Missing data</td>
<td>3</td>
<td>.6</td>
</tr>
<tr>
<td><strong>Self-assessment of previous breastfeeding experience</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td>366</td>
<td>70</td>
</tr>
<tr>
<td>Fair</td>
<td>95</td>
<td>18.1</td>
</tr>
<tr>
<td>Bad</td>
<td>60</td>
<td>11.5</td>
</tr>
<tr>
<td>Missing data</td>
<td>2</td>
<td>0.4</td>
</tr>
<tr>
<td><strong>Intention of breastfeeding during third trimester of pregnancy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1210</td>
<td>89.4</td>
</tr>
<tr>
<td>No</td>
<td>75</td>
<td>5.5</td>
</tr>
<tr>
<td>Not decided</td>
<td>58</td>
<td>4.3</td>
</tr>
<tr>
<td>Missing data</td>
<td>11</td>
<td>.8</td>
</tr>
<tr>
<td><strong>Attended in a Baby-Friendly hospital</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>319</td>
<td>24.8</td>
</tr>
<tr>
<td>No</td>
<td>967</td>
<td>75.2</td>
</tr>
<tr>
<td><strong>Delivery Method</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vaginal</td>
<td>854</td>
<td>65.5</td>
</tr>
<tr>
<td>Cesarean</td>
<td>272</td>
<td>20.2</td>
</tr>
<tr>
<td>Missing data</td>
<td>184</td>
<td>14.3</td>
</tr>
<tr>
<td><strong>Initiation of breastfeeding</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1148</td>
<td>89.2</td>
</tr>
</tbody>
</table>
**Current feeding in-hospital**

<table>
<thead>
<tr>
<th>Feeding Method</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exclusive breastfeeding (only breast milk)</td>
<td>618</td>
<td>110</td>
</tr>
<tr>
<td>Predominant breastfeeding (breast milk + no nutritive liquids)</td>
<td>25</td>
<td>8.6</td>
</tr>
<tr>
<td>Partially breastfeeding (breast milk + formula)</td>
<td>281</td>
<td>25</td>
</tr>
<tr>
<td>Formula feeding</td>
<td>110</td>
<td>8.6</td>
</tr>
<tr>
<td>Missing data</td>
<td>252</td>
<td>19.6</td>
</tr>
</tbody>
</table>

**Exclusive breastfeeding at 1 month postpartum**

<table>
<thead>
<tr>
<th>Feeding Status</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>851</td>
<td>177</td>
</tr>
<tr>
<td>No</td>
<td>177</td>
<td>8.6</td>
</tr>
<tr>
<td>Missing data</td>
<td>110</td>
<td>8.6</td>
</tr>
</tbody>
</table>

**Exclusive breastfeeding at 6 month postpartum**

<table>
<thead>
<tr>
<th>Feeding Status</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>168</td>
<td>807</td>
</tr>
<tr>
<td>No</td>
<td>807</td>
<td>62.7</td>
</tr>
<tr>
<td>Missing data</td>
<td>110</td>
<td>8.6</td>
</tr>
</tbody>
</table>

**Any breastfeeding at 12 months postpartum**

<table>
<thead>
<tr>
<th>Feeding Status</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>201</td>
<td>555</td>
</tr>
<tr>
<td>No</td>
<td>555</td>
<td>43.2</td>
</tr>
<tr>
<td>Missing data</td>
<td>110</td>
<td>8.6</td>
</tr>
</tbody>
</table>

**Missing data**

<table>
<thead>
<tr>
<th>Feeding Status</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formula feeding</td>
<td>110</td>
<td>8.6</td>
</tr>
<tr>
<td>Missing data</td>
<td>252</td>
<td>19.6</td>
</tr>
</tbody>
</table>
## Iowa Infant Feeding Attitude Scale-Spanish (IIFAS-S) with principal components factor loadings, reliability results, floor and ceiling effects, means ($M$), standard deviation ($SD$) and response frequency for each item ($n$).

<table>
<thead>
<tr>
<th>Item</th>
<th>Loading</th>
<th>Corrected item-total correlation</th>
<th>Cronbach’s α if item deleted</th>
<th>Floor “1”%</th>
<th>Ceiling “5”%</th>
<th>$M$</th>
<th>$SD$</th>
<th>$n$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <em>The benefits of breast milk last only as long as the baby is breastfeed.</em></td>
<td>.129</td>
<td>.148</td>
<td>.773</td>
<td>9.8</td>
<td>34.6</td>
<td>3.58</td>
<td>1.32</td>
<td>1289</td>
</tr>
<tr>
<td>2. <em>Formula-feeding is more convenient than breast-feeding.</em></td>
<td>.520</td>
<td>.413</td>
<td>.703</td>
<td>2.5</td>
<td>64.3</td>
<td>4.40</td>
<td>.93</td>
<td>1337</td>
</tr>
<tr>
<td>3. Breastfeeding reinforces mother-infant bonding.</td>
<td>.612</td>
<td>.447</td>
<td>.703</td>
<td>1.8</td>
<td>78.1</td>
<td>4.64</td>
<td>.79</td>
<td>1340</td>
</tr>
<tr>
<td>4. <em>Breast milk is lacking in iron.</em></td>
<td>.232</td>
<td>.194</td>
<td>.723</td>
<td>2.2</td>
<td>50.0</td>
<td>4.11</td>
<td>1.01</td>
<td>1308</td>
</tr>
<tr>
<td>5. Formula-fed babies are more likely to be overfed than breastfed babies.</td>
<td>.378</td>
<td>.318</td>
<td>.711</td>
<td>15.1</td>
<td>11.3</td>
<td>3.00</td>
<td>1.15</td>
<td>1331</td>
</tr>
<tr>
<td>6. <em>Formula-feeding is the better choice if the mother plans to go out to work.</em></td>
<td>.495</td>
<td>.408</td>
<td>.701</td>
<td>8.3</td>
<td>17.9</td>
<td>3.25</td>
<td>1.16</td>
<td>1346</td>
</tr>
<tr>
<td>7. Mothers who formula-feed miss one of the better experiences of motherhood.</td>
<td>.679</td>
<td>.462</td>
<td>.695</td>
<td>6.7</td>
<td>46.5</td>
<td>3.96</td>
<td>1.20</td>
<td>1340</td>
</tr>
<tr>
<td>8. *Women should not breast-feed in</td>
<td>.291</td>
<td>.275</td>
<td>.715</td>
<td>2.6</td>
<td>60.2</td>
<td>4.28</td>
<td>1.03</td>
<td>1343</td>
</tr>
</tbody>
</table>
public places such as restaurants.

<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9. Breastfeed babies are healthier than formula-feed babies.</td>
<td>0.686</td>
<td>0.481</td>
<td>0.692</td>
<td>9.1</td>
<td>28.5</td>
</tr>
<tr>
<td></td>
<td>10. *Breastfed babies are more likely to be overfed than formula-fed babies.</td>
<td>0.096</td>
<td>0.147</td>
<td>0.728</td>
<td>5.4</td>
<td>30.5</td>
</tr>
<tr>
<td></td>
<td>11. *Fathers feel left out if a mother breastfeeds.</td>
<td>0.168</td>
<td>0.150</td>
<td>0.726</td>
<td>2.6</td>
<td>66.8</td>
</tr>
<tr>
<td></td>
<td>12. Breast milk is the ideal food for babies.</td>
<td>0.647</td>
<td>0.453</td>
<td>0.704</td>
<td>1.7</td>
<td>79.9</td>
</tr>
<tr>
<td></td>
<td>13. Breast milk is more easily digested than formula.</td>
<td>0.586</td>
<td>0.424</td>
<td>0.701</td>
<td>3.0</td>
<td>41.2</td>
</tr>
<tr>
<td></td>
<td>14. *Formula is as healthy for infants as breastmilk.</td>
<td>0.566</td>
<td>0.421</td>
<td>0.701</td>
<td>5.4</td>
<td>14.0</td>
</tr>
<tr>
<td></td>
<td>15. Breastfeeding is more convenient than formula feeding.</td>
<td>0.697</td>
<td>0.497</td>
<td>0.696</td>
<td>2.8</td>
<td>59.0</td>
</tr>
<tr>
<td></td>
<td>16. Breastmilk is more economic than formula.</td>
<td>0.329</td>
<td>0.214</td>
<td>0.720</td>
<td>1.6</td>
<td>85.4</td>
</tr>
<tr>
<td></td>
<td>17. *A mother who occasionally drinks alcohol should not breastfeed her baby.</td>
<td>0.050</td>
<td>0.029</td>
<td>0.745</td>
<td>44.8</td>
<td>7.7</td>
</tr>
</tbody>
</table>

* Variables reverse scored to calculate total infant feeding attitude score.
Table 3.

Iowa Infant Feeding Attitude Scale (IIFAS) Predictive Validity by item and total scores.

<table>
<thead>
<tr>
<th>Item</th>
<th>BF Initiation</th>
<th>EBF at discharge</th>
<th>EBF 1 month</th>
<th>EBF 6 months</th>
<th>ABF 12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>Item</td>
<td>3.61</td>
<td>(1.33)</td>
<td>3.61</td>
<td>(1.23)</td>
<td>3.66</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item</td>
<td>4.47</td>
<td>(1.02)</td>
<td>4.19</td>
<td>(1.02)</td>
<td>4.52</td>
</tr>
<tr>
<td></td>
<td>(.94)*</td>
<td>(.90)</td>
<td>(.94)</td>
<td>(.90)</td>
<td>(.94)</td>
</tr>
<tr>
<td>Item</td>
<td>4.71</td>
<td>(.72)</td>
<td>4.42</td>
<td>(.72)</td>
<td>4.77</td>
</tr>
<tr>
<td></td>
<td>(1.22)</td>
<td>(.69)</td>
<td>(1.01)</td>
<td>(.64)</td>
<td>(1.01)</td>
</tr>
<tr>
<td>Item</td>
<td>4.12</td>
<td>(1.02)</td>
<td>3.98</td>
<td>(1.02)</td>
<td>4.13</td>
</tr>
<tr>
<td></td>
<td>(.98)</td>
<td>(.98)</td>
<td>(1.05)</td>
<td>(1.05)</td>
<td>(1.05)</td>
</tr>
<tr>
<td>Item</td>
<td>3.06</td>
<td>(1.16)</td>
<td>2.79</td>
<td>(1.16)</td>
<td>3.09</td>
</tr>
<tr>
<td></td>
<td>(1.09)</td>
<td>(1.09)</td>
<td>(1.17)</td>
<td>(1.17)</td>
<td>(1.17)</td>
</tr>
<tr>
<td>Item</td>
<td>3.32</td>
<td>(1.16)</td>
<td>2.98</td>
<td>(1.16)</td>
<td>3.40</td>
</tr>
<tr>
<td></td>
<td>(1.18)</td>
<td>(1.18)</td>
<td>(1.18)</td>
<td>(1.18)</td>
<td>(1.18)</td>
</tr>
<tr>
<td>Item</td>
<td>4.08</td>
<td>(1.12)</td>
<td>3.62</td>
<td>(1.12)</td>
<td>4.14</td>
</tr>
<tr>
<td></td>
<td>(1.45)</td>
<td>(1.45)</td>
<td>(1.37)</td>
<td>(1.37)</td>
<td>(1.37)</td>
</tr>
<tr>
<td>Item</td>
<td>4.29</td>
<td>(1.03)</td>
<td>4.20</td>
<td>(1.03)</td>
<td>4.33</td>
</tr>
<tr>
<td></td>
<td>(1.15)</td>
<td>(1.15)</td>
<td>(1.04)</td>
<td>(1.04)</td>
<td>(1.04)</td>
</tr>
<tr>
<td>Item</td>
<td>3.69</td>
<td>(1.17)</td>
<td>3.21</td>
<td>(1.17)</td>
<td>3.73</td>
</tr>
<tr>
<td></td>
<td>(1.29)</td>
<td>(1.29)</td>
<td>(1.34)</td>
<td>(1.34)</td>
<td>(1.34)</td>
</tr>
<tr>
<td>Item</td>
<td>3.65</td>
<td>(1.13)</td>
<td>3.59</td>
<td>(1.13)</td>
<td>3.70</td>
</tr>
<tr>
<td></td>
<td>(1.03)</td>
<td>(1.03)</td>
<td>(1.14)</td>
<td>(1.14)</td>
<td>(1.14)</td>
</tr>
<tr>
<td>Item</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>-----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(.92)</td>
<td>(.94)</td>
<td>(.97)</td>
<td>(.93)</td>
<td>(.81)</td>
</tr>
<tr>
<td></td>
<td>4.76</td>
<td>4.01</td>
<td>4.79</td>
<td>4.48</td>
<td>4.77</td>
</tr>
<tr>
<td></td>
<td>(.63)*</td>
<td>(.120)</td>
<td>(.61)*</td>
<td>(.93)</td>
<td>(.64)</td>
</tr>
<tr>
<td></td>
<td>4.03</td>
<td>3.42</td>
<td>4.05</td>
<td>3.78</td>
<td>4.06</td>
</tr>
<tr>
<td></td>
<td>(.101)</td>
<td>(.107)</td>
<td>(.101)*</td>
<td>(.105)</td>
<td>(.100)</td>
</tr>
<tr>
<td></td>
<td>3.23</td>
<td>2.62</td>
<td>3.30</td>
<td>3.03</td>
<td>3.33</td>
</tr>
<tr>
<td></td>
<td>(.105)</td>
<td>(.112)</td>
<td>(.106)*</td>
<td>(.109)</td>
<td>(.105)</td>
</tr>
<tr>
<td></td>
<td>4.46</td>
<td>3.68</td>
<td>4.48</td>
<td>4.20</td>
<td>4.49</td>
</tr>
<tr>
<td></td>
<td>(.86)*</td>
<td>(.109)</td>
<td>(.85)*</td>
<td>(.96)</td>
<td>(.83)*</td>
</tr>
<tr>
<td></td>
<td>4.78</td>
<td>4.68</td>
<td>4.76</td>
<td>4.76</td>
<td>4.79</td>
</tr>
<tr>
<td></td>
<td>(.65)*</td>
<td>(.68)</td>
<td>(.68)</td>
<td>(.63)</td>
<td>(.65)</td>
</tr>
<tr>
<td></td>
<td>2.14</td>
<td>1.89</td>
<td>2.13</td>
<td>2.17</td>
<td>2.19</td>
</tr>
<tr>
<td></td>
<td>(.128)</td>
<td>(.120)</td>
<td>(.129)*</td>
<td>(.135)</td>
<td>(.128)*</td>
</tr>
<tr>
<td>IIFAS</td>
<td>67.02</td>
<td>58.35</td>
<td>67.48</td>
<td>63.41</td>
<td>67.69</td>
</tr>
<tr>
<td></td>
<td>(7.18)</td>
<td>(7.89)</td>
<td>(7.11)</td>
<td>(8.18)</td>
<td>(7.04)</td>
</tr>
<tr>
<td>IIFAS-S</td>
<td>36.87</td>
<td>29.46</td>
<td>37.12</td>
<td>33.95</td>
<td>37.24</td>
</tr>
</tbody>
</table>

