







Psychometric Evaluation of the Spanish Families Importance in Nursing Care: Nurses' Attitudes Scale Through Classical Test Theory and Rasch Analysis

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Abstract

Nurses' attitudes toward families play an important role in improving relationships with patients' families. It is essential to have valid and reliable instruments to assess nurses' attitudes toward involving families. The aim of this study was to analyze the psychometric properties of the refined Spanish version of the Families' Importance in Nursing Care-Nurses' Attitudes (FINC-NA) according to classical test theory and the Rasch model ($N = 263$). Cronbach's alpha values were .73 to .87 and intraclass correlation coefficients ranged from .72 to .86. Rasch analysis results suggested that it was a multidimensional scale with four dimensions and a simpler response scheme than the original scale. Except for one item, the scale was free from bias regarding age and experience time. The FINC-NA is a reliable and valid measure showing a good fit to the Rasch model and is ready to map nurses' attitudes and measure the effectiveness of family nursing educational interventions.

Keywords

nurses, attitudes, family, nursing care, psychometrics, Rasch model

At the international level, a growing body of evidence has highlighted the benefits, both for patients and their families, of involving the family in health care (Chesla, 2010; Deek et al., 2016; Northouse et al., 2012; Sveinbjarnardottir et al., 2013). Health professionals achieve more effective results when they provide simultaneous support to patients and their families. If nurses and families work together, the effectiveness of care increases (Blondal et al., 2014; Wright & Leahey, 2013). In other words, as treating them together creates a stronger synergistic effect than treating the patient alone, care should be focused on the family as the unit of care (Alfaro-Díaz