*Significative differences with U Mann Whitney test ($p < .05$)

EBF: exclusive breastfeeding.

ABF: any breastfeeding
"Spanish version of the Iowa Infant Feeding Scale (IIFAS-S)"

Table 4.

Confirmatory factor analysis fit indexes of the Iowa Infant Feeding Attitude Scale (IIFAS).

<table>
<thead>
<tr>
<th></th>
<th>Model 1&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Model 2&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Model 3&lt;sup&gt;c&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\chi^2$</td>
<td>3425.063</td>
<td>192.700</td>
<td>192.702</td>
</tr>
<tr>
<td>DF</td>
<td>136</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>$\chi^2$/ DF</td>
<td>25.18</td>
<td>5.50</td>
<td>5.50</td>
</tr>
<tr>
<td>GFI</td>
<td>.950</td>
<td>.720</td>
<td>.994</td>
</tr>
<tr>
<td>CFI</td>
<td>.728</td>
<td>.000</td>
<td>.979</td>
</tr>
<tr>
<td>SRMR</td>
<td>.067</td>
<td>.16</td>
<td>.038</td>
</tr>
<tr>
<td>RMSEA</td>
<td>.080</td>
<td>.19</td>
<td>.038</td>
</tr>
</tbody>
</table>

<sup>a</sup>One-factor model with the 17 IIFAS items, n = 1187; <sup>b</sup>four latent variables (Dai et al., 2013), n = 1187; <sup>c</sup>Unifactorial solution (items 2, 3, 6, 7, 9, 12, 13, 14, 15), n = 1294.
**TABLE 5.**

**Iowa Infant Feeding Attitude Scale-Spanish (IIFAS-S) with reliability results (n = 1280)**

<table>
<thead>
<tr>
<th>Item</th>
<th>Corrected item-total correlation</th>
<th>Cronbach’s α if item deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. *Formula-feeding is more convenient than breast-feeding.</td>
<td>.388</td>
<td>.776</td>
</tr>
<tr>
<td>3. Breastfeeding <em>reinforces</em> mother-infant bonding.</td>
<td>.487</td>
<td>.767</td>
</tr>
<tr>
<td>6. *Formula-feeding is the better choice if the mother plans to go out to work.</td>
<td>.366</td>
<td>.781</td>
</tr>
<tr>
<td>7. Mothers who formula-feed miss one of the <em>better experiences</em> of mother hood.</td>
<td>.563</td>
<td>.753</td>
</tr>
<tr>
<td>9. Breastfeed babies are healthier than formula-feed babies.</td>
<td>.598</td>
<td>.748</td>
</tr>
<tr>
<td>12. Breastmilk is the ideal food for babies.</td>
<td>.488</td>
<td>.768</td>
</tr>
<tr>
<td>13. Breastmilk is more easily digested than formula.</td>
<td>.458</td>
<td>.768</td>
</tr>
<tr>
<td>14. *Formula is as healthy for infants as breastmilk</td>
<td>.463</td>
<td>.767</td>
</tr>
<tr>
<td>15. Breastfeeding is more convenient than formula feeding.</td>
<td>.554</td>
<td>.757</td>
</tr>
</tbody>
</table>

* Variables reverse scored to calculate total infant feeding attitude score.
COPYRIGHT TRANSFER & AUTHOR DISCLOSURE

Name _______________________________________   Credentials__________________________________

Address_____________________________________   City__________ State _____ZIP_________________

Daytime telephone ___________________________Email _________________________________________

Manuscript Title
__________________________________________________________________________________________

1. AUTHORSHIP STATEMENT
Do you have co-authors on this manuscript:  ■ Yes (All authors must individually submit this form)  □ No

All authors listed on a manuscript must verify that they qualify as an author according to the standards of the International Committee of Medical Journal Editors and the Council of Science Editors. Authorship implies substantial contributions to the intellectual content of the manuscript. Please answer each of the following regarding your role in the manuscript. You must answer yes to each question to qualify as an author.

A. I substantially contributed to the conceptualization of the paper and review and synthesis of the literature; or the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work:  ■ Yes  □ No

B. I participated in the drafting or critical revision of the manuscript for important intellectual content:  ■ Yes  □ No

C. I approved the final version of the manuscript submitted:  ■ Yes  □ No

D. I certify that all persons who have made substantial contributions to the work reported in this manuscript are included as authors or are acknowledged with their written permission to be named (this includes anyone who may have been paid to draft or revise the paper). I also certify that no other person has made substantial contributions to the manuscript:

2. COPYRIGHT TRANSFER
I agree and acknowledge the terms of Copyright Transfer in Appendix A that upon AWHONN’s acceptance of the manuscript for publication, and in consideration thereof, all of my intellectual property rights in accordance with in the manuscript transfer to AWHONN with no further documentation required. If AWHONN requests further documentation of the transfer, I agree to execute such further transfer documentation. In addition, I hereby authorize my corresponding authors to execute such further transfer documentation on my behalf.

■ Acknowledged and agreed  ■ I cannot acknowledge or agree

If you checked "I cannot Agree or Acknowledge in e.), please explain:

Employee(s) of the federal government. If you are a federal employee and your contribution was created by you within the scope of your employment with the federal government or a branch of the federal government, please acknowledge here that your work is in the public domain by certifying as such. Only fill out this part if you are an employee of the federal government. This does not apply to employees of state or local government.

■ I certify  ■ I cannot certify; does not apply to me

3. FINANCIAL DISCLOSURE & AFFILIATIONS
This manuscript includes discussion of products or services of persons, companies, organizations, or other entities (“Entities”), or significant competitors of such Entities, from which I have received, directly or indirectly, compensation for services, reimbursement of expenses or other remuneration or things of significant value that have paid me for my services during the past three years in the following capacities. I further warrant that these are the only such relationships with such Entities of me or my spouse (check all that apply):

■ I have no relevant financial interests to report related to this manuscript

OR, related to this manuscript I have had the following relationship with the Entity mentioned or a major competitor (check all that apply):

☐ acted as a consultant for a fee
☐ been paid or sponsored by the organization to speak to a professional or lay group
been paid to write this manuscript or for a publication related to this manuscript
served as an unpaid or paid advisor to the organization or on an advisory panel paid for by it
been or am now a full or part-time employee of or a contractor to the organization
received or my employing organization has received a grant for research or other work related to the topic of the manuscript
held or hold stock in the organization mentioned in this paper (other than less than 1% of a public company)
provided testimony for the organization in relation to the product or service discussed in the manuscript
held or now hold a patent for a product discussed in the manuscript
received or continue to receive royalties for a product discussed in the manuscript.

If you checked any of the boxes above, except for the very first one, please provide the specifics of the arrangement (e.g. "I was paid an honorarium and travel expenses to serve on the advisory committee for the Big Drug Company Inc. that makes Super Capsule."):

<table>
<thead>
<tr>
<th>Entity</th>
<th>Relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. Off-label Use of Medical Devices & Drugs Statement

Some FDA-approved or cleared medical devices or drugs are at times be used off-label (i.e., a use not FDA approved, cleared or described on the product's label) if, in the judgment of the treating clinician, such use is medically indicated to treat a patient's condition. The FDA does not regulate the practice of medicine but does regulate how companies promote their cleared or approved products; "off-label" use may be described in the manuscript so long as the lack of FDA approval or clearance for such uses is disclosed. To check the clearance status of a particular use for a device or drug, refer to the currently approved/cleared labeling at www.fda.gov. Check one of the following:

- [ ] Section 4 does not apply to this manuscript.
- [ ] The FDA has cleared all pharmaceuticals and/or medical devices for the use described in this paper.
- [ ] The FDA has not cleared the following pharmaceuticals and/or medical devices for the use described in this paper. The following pharmaceuticals and/or medical devices are being discussed for an off-label use:

<table>
<thead>
<tr>
<th>Manufacturer Name</th>
<th>Drug or Device</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

By signing this statement, I hereby attest to the accuracy of this Copyright Transfer & Author Disclosure and agree as to the obligations set forth herein and that in relation to the submission of the aforementioned manuscript, I will comply with the journal's policies of Copyright Transfer (Appendix A), Full Disclosure of Relationships with Commercial Entities, and Authorship Verification.

Rosa Tomas-Almarcha 04/17/2016

NAME DATE

SIGNATURE
Appendix A: Copyright Transfer

The Journal of Obstetric, Gynecologic & Neonatal Nursing is owned by the Association of Women’s Health, Obstetric and Neonatal Nurses (AWHONN) and published by Elsevier Inc. (Publisher). AWHONN is pleased to consider the Contribution for publication in the Journal. If and when the Contribution is accepted for publication in the Journal, the following terms and conditions shall become effective as of the date of Contributor’s execution of this Author Disclosure and Copyright Transfer:

Transfer of Copyright: Contributor transfers and assigns to AWHONN all right, title, and interest of every kind in and to the copyright in the Contribution for the full term of copyright throughout the world, together with all the exclusive rights comprised in such copyright and remedies as afforded by law (for United States government employees, to the extent allowable by law), including, without limitation, the exclusive right: to register the copyright in AWHONN’s name; to reproduce, publish, transmit, distribute, and publicly display and perform copies of the Contribution or excerpts therefrom, in any format or medium, and by any method, device, or process, now known or later conceived or developed; to prepare translations and other derivative works based on the Contribution; and to license, transfer, or assign to others any or all of the rights comprised in the copyright in the Contribution.

AWHONN makes no guarantee that the Contribution will be published in the Journal. If, for any reason, the Contribution is not published in the Journal, all rights in the copyright in the Contribution shall revert to Contributor, and this Transfer shall be of no further force and effect and neither AWHONN or Contributor will have any obligation to the other with respect to the Contribution.

License to Contributor: AWHONN grants back to Contributor the nonexclusive license to:

a) use all or part of the Contribution (after publication in the Journal) in any book or article written by the Author(s), and
b) make photocopies of all or part of the Contribution for use by the Author(s) in classroom teaching. Contributor may not post the as-published PDF version of the Contribution online, or their final manuscript file version.

As a condition for this license to Contributor, all such books and articles containing the Contribution or any part thereof, and all photocopies of the Contribution or any part thereof, must include the copyright notice that appears on the issue of the Journal in which the Contribution is first published and the following credit statement: “From (or Adapted from:) Full citation of the Contribution. Used with permission.”

Contributor’s Duties:

a) If the Contribution contains copyrighted material not owned by Contributor, then Contributor shall obtain written permission from the copyright owner, in a form acceptable to AWHONN, to include such copyrighted material in the Contribution and to make any and all use of the excerpt in any and all media, and shall deliver such written permission to the Editor together with delivery of the manuscript of the Contribution.
b) The Editor may copyedit the Contribution as necessary in order to prepare it for production and publication in the Journal. The Corresponding Author will proofread and correct the edited manuscript and, if forwarded, the proofs of the Contribution and shall timely return them as directed.

c) If corrected proofs are not timely returned, AWHONN and Publisher may proceed with the publication of the Contribution as it deems appropriate.

d) This Transfer must be signed by each Author (and Employer, if applicable) and delivered to the Editor as a condition for publication of the Contribution in the Journal.

Credit; Use of Name and Likeness: Each Author will receive credit as an author of the Contribution when it is published in the Journal; the form and placement of the credit will be determined by Publisher. Each Author grants AWHONN and Publisher the right to use his/her name, likeness, biographical information, and professional affiliations in connection with the publication and promotion of the Contribution and the Journal.

Consideration: In addition to publication of the Contribution in the Journal, AWHONN will provide the Corresponding Author one (1) electronic copy of the article. Additional reprints of the Contribution may be purchased at Publisher’s regularly scheduled prices.

Warranties: Contributor warrants and represents that:

a) the Contribution has not been previously published, is not in the public domain, and is the original work of the Author(s) (except for excerpts from copyrighted material owned by others and included with the written permission of the copyright owner);
b) Contributor is the owner of all right, title, and interest of every kind in and to the copyright in the Contribution, and has the full power and authority to transfer and assign the copyright to AWHONN;
c) the Contribution does not infringe the copyright or any other proprietary right of another; (d) the Contribution contains no material that is obscene, libelous or defamatory, violates any right of privacy, or is otherwise contrary to law;
d) all statement in the Contribution asserted as facts are based upon reasonable research for accuracy; and

e) no formula or procedure contained in the Contribution would cause injury if used in accordance with the instructions and/or warnings contained in the Contribution. Contributor shall indemnify AWHONN and Publisher, its subsidiaries and affiliates, their officers, directors, employees, agents, and licensees, against any liabilities, costs, and expenses (including reasonable legal fees and court costs) resulting from any claim finally sustained or settled based on facts inconsistent with any of Contributor’s warranties and representations.
COPYRIGHT TRANSFER & AUTHOR DISCLOSURE

Name _______________________________________   Credentials _______________________________________

Address_____________________________________   City__________ State _____ZIP_________________

Daytime telephone ___________________________Email _________________________________________

Manuscript Title
__________________________________________________________________________________________

1. AUTHORSHIP STATEMENT
Do you have co-authors on this manuscript:  ■ Yes (All authors must individually submit this form)  ☐ No

All authors listed on a manuscript must verify that they qualify as an author according to the standards of the International Committee of Medical Journal Editors and the Council of Science Editors. Authorship implies substantial contributions to the intellectual content of the manuscript. Please answer each of the following regarding your role in the manuscript. You must answer yes to each question to qualify as an author.

A. I substantially contributed to the conceptualization of the paper and review and synthesis of the literature; or the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work:  ■ Yes ☐ No

B. I participated in the drafting or critical revision of the manuscript for important intellectual content:  ■ Yes ☐ No

C. I approved the final version of the manuscript submitted:  ■ Yes ☐ No

D. I certify that all persons who have made substantial contributions to the work reported in this manuscript are included as authors or are acknowledged with their written permission to be named (this includes anyone who may have been paid to draft or revise the paper). I also certify that no other person has made substantial contributions to the manuscript:  ■ I certify ☐ I cannot certify

2. COPYRIGHT TRANSFER
I agree and acknowledge the terms of Copyright Transfer in Appendix A that upon AWHONN’s acceptance of the manuscript for publication, and in consideration thereof, all of my intellectual property rights in accordance with in the manuscript transfer to AWHONN with no further documentation required. If AWHONN requests further documentation of the transfer, I agree to execute such further transfer documentation. In addition, I hereby authorize my corresponding authors to execute such further transfer documentation on my behalf.

■ Acknowledged and agreed ☐ I cannot acknowledge or agree

If you checked "I cannot Agree or Acknowledge in e.", please explain:

Employee(s) of the federal government. If you are a federal employee and your contribution was created by you within the scope of your employment with the federal government or a branch of the federal government, please acknowledge here that your work is in the public domain by certifying as such. Only fill out this part if you are an employee of the federal government. This does not apply to employees of state or local government.

■ I certify ☐ I cannot certify; does not apply to me

3. FINANCIAL DISCLOSURE & AFFILIATIONS
This manuscript includes discussion of products or services of persons, companies, organizations, or other entities (“Entities”), or significant competitors of such Entities, from which I have received, directly or indirectly, compensation for services, reimbursement of expenses or other remuneration or things of significant value that have paid me for my services during the past three years in the following capacities. I further warrant that these are the only such relationships with such Entities of me or my spouse (check all that apply):

■ I have no relevant financial interests to report related to this manuscript

OR, related to this manuscript I have had the following relationship with the Entity mentioned or a major competitor (check all that apply):

☐ acted as a consultant for a fee
☐ been paid or sponsored by the organization to speak to a professional or lay group
been paid to write this manuscript or for a publication related to this manuscript
served as an unpaid or paid advisor to the organization or on an advisory panel paid for by it
been or am now a full or part-time employee of or a contractor to the organization
received or my employing organization has received a grant for research or other work related to the topic of the manuscript
held or hold stock in the organization mentioned in this paper (other than less than 1% of a public company)
provided testimony for the organization in relation to the product or service discussed in the manuscript
held or now hold a patent for a product discussed in the manuscript
received or continue to receive royalties for a product discussed in the manuscript

If you checked any of the boxes above, except for the very first one, please provide the specifics of the arrangement (e.g. “I was paid an honorarium and travel expenses to serve on the advisory committee for the Big Drug Company Inc. that makes Super Capsule.”):

<table>
<thead>
<tr>
<th>Entity</th>
<th>Relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. OFF-LABEL USE OF MEDICAL DEVICES & DRUGS STATEMENT

Some FDA-approved or cleared medical devices or drugs are at times used off-label (i.e., a use not FDA approved, cleared or described on the product’s label) if, in the judgment of the treating clinician, such use is medically indicated to treat a patient’s condition. The FDA does not regulate the practice of medicine but does regulate how companies promote their cleared or approved products; “off-label” use may be described in the manuscript so long as the lack of FDA approval or clearance for such uses is disclosed. To check the clearance status of a particular use for a device or drug, refer to the currently approved/cleared labeling at www.fda.gov. Check one of the following:

- Section 4 does not apply to this manuscript.
- The FDA has cleared all pharmaceuticals and/or medical devices for the use described in this paper.
- The FDA has not cleared the following pharmaceuticals and/or medical devices for the use described in this paper. The following pharmaceuticals and/or medical devices are being discussed for an off-label use:

<table>
<thead>
<tr>
<th>Manufacturer Name</th>
<th>Drug or Device</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

By signing this statement, I hereby attest to the accuracy of this Copyright Transfer & Author Disclosure and agree as to the obligations set forth herein and that in relation to the submission of the aforementioned manuscript, I will comply with the journal’s policies of Copyright Transfer (Appendix A), Full Disclosure of Relationships with Commercial Entities, and Authorship Verification.

Miguel Richart-Martinez 04/18/2016

NAME DATE

SIGNATURE
The Journal of Obstetric, Gynecologic & Neonatal Nursing is owned by the Association of Women’s Health, Obstetric and Neonatal Nurses (AWHONN) and published by Elsevier Inc. (Publisher). AWHONN is pleased to consider the Contribution for publication in the Journal. If and when the Contribution is accepted for publication in the Journal, the following terms and conditions shall become effective as of the date of Contributor’s execution of this Author Disclosure and Copyright Transfer:

**Transfer of Copyright:** Contributor transfers and assigns to AWHONN all right, title, and interest of every kind in and to the copyright in the Contribution for the full term of copyright throughout the world, together with all the exclusive rights comprised in such copyright and remedies as afforded by law (for United States government employees, to the extent allowable by law), including, without limitation, the exclusive right: to register the copyright in AWHONN’s name; to reproduce, publish, transmit, distribute, and publicly display and perform copies of the Contribution or excerpts therefrom, in any format or medium, and by any method, device, or process, now known or later conceived or developed; to prepare translations and other derivative works based on the Contribution; and to license, transfer, or assign to others any or all of the rights comprised in the copyright in the Contribution.

AWHONN makes no guarantee that the Contribution will be published in the Journal. If, for any reason, the Contribution is not published in the Journal, all rights in the copyright in the Contribution shall revert to Contributor, and this Transfer shall be of no further force and effect and neither AWHONN or Contributor will have any obligation to the other with respect to the Contribution.

**License to Contributor:** AWHONN grants back to Contributor the nonexclusive license to:

a) use all or part of the Contribution (after publication in the Journal) in any book or article written by the Author(s), and

b) make photocopies of all or part of the Contribution for use by the Author(s) in classroom teaching. Contributor may not post the as-published PDF version of the Contribution online, or their final manuscript file version.

As a condition for this license to Contributor, all such books and articles containing the Contribution or any part thereof, and all photocopies of the Contribution or any part thereof, must include the copyright notice that appears on the issue of the Journal in which the Contribution is first published and the following credit statement: “From (or Adapted from:) Full citation of the Contribution. Used with permission.”

**Contributor’s Duties:**

a) If the Contribution contains copyrighted material not owned by Contributor, then Contributor shall obtain written permission from the copyright owner, in a form acceptable to AWHONN, to include such copyrighted material in the Contribution and to make any and all use of the excerpt in any and all media, and shall deliver such written permission to the Editor together with delivery of the manuscript of the Contribution.

b) The Editor may copyedit the Contribution as necessary in order to prepare it for production and publication in the Journal. The Corresponding Author will proofread and correct the edited manuscript and, if forwarded, the proofs of the Contribution and shall timely return them as directed.

If corrected proofs are not timely returned, AWHONN and Publisher may proceed with the publication of the Contribution as it deems appropriate.

c) This Transfer must be signed by each Author (and Employer, if applicable) and delivered to the Editor as a condition for publication of the Contribution in the Journal.

**Credit; Use of Name and Likeness:** Each Author will receive credit as an author of the Contribution when it is published in the Journal; the form and placement of the credit will be determined by Publisher. Each Author grants AWHONN and Publisher the right to use his/her name, likeness, biographical information, and professional affiliations in connection with the publication and promotion of the Contribution and the Journal.

**Consideration:** In addition to publication of the Contribution in the Journal, AWHONN will provide the Corresponding Author one (1) electronic copy of the article. Additional reprints of the Contribution may be purchased at Publisher’s regularly scheduled prices.

**Warranties:** Contributor warrants and represents that:

a) the Contribution has not been previously published, is not in the public domain, and is the original work of the Author(s) (except for excerpts from copyrighted material owned by others and included with the written permission of the copyright owner);

b) Contributor is the owner of all right, title, and interest of every kind in and to the copyright in the Contribution, and has the full power and authority to transfer and assign the copyright to AWHONN;

c) the Contribution does not infringe the copyright or any other proprietary right of another; (d) the Contribution contains no material that is obscene, libelous or defamatory, violates any right of privacy, or is otherwise contrary to law;

d) all statement in the Contribution asserted as facts are based upon reasonable research for accuracy; and

e) no formula or procedure contained in the Contribution would cause injury if used in accordance with the instructions and/or warnings contained in the Contribution. Contributor shall indemnify AWHONN and Publisher, its subsidiaries and affiliates, their officers, directors, employees, agents, and licensees, against any liabilities, costs, and expenses (including reasonable legal fees and court costs) resulting from any claim finally sustained or settled based on facts inconsistent with any of Contributor’s warranties and representations.
COPYRIGHT TRANSFER & AUTHOR DISCLOSURE

Name _______________________________________   Credentials__________________________________
Address_____________________________________   City__________ State _____ZIP_________________
Daytime telephone ___________________________Email _________________________________________

Manuscript Title
__________________________________________________________________________________________

1. AUTHORSHIP STATEMENT
Do you have co-authors on this manuscript:  ■ Yes (All authors must individually submit this form)  □ No

All authors listed on a manuscript must verify that they qualify as an author according to the standards of the International Committee of Medical Journal Editors and the Council of Science Editors. Authorship implies substantial contributions to the intellectual content of the manuscript. Please answer each of the following regarding your role in the manuscript. You must answer yes to each question to qualify as an author.

A. I substantially contributed to the conceptualization of the paper and review and synthesis of the literature; or the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work:  ■ Yes  □ No

B. I participated in the drafting or critical revision of the manuscript for important intellectual content:  ■ Yes  □ No

C. I approved the final version of the manuscript submitted:  ■ Yes  □ No

D. I certify that all persons who have made substantial contributions to the work reported in this manuscript are included as authors or are acknowledged with their written permission to be named (this includes anyone who may have been paid to draft or revise the paper). I also certify that no other person has made substantial contributions to the manuscript:  ■ I certify  ■ I cannot certify

2. COPYRIGHT TRANSFER
I agree and acknowledge the terms of Copyright Transfer in Appendix A that upon AWHONN’s acceptance of the manuscript for publication, and in consideration thereof, all of my intellectual property rights in accordance with in the manuscript transfer to AWHONN with no further documentation required. If AWHONN requests further documentation of the transfer, I agree to execute such further transfer documentation. In addition, I hereby authorize my corresponding authors to execute such further transfer documentation on my behalf.  ■ Acknowledged and agreed  ■ I cannot acknowledge or agree

If you checked "I cannot Agree or Acknowledge in e.), please explain:


Employee(s) of the federal government. If you are a federal employee and your contribution was created by you within the scope of your employment with the federal government or a branch of the federal government, please acknowledge here that your work is in the public domain by certifying as such. Only fill out this part if you are an employee of the federal government. This does not apply to employees of state or local government.  ■ I certify  ■ I cannot certify; does not apply to me

3. FINANCIAL DISCLOSURE & AFFILIATIONS
This manuscript includes discussion of products or services of persons, companies, organizations, or other entities (“Entities”), or significant competitors of such Entities, from which I have received, directly or indirectly, compensation for services, reimbursement of expenses or other remuneration or things of significant value that have paid me for my services during the past three years in the following capacities. I further warrant that these are the only such relationships with such Entities of me or my spouse (check all that apply):

■ I have no relevant financial interests to report related to this manuscript

OR, related to this manuscript I have had the following relationship with the Entity mentioned or a major competitor (check all that apply):

■ acted as a consultant for a fee
■ been paid or sponsored by the organization to speak to a professional or lay group
been paid to write this manuscript or for a publication related to this manuscript
served as an unpaid or paid advisor to the organization or on an advisory panel paid for by it
been or am now a full or part-time employee of or a contractor to the organization
received or my employing organization has received a grant for research or other work related to the topic of the manuscript
held or hold stock in the organization mentioned in this paper (other than less than 1% of a public company)
provided testimony for the organization in relation to the product or service discussed in the manuscript
held or now hold a patent for a product discussed in the manuscript
received or continue to receive royalties for a product discussed in the manuscript

If you checked any of the boxes above, except for the very first one, please provide the specifics of the arrangement (e.g. "I was paid an honorarium and travel expenses to serve on the advisory committee for the Big Drug Company Inc. that makes Super Capsule."):

<table>
<thead>
<tr>
<th>Entity</th>
<th>Relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. **OFF-LABEL USE OF MEDICAL DEVICES & DRUGS STATEMENT**

Some FDA-approved or cleared medical devices or drugs are at times be used off-label (i.e., a use not FDA approved, cleared or described on the product's label) if, in the judgment of the treating clinician, such use is medically indicated to treat a patient's condition. The FDA does not regulate the practice of medicine but does regulate how companies promote their cleared or approved products; "off-label" use may be described in the manuscript so long as the lack of FDA approval or clearance for such uses is disclosed. To check the clearance status of a particular use for a device or drug, refer to the currently approved/cleared labeling at [www.fda.gov](http://www.fda.gov). Check one of the following:

- Section 4 does not apply to this manuscript.
- The FDA has cleared all pharmaceuticals and/or medical devices for the use described in this paper.
- The FDA has not cleared the following pharmaceuticals and/or medical devices for the use described in this paper. The following pharmaceuticals and/or medical devices are being discussed for an off-label use:

<table>
<thead>
<tr>
<th>Manufacturer Name</th>
<th>Drug or Device</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

By signing this statement, I hereby attest to the accuracy of this Copyright Transfer & Author Disclosure and agree as to the obligations set forth herein and that in relation to the submission of the aforementioned manuscript, I will comply with the journal's policies of Copyright Transfer (Appendix A), Full Disclosure of Relationships with Commercial Entities, and Authorship Verification.

**Antonio Oliver-Roig**

04/18/2016

NAME ___________________________ DATE ___________________________

SIGNATURE ___________________________
Transfer of Copyright: Contributor transfers and assigns to AWHONN all right, title, and interest of every kind in and to the copyright in the Contribution for the full term of copyright throughout the world, together with all the exclusive rights comprised in such copyright and remedies as afforded by law (for United States government employees, to the extent allowable by law), including, without limitation, the exclusive right: to register the copyright in AWHONN’s name; to reproduce, publish, transmit, distribute, and publicly display and perform copies of the Contribution or excerpts therefrom, in any format or medium, and by any method, device, or process, now known or later conceived or developed; to prepare translations and other derivative works based on the Contribution; and to license, transfer, or assign to others any or all of the rights comprised in the copyright in the Contribution.

AWHONN makes no guarantee that the Contribution will be published in the Journal. If, for any reason, the Contribution is not published in the Journal, all rights in the copyright in the Contribution shall revert to Contributor, and this Transfer shall be of no further force and effect and neither AWHONN or Contributor will have any obligation to the other with respect to the Contribution.

License to Contributor: AWHONN grants back to Contributor the nonexclusive license to:

a) use all or part of the Contribution (after publication in the Journal) in any book or article written by the Author(s), and
b) make photocopies of all or part of the Contribution for use by the Author(s) in classroom teaching. Contributor may not post the as-published PDF version of the Contribution online, or their final manuscript file version.

As a condition for this license to Contributor, all such books and articles containing the Contribution or any part thereof, and all photocopies of the Contribution or any part thereof, must include the copyright notice that appears on the issue of the Journal in which the Contribution is first published and the following credit statement: “From (or Adapted from:) Full citation of the Contribution. Used with permission.”

Contributor’s Duties:

a) If the Contribution contains copyrighted material not owned by Contributor, then Contributor shall obtain written permission from the copyright owner, in a form acceptable to AWHONN, to include such copyrighted material in the Contribution and to make any and all use of the excerpt in any and all media, and shall deliver such written permission to the Editor together with delivery of the manuscript of the Contribution.

b) The Editor may copyedit the Contribution as necessary in order to prepare it for production and publication in the Journal. The Corresponding Author will proofread and correct the edited manuscript and, if forwarded, the proofs of the Contribution and shall timely return them as directed.

c) If corrected proofs are not timely returned, AWHONN and Publisher may proceed with the publication of the Contribution as it deems appropriate.

Credit; Use of Name and Likeness: Each Author will receive credit as an author of the Contribution when it is published in the Journal; the form and placement of the credit will be determined by Publisher. Each Author grants AWHONN and Publisher the right to use his/her name, likeness, biographical information, and professional affiliations in connection with the publication and promotion of the Contribution and the Journal.

Consideration: In addition to publication of the Contribution in the Journal, AWHONN will provide the Corresponding Author one (1) electronic copy of the article. Additional reprints of the Contribution may be purchased at Publisher’s regularly scheduled prices.

Warranties: Contributor warrants and represents that:

a) the Contribution has not been previously published, is not in the public domain, and is the original work of the Author(s) (except for excerpts from copyrighted material owned by others and included with the written permission of the copyright owner);

b) Contributor is the owner of all right, title, and interest of every kind in and to the copyright in the Contribution, and has the full power and authority to transfer and assign the copyright to AWHONN;

c) the Contribution does not infringe the copyright or any other proprietary right of another; (d) the Contribution contains no material that is obscene, libelous or defamatory, violates any right of privacy, or is otherwise contrary to law;

d) all statement in the Contribution asserted as facts are based upon reasonable research for accuracy; and

e) no formula or procedure contained in the Contribution would cause injury if used in accordance with the instructions and/or warnings contained in the Contribution. Contributor shall indemnify AWHONN and Publisher, its subsidiaries and affiliates, their officers, directors, employees, agents, and licensees, against any liabilities, costs, and expenses (including reasonable legal fees and court costs) resulting from any claim finally sustained or settled based on facts inconsistent with any of Contributor’s warranties and representations.
Dª Patrocinio Gascón Calderón, Secretaria del Comité Ético de Investigación Clínica del Hospital de la Plana de Vila-real (Castellón).

CERTIFICA

Que el Comité Ético de Investigación Clínica, según consta en acta de la reunión celebrada el día 30 de septiembre de 2013, ha evaluado el proyecto de investigación titulado:

“Adaptación de herramientas para la evaluación de los cuidados durante el parto desde la perspectiva materna (estudio metodologico/observacional multicéntrico de ámbito nacional)"

Investigador principal: D. Antonio Oliver Roig.

Entendiendo que dicho estudio se ajusta a las norma éticas esenciales y criterios deontológicos que rigen en este Centro, y, por tanto, ha decidido su aprobación.

Lo que firmo, en Vila-real, a 7 de octubre de 2013

LA SECRETARIA DEL CEIC

Patro Gascón-Calderón
Reliability, Validity and reduced Spanish version of the Iowa Infant Feeding Attitude Scale (IIFAS)  

Abstract Objective: To translate the scale into Spanish, to test its psychometric properties and to explore item reduction for the Spanish version. 


Participants: A convenience sample of 1354 pregnant women was recruited and data on sociodemographic variables, breastfeeding experience and intention, as well as the Spanish version of the IIFAS was obtained. Also, data on breastfeeding types during the first year was obtained. 

Methods: The IIFAS was translated using forward and back translation. 

Dimensional structure, internal consistency and construct validity of the Spanish IIFAS version were assessed. Criteria of
improving

the reliability of the scale and the predictive power of the items

were used to reduce the scale. Results: Statistics on the psychometric properties suggested the need of item reduction. Cronbach’s alpha coefficient of the 9-item final version of the Spanish IIFAS (IIFAS-S) was 0.792. The confirmatory factor analysis showed a unidimensional structure.

Demographic response patterns and correlations with IIFAS-S scale provided further evidence of construct validity.

Pregnancy IIFAS-S scores significantly predicted breastfeeding rates and exclusivity. Conclusion:

The results of this study indicate that the Spanish translation of the 23 IIFAS is a valid and reliable measure of maternal attitudes toward breastfeeding. 24 Précis: IIFAS-S can be used to assess the attitudes of the Spanish women towards breastfeeding and is a good predictor of initiation, exclusiveness and duration of breastfeeding.

26 breastfeeding. 27 Keywords: Breastfeeding, Iowa Infant Feeding Attitude Scale, psychometrics 28 properties, breastfeeding attitudes, validity, reliability. 29 Callouts 31 Callout 1.
Maternal breastfeeding attitudes are better predictors of infant feeding method during the postpartum period than the mother’s socio-demographic characteristics. Our study suggests a Spanish adaptation of the IIFAS (IIFAS-S), unidimensional, with very good reliability and validity data. IIFAS-S shows a good relationship with maternal intention to breastfeed, discriminates women according to their previous experience, and is a good predictor of initiation, exclusiveness, and duration of breastfeeding.

Introduction Breastfeeding is promoted as the optimal form of infant feeding due to its unique short and long-term health benefits for both the mother and the infant. Published studies have confirmed and quantified the risks of bottle-feeding, and breastfeeding should not be considered as just another way of feeding the newborn, but rather as a basic health issue, with important implications for the health, both in countries with high or low income. The WHO recommends that babies be exclusively breastfed for 6 months and that breastfeeding should be continued with appropriate complementary food for at least 2 years.
Despite these recommendations, only a minority of European infants is breastfed (Callen & Pinelli, 2004). In Spain, the rate of initiation of breastfeeding is high, above 80% (Rio et al., 2012). However, only 28.5% of Spanish women exclusively breastfeed their child, without offering other liquids or foods, at 6 months postpartum, and the median of duration of breastfeeding is 6 months (Directorate General of Public Health, 2011/12). The Spanish National Health System’s Quality Plan urges health professionals to incorporate breastfeeding support intervention into their practices (Spanish Ministry of Health and Social Policy, 2009). Premature cessation of breastfeeding is usually the result of the combination of various factors on different levels (Hector, King, Webb, & Heywood, 2005). First, factors such as the so-called bottle-feeding culture, with cultural values that have made formula feeding the norm, or cultural norms against breastfeeding in public are linked to the structure of society, and influence the acceptability and expectations of a woman about breastfeeding (Hector et al., 2005; Oliver-Roig, 2003). Secondly, factors such as the lack of support from significant others, the hospital practices that make breastfeeding difficult after delivery, or the difficulties after returning to work, are linked to the environment in which the women and their
children relate to others, and affect the amount of energy, time and ability of the mother to solve breastfeeding problems (Oliver-Roig, 2003; Thulier & Mercer, 2009). Finally, factors such as clinical, psychological, and personal history are linked to the mother-child dyad and directly associated with maternal decisions and breastfeeding practices (Meedya, Fahy, & Kable, 2010; Thulier & Mercer, 2009). Our study focused on the mother’s attributes that affect breastfeeding decisions in the mother-child dyad level. Self-efficacy, postnatal depression, anxiety, maternal intention to breastfeed, attitudes toward breastfeeding and social support are factors that have been implicated in breastfeeding initiation and duration (de Jager, Skouteris, Broadbent, Amir, & Mellor, 2013; Meedya et al., 2010).

One important variable at this individual level is maternal attitude toward breastfeeding, since women’s attitudes are one of the possible modifiable variables related to breastfeeding outcomes. Attitudes are associations between attitudinal objects (practically any aspect of the social world) and evaluations of these objects,
and constitute durable assessments of various aspects of the social world that are stored in memory. They are important because they strongly influence social thinking or how we think about and process social information. Attitudes function as schemas, or cognitive frameworks, possessing and organizing information about specific concepts, situations or events. Attitudes have been the focus of research because it is assumed that they always influence behavior; therefore, knowing something about them can help us to predict people’s behavior in many contexts (Baron & Byrne, 1998).

Maternal breastfeeding attitudes are better predictors of infant feeding method during the postpartum period than the mother’s socio-demographic characteristics (Dungy, Losch, & Russell, 1994; Scott, Binns, Oddy, & Graham, 2006). Women with positive attitudes are more likely to breastfeed and tend to do so for longer than those with less positive attitudes (Thulier & Mercer, 2009) (de La Mora, Russell, Dungy, & et al., 1999; Scott et al., 2006). (CALLOUT 1.)
State University, originally designed in 1999 the

**Iowa Infant Feeding Attitude Scale (IIFAS) (de La Mora et al., 1999)** to assess ten aspects related to

- women’s attitudes toward breastfeeding,
- five related to the characteristics of breast milk and formula milk (i.e., cost, mother’s physical shape, sexual pleasure, mental-physical comfort, and nutritional product) and five related to the process of feeding the baby (i.e., parental role, physical closeness, infant food intake, ease of feeding, and nighttime feeding).

The scale was developed to predict the choice of infant feeding method as well as duration of breastfeeding;

higher rates indicate that women are likely to breastfeed. The IIFAS consists of 17 items selected from an initial pool of 26 items to optimize reliability. In the original study, which consists in three substudies conducted at a community hospital in a medium-sized Midwestern city of USA, the reliability of the IIFAS ranged since 0.68 to 0.96. On behalf validity, the IIFAS discriminated between

- women who intend to breastfeed and those who decide to use artificial feeding.

The IIFAS
has been tested in various populations (Ho & McGrath, 2010), including prenatal and postpartum women, low-income women

(Dungy, McInnes, Tappin, Wallis, & Oprescu, 2008), social networkers (Dungy et al., 2008), fathers (Karande & Perkar, 2012), and students (Kavanagh, Lou, Nicklas, Habibi, & Murphy, 2012). The original English version has been used in the USA

(de La Mora et al., 1999), Australia, (Scott et al., 2006)

Northern Ireland (Sittlington, Stewart-Knox, Wright, Bradbury, & Scott, 2007), Scotland

(Dungy et al., 2008), Croatia (Zakarija-Grkovic & Burmaz, 2010), Syria (Al-Akour, Khassawneh, Khader, Ababneh, & Haddad, 2010), India (Karande & Perkar, 2012), and Singapore (Lau, Htun, Lim, Ho-Lim, & Klainin- Yobas, 2015). Besides being used in English, it has been translated into Romanian (Wallis et al., 2008), Chinese (Ho & McGrath, 2011a), Arabic (Charafeddine, Tamim, Soubra, de la Mora, & Nabulsi, 2015; Saied, Mohamed, Suliman, & Al Anazi, 2013), Japanese (Nanishi & Jimba, 2014), and isiZulu (Tuthill et al., 2014). Many international studies have been conducted on the IIFAS and the reliability and validity of this scale. Previous studies have reported conflicting evidence on reliability, with internal consistency coefficients (\(?)\) ranging between 0.89 and 0.50 (Wallis et al., 2008). Moreover, the low internal consistency of (Dungy et al., 2008)}
the IIFAS found in some previous studies has not been explained. The factor structure of the IIFAS has been considered unidimensional, and the total IIFAS score has been used in all previous research to provide evidence of validity. However, a discrepancy in results on the structure of the IIFAS between publications is found. Previous studies have reported structures with one (Charafeddine et al., 2015; Nanishi & Jimba, 2014), three (Lau et al., 2015) or four (Dai, Guan, Li, You, & Lau, 2013) factors for the IIFAS. As in the original study (de La Mora et al., 1999), other authors found that the IIFAS discriminates between women who intend to breastfeed and those who decide to use artificial feeding (de La Mora et al., 1999; Lawton, Ashley, Dawson, Waiblinger, & Conner, 2012). Also IIFAS predicts the initiation and the duration of breastfeeding in women with higher scores (Chen et al., 2013; Ho & McGrath, 2011b; Scott et al., 2006). The IIFAS has not previously been translated into Spanish and psychometrically tested among mothers in Spain, where a validated version could be useful to identify groups at risk of early breastfeeding cessation or to evaluate interventions. The objectives of this study were (1) to translate the scale into Spanish, and (2) to test its
psychometric properties

and obtain data on Spanish-speaking mothers in Spain. The conflicting evidence on the factor structure of the IIFAS and the low internal consistency of the scale observed in some previous studies indicated the need to explore item reduction for the Spanish version. Method Participants We conducted an instrumental study.

A convenience sample of 1354 pregnant women in their third trimester was recruited from 6 hospitals in eastern Spain, as part of a larger study on factors related to early breastfeeding cessation. All the hospitals involved were implementing different strategies to improve breastfeeding practices and two of them had been designated as Baby-Friendly Hospitals before the initiation of the study, by taking the steps recommended by the UNICEF/WHO’s Baby-Friendly Hospital Initiative to improve breastfeeding practices in health care (World Health Organization., 2009).

All participants were able to read and speak Spanish and they had no problems that could seriously complicate or contraindicate breastfeeding such as HIV infection, 7 previous breast surgery, or congenital fetal pathology diagnosed during pregnancy. In the postpartum follow-up, women were excluded if they had had preterm deliveries or multiple births, or when medical problems existed that prevented or seriously hampered
breastfeeding; these included problems of the newborn such as an Apgar score below 6 at 5 minutes of life, neonatal sepsis, cleft lip, cleft palate, or Down syndrome. All recruited women agreed to participate in the study. The study received approval from the institutional review board.

**Instrument:**

The IIFAS is a 17-item questionnaire that uses a 5-point Likert scale ranging from 5 (strongly agree) to 1 (strongly disagree). Nine of the items are worded in a manner favorable to breastfeeding, while the remaining items are favorable to formula feeding. Items favoring artificial feeding are reversed scored and a total score is computed via an equally weighted sum of responses to the individual items. The total attitude scale can range from 17-85; higher rates indicate that the respondent is likely
to breastfeed (de La Mora et al., 1999).

Translation procedures Linguistic validation of the Spanish IIFAS was performed using the standard procedure of translation and blind back-translation, with the aim of ensuring content, semantic and technical equivalence. The translators, two for the translation and two for the back-translation, were not otherwise involved in the project and were not experts in maternal breastfeeding. Data was collected on difficulty in translating

(1= not at all difficult; 10= maximum difficulty), and on the applicability to the Spanish cultural context or changes made to each item

in order to maintain semantic and conceptual equivalence. Once the translated version and data concerning the items were available, the research team held meetings with the translators to revise the translation and reach a consensus in order to produce a single version in Spanish. A pilot study was conducted with 10 pregnant women in order

to test comprehensibility and legibility of the
translated IIFAS. Data collection During a third trimester pregnancy check-up (28-42 weeks),

participants completed a battery of self-report questionnaires,

including the translated IIFAS, and provided data

on age, level of maternal education and income,

marital status, parity, previous experience of breastfeeding, breastfeeding duration and assessment, and selected infant feeding method and decided duration. In order to obtain follow-up information on breastfeeding, we consider three moments for data collection: at postpartum discharge, at 5 months, and at one year after delivery (Figure 1). First, prior to postpartum discharge from the hospital (2 to 4 days postpartum), we collected data from a self-administered questionnaire on in-hospital initiation of breastfeeding and supplementation with infant formula or other liquids before discharge. Also, we obtained data on obstetric variables such as mode of delivery from clinical records. In addition, at 5 and 12 months after delivery data was obtained concerning the time at which breastfeed infants was first given

additional water-based liquids, breast milk substitutes and complementary foods at least once a day, and the time of weaning.

At 5 months postpartum a self-administered postal 9 questionnaire was sent to mothers who were breastfeeding their child at discharge or with missing data after delivery. This was sent up to three times to non-responders, with a period of three weeks between each delivery, and included the form to complete, a pen, and a postage paid envelope for submitting responses to the research team. Finally, 12 months after delivery, a telephone survey was conducted by one of the authors not involved in in-hospital attention, of mothers who were breastfeeding their child or with missing data at 5 months postpartum. The description of the breastfeeding practices is based on the definitions proposed by WHO

(World Health Organization, 1991): exclusive breastfeeding, when infants only received breast milk,
although rehydration solutions, drops, and syrups were also allowed; and any breastfeeding,

when infants received any amount of breast milk with or without other liquids or foods.

The duration of exclusive breastfeeding was considered to be the time until the introduction of water based drinks, juices, infant formula or complementary foods, and the duration of any breastfeeding as the time during which the infants received any quantity of mother’s milk. Data analysis We calculated the

mean and standard deviation of item scores, and the proportion of respondents with

the lowest or highest possible score was determined

in order to assess floor and ceiling effects. The median duration and proportion of

infants by age for exclusive and any

breastfeeding were calculated using the survival table method,

including information collected at discharge, 5 months and 12 months postpartum. For data analysis, we only used records in which 100% of IIFAS items had been answered. The

Kolmogorov-Smirnov test was used to assess normal distribution of variables.

We assessed the association between variables using Pearson’s or Spearman’s correlation, as appropriate, and the hypotheses were contrasted using (Student’s T test)
or non-parametric tests (Mann–Whitney U, χ²) depending on distribution of variables.

Reliability of the translated IIFAS was assessed using the following criteria:

Cronbach’s Ω coefficient, estimation of alpha when an item was deleted from the scale, and adjusted item-total correlation.

In order to determine construct validity, we performed a principal component analysis, forcing the extraction of one factor. We reduced the scale to obtain a short version by deleting items with an adjusted item-total correlation or factor loading of less than 0.30, in line with the criteria proposed by Nunnally and Bernstein (Nunnally, J., Bernstein, I., 1994). In addition, following the strategy proposed by Smith aimed at assessing the validity of each item in relation to a criterion (Smith, Fischer, & Fister, 2003), the items that presented no relationship with at least 3 of these 5 following variables were removed:

initiation of breastfeeding after delivery, exclusive breastfeeding at discharge, at 1 and 6 months postpartum and any breastfeeding at 12 months postpartum.

Lastly,
A confirmatory factor analysis was conducted. We tested 3 models: model 1 tested

A one-factor model, in which the 17 IIFAS items were assumed to be indicators of a single latent factor.

Model 2 examined the presence of 4 latent variables identified in a previous study (Dai et al., 2013). Finally, model 3 explored the unifactorial solution of the IIFAS-S obtained through the item reduction process explained above. We did not test the Japanese model (Nanishi & Jimba, 2014) because it did not fit for just one dimension, and because it includes all the same items as the original except item 17. As data were ordinal, not normally distributed, there was a ceiling effect in some items, and the sample is large, the weighted least square (WLS) method was used to fit models (Bentler, 2004). The models were assessed using the goodness-of-fit index (GFI) and the comparative fit index (CFI), with values of >0.9 indicating an acceptable fit and >0.95 indicating a good fit (Hu, L.T., Bentler, P.M., 1999); the root mean squared error of approximation (RMSEA), which favors more
parsimonious models, with a value of 0.06 indicating a good fit and 0.10 representing an acceptable fit (Hu, L.T., Bentler, P.M., 1999); and the standardized root mean square residual (SRMR), with values of <0.08 indicating a good fit and <0.10 representing an acceptable fit (Hu, L.T., Bentler, P.M., 1999; Kline, 2005). In addition, the x2/DF was calculated, considering the fit acceptable if <4 (Bentler, 2004; Kelloway, 1998).

To further assess construct validity, a known group comparison was conducted with the hypothesis based on previous studies on the IIFAS - that women who decided to breastfeed during pregnancy and those who intended to breastfeed their babies for more time would obtain higher total scores than women who did not intend to...
do so. We also expected that mothers with a higher socioeconomic status, as assessed by annual income or educational status, older mothers, mothers with prior and longer breastfeeding experience and those who assessed their previous experience positively, would also present higher IIFAS scores. Lastly,

predictive validity was determined by examining the association between the IIFAS score and the variables used to remove items in order to improve criterion validity as described above. Also,

receiver operating characteristic (ROC) curves were used to determine predictive validity and utility of IIFAS scores for differentiating between mothers who initiated breastfeeding after delivery from those who did not initiate breastfeeding. The ROC curves were constructed for the whole sample, primiparous women and multiparous women. The area under the ROC curve (AUC) was computed.

We considered that an AUC greater than 0.9 can be said to be highly accurate, while 0.7–0.9 indicates moderate accuracy (Fischer, Bachmann, & Jaeschke, 2003).

Youden’s J (J = sensitivity + specificity–1) was used to identify the optimal cut-off point.
(Perkins & Schisterman, 2006). Results

Description of sample The mean age of the sample was 31.87 years old (SD=4.77), ranging from 14 to 48 years old. Most of the participants were married, had a high school or higher education, and an annual family income of more than 18000 Euros. Most women wanted to breastfeed and the mean intended breastfeeding duration was 9.24 ± 5.97 months. The principal delivery method was vaginal and for most women, this was their first child (Table 1). At discharge, we excluded for the follow-up sample 68 cases because they met an exclusion criterion or due to lack of information on exclusion criteria (Figure 1). Also, a total of 110 women that did not initiate breastfeeding after delivery were not included in the follow-up after postpartum discharge. For the follow-up sample after postpartum discharge (n=1176), information on breastfeeding duration was obtained from 986 (83.8%) women that completed the postal questionnaire, answered the telephone survey, or both. Statistically significant differences were observed between women participating and women not participating in the follow-up after postpartum discharge. Women not participating were younger (t=4.58, p<0.01), with lower 13 educational status (chi2=18.38, p<0.01), lower family annual incomes (chi2=9.67, p<0.01) and lower IIFAS scores (U=55173, p<0.01), more frequently singles (chi2=4.47, p=0.04), without previous breastfeeding experience (chi2=8.29, p<0.01), and more frequently they did not want to breastfeed during the third trimester of pregnancy (chi2=36.48, p<0.01). No differences were observed for having previous children (chi2=1.86, p=0.17) or delivery method (chi2=2.56, p=0.11) between women participating and not participating in the follow-up after discharge. We obtained complete information referring to the first year postpartum for the whole follow up sample, including women that did not initiate breastfeeding, on duration of exclusive breastfeeding for 1075 (83.6 %) cases, and on duration of any breastfeeding for 866 (67.4 %) cases. The median of duration of exclusive breastfeeding and any breastfeeding was 120 and 210 days, respectively.
Semantic equivalence None of the 17 items on the scale was considered inappropriate for the Spanish context. It was not necessary to make any changes to 14 of the items. Meanwhile, expressions that were more suitable in the Spanish context were introduced in the rest of the items in order to ensure equivalence. For instance, the expression “great joys of motherhood” in item seven was changed to “better experiences of motherhood” (“mejores experiencias de la maternidad”), the expression “less expensive” in item sixteen was changed to “more economic” (“más económica”), and “increases” was changed to “reinforces” (“fortalece”) in item three.

According to the translator evaluation, the average difficulty of the translation was 2, and in no case did it rise above 3 on the established scale of 1-10.

Semantic differences were not detected in the translated version, and reading and comprehension problems were not encountered during the pilot study (Muñiz, Elosua, & Hambleton, 2013). Reliability, validity and test information of IIFAS.

Cronbach’s alpha coefficient was 0.726 for the Spanish version of the IIFAS, with a mean total scale score of 66.12 (SD= 7.68). The item mean was 3.89, ranging from 2.13 to 4.78. Table 2 shows the item-adjusted test correlations,
means

and standard deviation of item responses, and the proportion of extreme value responses and response frequency for each item.

The Cronbach’s alpha coefficient for the IIFAS was not increased by more than 0.1 if any of the items were deleted. Item

1 (“The benefits of breast milk last only as long as the baby is breastfed”); item 4 (“Breast milk is lacking in iron”); item

8 (“Women should not breast-feed in public places such as restaurants”);

item

10 (“Breastfed babies are more likely to be overfed than formula-fed babies”);

item 11

(“Fathers feel left out if a mother breastfeeds”);

item 17

(“A mother who occasionally drinks alcohol should not breastfeed her baby”),
had loadings below 0.30, and all of them plus

item 16 (“Breastmilk is cheaper than formula”) had item-

adjusted test correlations below 0.30 (Table 2). These 7 items, plus item

5 (“Formula-fed babies are more likely to be overfed than breastfed babies”),

showed low predictive validity related to breastfeeding (Table 3), and were proposed for elimination from the short version. Table 4 shows the fit indexes obtained from

the confirmatory factor analysis of the 3 models tested.

Model 3 showed the best-fit indexes and corresponds to the final version of the 9-item Spanish adaptation of the IIFAS, considering a unifactorial solution (IIFAS-S).

Reliability and validity of the short Spanish version IIFAS-S. The
total score average of the IIFAS-S was

36.15±5.66, with a non-normal distribution. The

Cronbach’s alpha coefficient was 0.

792. Table 5 shows the item-adjusted test correlations and
Cronbach’s alpha when the item was deleted. The average score in the IIFAS-S was 36.97±4.77.

For women who wanted to breastfeed their infant during the third trimester of pregnancy, 29.85±6.57 for those who had not yet decided and 26.86±6.98.

For those who had decided to give their infant formula milk, reflecting significant differences between the IIFAS-S scores (KW=167.2; p < 0.001).

Intended breastfeeding duration during pregnancy correlated positively with IIFAS-S scores (rs=0.31; p<0.001). Women that initiated breastfeeding and those that were exclusively breastfeeding during postpartum hospitalization, at 1 month postpartum, and at 6 months postpartum, had respectively higher IIFAS-S scores than mothers that did not initiate or did not offer exclusive breastfeeding at discharge or at 1 or 6 months postpartum, respectively. Lastly, women breastfeeding at 12 months postpartum had higher IIFAS-S scores than women that had weaned their babies previously (see Table 3). Regarding utility to predict the initiation of breastfeeding after delivery, the AUCs were 0.81 (95% CI: 0.76 to 0.85), 0.75 (95% CI: 0.67 to 0.82) and 0.85 (95% CI: 0.80 to 0.90) for the whole sample, primiparous and multiparous women, respectively. For the whole sample, Youden’s J was higher at IIFAS-S score of 31, with a sensitivity and specificity of 86% and 60%, respectively.
For primiparous women, Youden’s J 16 was higher at IIFAS-S score of 32,

\[
\text{with a sensitivity and specificity of } 83\% \text{ and } 50\%, \text{ respectively.}
\]

For multiparous women, Youden’s J was higher at IIFAS-S score of 31,

\[
\text{with a sensitivity and specificity of } 85\% \text{ and } 71\%, \text{ respectively.}
\]

Several of the demographic variables were found to be significant correlates of attitudes toward infant feeding.

Mothers with a primary school or lower education obtained a significantly (U=221851.5; p=0.016) lower IIFAS-S score (mean=35.84±5.41) than those with a high school or higher education (mean=36.36±5.85). Furthermore, mothers with previous breastfeeding experience (mean=36.73±5.64) obtained higher average of IIFAS-S scores (U=9976; p<0.001) than mothers without experience (mean=30.18±6.57), while longer duration (rs=0.41; p<0.001) and better assessment (rs=0.32; p<0.001) of that experience correlated positively with IIFAS-S scores. No differences in attitudes toward breastfeeding were found regarding maternal age (rs=0.04; p=0.173) or annual family income (rs=0.05; p=0.081).

Discussion This paper is the first report on use of the IIFAS in Spain, and describes the adaptation and psychometric properties of the scale in a large sample of
prenatal Spanish women. Data on the

psychometric properties of the adapted 17-item Spanish version of the IIFAS, reported in this study, together with the discrepancy in the evidence on the factor structure of the IIFAS and the low internal consistency of the scale observed in some previous studies, indicated the need to explore item reduction for the Spanish version. Our study provides a shorter, 9-item version than the original IIFAS-S, which presents optimal evidence of reliability and validity in our sample. 17

The translation process was systematic and rigorously conducted to ensure that equivalence was established. The pilot test showed that none of the items required special attention or modification. The evidence of reliability obtained for the adapted Spanish scale was high for the 17-item version and higher still for the short 9-item version (the IIFAS-S). Although the IIFAS-S has fewer items than the original, we nevertheless obtained better Cronbach's alpha values (0.792) than most previous studies. The reliability of the IIFAS scale has been variable in previous studies.

Nearly half of the studies performed obtained values close to or below 0.60 (Charafeddine et al., 2015; Dai et al., 2013; Nanishi & Jimba, 2014; Wallis et al., 2008), while the other half reported acceptable reliability, above 0.70 (de La Mora et al., 1999; Dungy et al., 2008; Ho & McGrath, 2011a; Lau et al., 2015; Sittlington et al., 2007; Twells et al., 2014). It is difficult to assess whether the reliability of some of these earlier versions could have been improved by
eliminating items, as proposed in the present study, since most only mentioned correlation ranges, with a lower limit well below 0.30 in some of them (Dai et al., 2013;

de La Mora et al., 1999; Twells et al.,

2014). However, in those studies that did provide data, the items with lower adjusted item-test correlations coincide with those that we have removed (Charafeddine et al., 2015; Dai et al., 2013; Ho & McGrath, 2011a; Twells et al., 2014). It is noteworthy that item 17 was not adjusted in any of the versions analyzed, and was only removed in two studies (Lau et al., 2015; Nanishi & Jimba, 2014). The reduced number of items in the proposed IIFAS-S scale decreases respondent burden. In addition, since an attitude scale can be useful for predicting a behavioral criterion such as breastfeeding behavior (Smith et al., 2003), one of the study's novel 18 contributions, besides using the classic strategy of reducing the number of items, has been to propose predictive validity criteria. All items with poor reliability or structural validity according to standard criteria also showed the worst predictive behavior, although this criterion made it possible to eliminate an additional item (item 5). As mentioned in the introduction, although a total IIFAS score has been used in all previous research to provide evidence of validity, only 2 validation studies have reported a unifactorial structure of the scale. However, one of these, a Japanese study, tested the IIFAS structure using principal components analysis without rotation, forcing the extraction of 1 factor,

but this was not adjusted properly (Hu, L.T., Bentler, P.M., 1999; Nanishi & Jimba, 2014). In the second study, the authors based the result of a one-dimensional structure not in the principal components analysis, which revealed a 6 factors structure, but in the scree plot, even though there were items with a very low corrected item-total correlations (less than 0.2) when a unifactorial model was tested, indicating a poor adjustment of this model too (Charafeddine et al., 2015). The short version proposed here fits to a one-dimensional model, achieving very good fit indexes in confirmatory factor analysis. (CALLOUT 2.) As regards predictive validity, given that the items retained individually predicted at least 3 of the breastfeeding behaviors proposed, it is not surprising that the scale as a whole showed statistically significant associations with initiation of breastfeeding, exclusive breastfeeding at discharge, at 1 month

and
6 months postpartum and any breastfeeding at 12 months postpartum.

Other studies

(de La Mora et al., 1999; Scott, Shaker, & Reid, 2004; Sittlington et al., 2007) have reported

that mothers who initiate breastfeeding in hospital present higher total scores

on the IIFAS scale than those using artificial feeding (Dungy et al., 2008; Holbrook, White, Heyman, & Wojcicki, 2013) or with longer duration of breastfeeding

in other studies (Chen et al., 2013; Donnan et al., 2013;

Ho & McGrath, 2011b; Scott et al., 2006). Also, the IIFAS-S showed a good AUC and good sensitivity and specificity properties to discriminate women initiating or not breastfeeding after delivery, for the entire sample, the primiparous and the multiparous women. The cut-off points are similar between these groups. However, IIFAS-S has slightly better sensitivity and specificity properties for multiparous women. These results are a novelty. Only one previous study had showed the IIFAS ROC results, but for intended breastfeeding during pregnancy instead of the initiation of breastfeeding after delivery (Twells et al., 2014). In our study, as in previous studies, other variables related to breastfeeding were associated with higher scores for the total IIFAS scale score, such as the mother's previous experience (Holbrook et al., 2013; Wilkins, Ryan, Green, & Thomas, 2012) and the intended breastfeeding (de La Mora et al., 1999; Donnan et al., 2013; Dungy et al., 2008; Nanishi & Jimba, 2014;
This study offers some novelties about prenatal attitudes. First, higher IIFAS-S scale scores were associated with longer duration of a previous experience and with its positive assessment, showing that not only previous experience but also its success, influence in the maternal attitude. Finally, the IIFAS-S scale scores were associated with intended breastfeeding duration, as was to be expected, since attitudes are a good predictor of behavioral intention (Dick et al., 2002). (CALLOUT 3.)

Regarding sociodemographic variables, as expected, IIFAS-S scale scores were positively associated with a higher educational level (Chen et al., 2013; de La Mora et al., 1999; Sittlington et al., 2007; Wilkins et al., 2012). However, in our study, like in other studies, they were not related to age (Saied et al., 2013; Scott et al., 2004; Sittlington et al., 2007; Wallis et al., 2008), marital status (Chen et al., 2013; Scott et al., 2006) or a higher level of family income. It is possible that the use of a short version of the IIFAS scale, differences inherent in the Spanish context compared to previous studies, or the self-selection of mothers to participate in this study, may explain the absence of differences in...
IIFAS-S scores for these variables. Moreover, given the economic crisis underway at the time of this study, family income is perhaps not as good an indicator of socioeconomic status as the mother's educational level, which did explain differences in IIFAS-S scores.

**Implications:** First, the IIFAS has been validated for use in Spanish women. The Spanish is one of the most spoken languages around the world. This version facilitates the adjusted linguistic validation (Acquadro, Conway, Girourdet, & Mear, 2004) for other countries with Spanish-speaking population. Moreover, the reduced version proposed decreases the respondent burden, has a structure that enhances the simplicity of the theoretical model, good metric properties, high reliability, and good evidences of validity in relation to sociodemographic and experiential variables, intention of breastfeeding, and breastfeeding behavior. Thus, the IIFAS-S shortened version improves the usability in research on breastfeeding attitudes. Lastly, from the perspective of the clinical utility, the scale can be used to assess maternal attitudes to infant feeding, to discriminate women at risk of no initiate breastfeeding after delivery, and evaluate the effectiveness of health interventions to promote breastfeeding.

Nearby scores, less than or equal to 32 for primiparous women and less than or equal to 31 for multiparous women, can be taken as indicators of a need for interventions to promote breastfeeding.

Limitations: The use of a convenience sample was a limitation of the study. The follow-up sample after postpartum discharge had characteristics that positively influence the breastfeeding
duration, including older age, higher educational level, higher economic status, being married, having previous breastfeeding experience, and having decided to breastfeed during pregnancy (Thulier & Mercer, 2009). These characteristics, besides the higher average of IIFAS scores of the follow-up sample, and the characteristics of the hospitals involved in the study explain the higher duration of breastfeeding of the sample compared with the Spanish average. The proposed cut-off points can be used as a normative reference in similar samples and it should be considered that they could be lower if the IIFAS-S is used with women at higher risk of early breastfeeding cessation.

Future research is required in order to obtain data on more representative samples, evidences of the structural validity of versions in other countries, and data on the responsiveness of the scale to health promotion interventions. The scale was adapted to Spanish as spoken in Spain, and not to the variants spoken in other countries; thus,

an adjusted linguistic validation would be required for studies involving Spanish speakers from other countries.

This is the first prenatal breastfeeding attitudes survey to be conducted using the Spanish version of the IIFAS (IIFAS-S). A 9-item Spanish version has been obtained, which is shorter than other existing versions, applying the criteria of improving the reliability and predictive power of the items. The scale presents a one-dimensional structure and shows optimal evidence of reliability and validity. The scale also shows a good relationship with maternal intention to breastfeed, discriminates women according to their previous experience, and
is a good predictor of initiation, 515 exclusiveness and duration of breastfeeding. References


Prediction of initiation and cessation of breastfeeding from late pregnancy to 16 weeks: The feeding your baby (FYB) cohort study. BMJ Open, 3(8) doi:10.1136/bmjopen-2013-003274


Journal of the Association for Academic Minority Physicians, 5(4), 159-164.


properties: Clinical example of sepsis. Intensive Care

Medicine, 29(7),

1043-1051. doi:10.1007/s00134-003-1761-8


analysis: Conventional criteria versus new alternatives. Structural equation modeling.


Journal of Human Lactation, 28(4), 556-564. doi:10.1177/0890334412446798


Early breastfeeding cessation in infants: Causes and solutions.


New York: Humana Press. doi:10.1007/978-1-


American Journal of Epidemiology, 163(7), 670-675. doi:kwj063


Section of Breastfeeding.


Spanish


Hospital delivery care.

standards and recommendations for hospital maternity.

www.msc.es/organizacion/sns/planCalidadSNS/docs/AHP.pdf.


Section 1, background and implementation. Geneva


Figure 1. Flow Chart of the study.

Table 1. Characteristics of the study sample.

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educational status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary school or lower</td>
<td>292</td>
<td>70</td>
</tr>
<tr>
<td>High school or more</td>
<td>64</td>
<td>16</td>
</tr>
<tr>
<td>Missing data</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>De facto or Married</td>
<td>24</td>
<td>6</td>
</tr>
<tr>
<td>Single</td>
<td>175</td>
<td>44</td>
</tr>
<tr>
<td>Divorced</td>
<td>164</td>
<td>41</td>
</tr>
<tr>
<td>Missing data</td>
<td>113</td>
<td>28</td>
</tr>
<tr>
<td>Family annual incomes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 18.000 Euros</td>
<td>164</td>
<td>41</td>
</tr>
<tr>
<td>More than 18.000 Euros</td>
<td>113</td>
<td>28</td>
</tr>
<tr>
<td>Missing data</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td>First child</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>142</td>
<td>36</td>
</tr>
<tr>
<td>No</td>
<td>200</td>
<td>50</td>
</tr>
<tr>
<td>Missing data</td>
<td>56</td>
<td>14</td>
</tr>
<tr>
<td>Previous breastfeeding experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>159</td>
<td>39</td>
</tr>
<tr>
<td>No or first birth</td>
<td>107</td>
<td>26</td>
</tr>
<tr>
<td>Missing data</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td>Duration of previous breastfeeding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 months or less</td>
<td>292</td>
<td>70</td>
</tr>
<tr>
<td>More than 4 months</td>
<td>64</td>
<td>16</td>
</tr>
<tr>
<td>Missing data</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td>Self-assessment of previous breastfeeding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td>110</td>
<td>27</td>
</tr>
<tr>
<td>Fair</td>
<td>117</td>
<td>29</td>
</tr>
<tr>
<td>Bad</td>
<td>21</td>
<td>5</td>
</tr>
<tr>
<td>Missing data</td>
<td>56</td>
<td></td>
</tr>
<tr>
<td>Intention of breastfeeding during third trimester of pregnancy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>142</td>
<td>36</td>
</tr>
<tr>
<td>No or not decided</td>
<td>107</td>
<td>26</td>
</tr>
<tr>
<td>Missing data</td>
<td>56</td>
<td></td>
</tr>
<tr>
<td>Attended in a Baby-Friendly hospital</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>159</td>
<td>39</td>
</tr>
<tr>
<td>No</td>
<td>107</td>
<td>26</td>
</tr>
<tr>
<td>Missing data</td>
<td>56</td>
<td></td>
</tr>
<tr>
<td>Delivery Method</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vaginal</td>
<td>142</td>
<td>36</td>
</tr>
<tr>
<td>Cesarean</td>
<td>107</td>
<td>26</td>
</tr>
<tr>
<td>Missing data</td>
<td>56</td>
<td></td>
</tr>
<tr>
<td>Initiation of breastfeeding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>159</td>
<td>39</td>
</tr>
<tr>
<td>No</td>
<td>107</td>
<td>26</td>
</tr>
<tr>
<td>Missing data</td>
<td>56</td>
<td></td>
</tr>
<tr>
<td>Current feeding in hospital</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exclusive breastfeeding (only breast milk)</td>
<td>142</td>
<td>36</td>
</tr>
<tr>
<td>Predominant breastfeeding (breast milk)</td>
<td>107</td>
<td>26</td>
</tr>
<tr>
<td>Missing data</td>
<td>56</td>
<td></td>
</tr>
</tbody>
</table>
+ no nutritive liquids) Partially breastfeeding (breast milk + formula) Formula feeding Missing data Exclusive breastfeeding at 1 month postpartum Yes No No initiation of breastfeeding Missing data Exclusive breastfeeding at 6 month postpartum Yes No No initiation of breastfeeding Missing data Any breastfeeding at 12 months postpartum Yes No No initiation of breastfeeding Missing data Any breastfeeding at 12 months postpartum 618 25 281 110 252 851 177 110 148 156 201 201 555 110 420 48.1 1.9 21.9 8.6 19.6 66.2 13.7 8.6 11.5 13.1 62.7 8.6 15.6 15.6 43.2 8.6 32.6 TABLE 2. IIFAS-s with principal components factor loadings,

reliability results, floor and ceiling effects, means (M), standard deviation (SD)

and response frequency for each item (n). Item Loading

Corrected item-total correlation  Cronbach’s α  if item deleted

Floor “1”% Ceiling “5”% M SD n

1. *The benefits of breast milk last only as long as the baby is breastfeed. 2. *Formula-feeding is more convenient than breast-feeding.

Breastfeeding reinforces mother-infant bonding.

4. *Breast milk is lacking in iron.

5. Formula-fed babies are more likely to be overfed than breastfed babies. 6. *Formula-feeding is the better choice if the mother plans to go out to work. 7. Mothers who
formula-feed miss one of the better experiences of motherhood.

8. *Women should not breast-feed in public places such as restaurants.

8. *Women should not breast-feed in public places such as restaurants.

9. Breastfeed babies are healthier than formula-feed babies.

10. *Breastfed babies are more likely to be overfed than formula-fed babies.


13. Breast milk is more easily digested than formula.

14. *Formula is as healthy for infants as breastmilk

15. Breastfeeding is more convenient than formula feeding.

16. Breastmilk is more economic than formula.
17. A mother who occasionally drinks alcohol should not breastfeed her baby.

Variables reverse scored to calculate total infant feeding attitude

score. Table 3. IIFAS Predictive Validity by item and total scores. BF Initiation Yes No Mean (SD) (SD) EBF at discharge Yes No Mean (SD) (SD) EBF 1 month Yes No Mean (SD) (SD) EBF 6 months Yes No Mean (SD) (SD) ABF 12 months Yes No Mean (SD) (SD) Item 1 3.61 3.61 (1.33) (1.23) 3.66 3.54 (1.34) (1.27) 3.64 3.50 (1.35) (1.26) 3.81 3.55 (1.35) (1.32) * 3.71 3.52 (1.35) (1.34) Item 2 4.47 3.79 (0.94) (0.98) * 4.47 4.19 (0.9) * (1.02) 4.52 4.41 (0.88) (0.94) 4.64 4.46 (0.79) (0.90) * 4.69 4.43 (0.66) (0.91) * Item 3 4.71 4.01 (0.72) (1.22) * 4.74 4.42 (0.69) (1.01) * 4.77 4.55 (0.64) (0.94) * 4.87 4.69 (0.42) (0.74) * 4.87 4.67 (0.45) (0.75) * Item 4 4.12 4.03 (0.98) 4.15 3.98 (1.02) (1.05) * 4.13 4.00 (1.05) (1.10) 4.13 4.09 (1.06) (1.07) 4.16 4.07 (1.06) (1.08) Item 5 3.06 2.42 (1.16) (1.09) * 3.13 2.79 (1.16) (1.14) * 3.09 3.04 (1.17) (1.12) 3.19 3.03 (1.21) (1.13) 3.09 2.95 (1.11) (1.17) Item 6 3.32 2.49 (1.16) (1.18) * 3.34 2.98 (1.16) (1.21) * 3.40 3.12 (1.18) (1.19) * 3.51 3.28 (1.09) (1.14) * 3.58 3.26 (1.08) (1.14) * Item 7 4.08 2.97 (1.12) (1.45) * 4.14 3.62 (1.08) (1.37) * 4.14 3.86 (1.08) (1.26) * 4.38 4.00 (0.87) (1.15) * 4.19 4.02 (0.98) (1.15) Item 8 4.29 4.05 (1.03) (1.15) * 4.31 4.20 (1.04) (1.04) * 4.33 4.23 (1.01) (0.84) 4.48 4.26 (0.93) (1.02) * 4.49 4.19 (0.94) (1.05) * Item 9 3.69 2.55 (1.17) (1.29) * 3.74 3.21 (1.13) (1.34) * 3.73 3.03 (1.12) (1.32) * 3.96 3.57 (0.97) (1.20) * 3.93 3.52 (1.07) (1.19) * Item 10 3.65 3.71 (1.13) (1.03) 3.68 3.59 (1.14) (1.06) 3.70 3.63 (1.11) (1.07) 3.76 3.64 (1.11) (1.09) 3.68 3.58 (1.11) (1.10) Item 11 4.47 4.35 (0.92) (1.01) 4.49 4.14 (0.94) (0.97) 4.48 4.51 (0.93) (0.81) 4.49 4.48 (0.95) (0.90) 4.45 4.49 (0.95) (0.91) Item 12 4.76 4.01 (0.63) (1.20) * 4.79 4.48 (0.61) (0.93) * 4.77 4.73 (0.64) (0.60) 4.86 4.74 (0.44) (0.67) * 4.85 4.47 (0.54) (0.68) * Item 13 4.03 3.42 (1.01) (1.07) * 4.05 3.78 (1.01) (1.05) * 4.06 3.87 (1.00) (1.17) * 4.14 3.98 (0.99) (1.02) 4.16 3.94 (0.94) (1.04) * Item 14 4.32 2.62 (1.05) (1.12) * 3.30 3.03 (1.06) (1.09) * 3.33 3.21 (1.05) (1.01) 9.3.49 3.25 (1.02) (1.04) * 3.44 3.19 (0.98) (1.06) * Item 15 4.46 3.68 (0.86) (1.09) * 4.48 4.20 (0.85) (0.96) * 4.49 4.35 (0.83) (0.85) * 4.60 4.43 (0.73) (0.86) * 9.4.58 4.44 (0.78) (0.83) * Item 16 4.78 4.68 (0.65) (0.68) * 4.76 4.76 (0.68) (0.63) 4.79 4.77 (0.65) (0.60) 4.83 4.77 (0.44) (0.69) 4.78 4.78 (0.59) (0.68) Item 17 2.14 1.89 (1.28) (1.20) * 2.13 2.17 (1.29) (1.35) 2.19 1.96 (1.28) (1.22) * 2.20 2.13 (1.28) (1.26) 2.15 2.09 (1.19) (1.25) IIFA S 67.02 58.35 (7.18) (7.89) * 67.48 63.41 (7.11) (8.18) * 67.69 65.09 (7.04) (7.28) * 69.42 66.50 (6.76) (7.05) * 69.07 65.87 (6.62) (7.05) * IIFA S-S 36.87 47/63

Breastfeeding reinforces mother-infant bonding. 6.

*Formula-feeding is the better choice if the mother plans to go out to work. 7.

Mothers who formula-feed miss one of the better experiences of motherhood. 9. Breastfeed babies are healthier than formula-feed babies. 5

12. Breastmilk is the ideal food for babies. 1

13. Breastmilk is more easily digested than formula. 1

14. *Formula is as healthy for infants as breastmilk 1

15. Breastfeeding is more convenient than formula feeding. 4
item-total correlation if item deleted

0.388 0.776 0.487 0.767 0.366 0.781 0.563 0.753 0.598 0.488 0.768 0.463 0.767 0.554 0.757 *

Variables reverse scored to calculate total infant feeding attitude


S”) 22 “Spanish
version of the Iowa Infant Feeding Scale (IIFAS-S)
version of the Iowa Infant Feeding Scale (IIFAS-S)
version of the Iowa Infant Feeding Scale (IIFAS-

S) “Spanish

version of the Iowa Infant Feeding Scale (IIFAS-

S) “Spanish

version of the Iowa Infant Feeding Scale (IIFAS-

S) “Spanish

version of the Iowa Infant Feeding Scale (IIFAS-

S) “Spanish

version of the Iowa Infant Feeding Scale (IIFAS-

S) “Spanish
version of the Iowa Infant Feeding Scale (IIFAS)

S) “Spanish

version of the Iowa Infant Feeding Scale (IIFAS)

S) “Spanish

version of the Iowa Infant Feeding Scale (IIFAS)

S) “Spanish

version of the Iowa Infant Feeding Scale (IIFAS)

S) “Spanish

version of the Iowa Infant Feeding Scale (IIFAS)

S) “Spanish

version of the Iowa Infant Feeding Scale (IIFAS)

S) “Spanish

version of the Iowa Infant Feeding Scale (IIFAS)
version of the Iowa Infant Feeding Scale (IIFAS-S)

S) “Spanish

version of the Iowa Infant Feeding Scale (IIFAS-S)

S) “Spanish

version of the Iowa Infant Feeding Scale (IIFAS-S)

S) “Spanish

version of the Iowa Infant Feeding Scale (IIFAS-S)

S) 1 2 3 8 14 15 20 21 23 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

sources:

1 923 words / 9% - Internet from 09-Jun-2015 12:00AM
espace.library.curtin.edu.au

2 578 words / 5% - CrossCheck

3 239 words / 2% - CrossCheck

4 236 words / 2% - CrossCheck


Anne Baber Wallis. "Reliability and validity of the Romanian version of a scale to measure infant feeding attitudes and knowledge", Acta Paediatrica, 09/2008
Attitude and Intention among Female Young Adults in Ibadan, Nigeria", Open Journal of Nursing, 2016.

16 words / < 1% match - Internet from 25-Jul-2014 12:00AM
www.nhmrc.gov.au

15 words / < 1% match - Internet from 19-Mar-2009 12:00AM
www.alliant.edu

14 words / < 1% match - CrossCheck

13 words / < 1% match - CrossCheck

12 words / < 1% match - Internet from 26-Mar-2015 12:00AM
scholarworks.gvsu.edu

12 words / < 1% match - Internet from 20-Feb-2015 12:00AM

11 words / < 1% match - CrossCheck

11 words / < 1% match - CrossCheck
"Breast-Feeding Boosts Intelligence and Global Growth.", Africa News Service, Feb 9 2016 Issue

10 words / < 1% match - CrossCheck
Yunhee Chang. "Gender differences in knowledge and attitude regarding breastfeeding: Breastfeeding knowledge and attitude", International Journal of Consumer Studies, 05/2012

9 words / < 1% match - Internet from 11-Sep-2015 12:00AM
espace.library.curtin.edu.au

9 words / < 1% match - Internet from 21-May-2014 12:00AM
<table>
<thead>
<tr>
<th>#</th>
<th>URL</th>
<th>Words match</th>
<th>Date</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>49</td>
<td>eprints.usq.edu.au</td>
<td>9</td>
<td>16-Dec-2015 12:00AM</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>eprints.aston.ac.uk</td>
<td>9</td>
<td>19-Apr-2015 12:00AM</td>
<td></td>
</tr>
<tr>
<td>52</td>
<td>Al-Saleh, Iman, Mai Abduljabbar, Reem Al-Rouqi, Chafica Eltabache, Tahreer Al-Rajudi, Rola Elkhaitib, and Michael Nester. &quot;The extent of mercury (Hg) exposure among Saudi mothers and their respective infants&quot;, Environmental Monitoring and Assessment, 2015.</td>
<td>9</td>
<td>CrossCheck</td>
<td></td>
</tr>
<tr>
<td>53</td>
<td><a href="http://www.aphp.ca">www.aphp.ca</a></td>
<td>8</td>
<td>13-May-2010 12:00AM</td>
<td></td>
</tr>
<tr>
<td>55</td>
<td>lup.lub.lu.se</td>
<td>8</td>
<td>24-Sep-2013 12:00AM</td>
<td></td>
</tr>
<tr>
<td>56</td>
<td>aquila.usm.edu</td>
<td>8</td>
<td>19-Feb-2016 12:00AM</td>
<td></td>
</tr>
<tr>
<td>57</td>
<td>onlinelibrary.wiley.com</td>
<td>8</td>
<td>13-Sep-2015 12:00AM</td>
<td></td>
</tr>
<tr>
<td>58</td>
<td><a href="http://www.feb.ugent.be">www.feb.ugent.be</a></td>
<td>8</td>
<td>14-Dec-2007 12:00AM</td>
<td></td>
</tr>
<tr>
<td>59</td>
<td><a href="http://www.science.gov">www.science.gov</a></td>
<td>8</td>
<td>01-Dec-2015 12:00AM</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>etds.ncl.edu.tw</td>
<td>8</td>
<td>01-Apr-2010 12:00AM</td>
<td></td>
</tr>
</tbody>
</table>

Jane A. Scott. "Parental Attitudes Toward Breastfeeding: Their Association with Feeding Outcome at Hospital Discharge", Birth, 6/2004


"Predictors of Breastfeeding Duration: Evidence From a Cohort Study", PEDIATRICS, 04/01/2006

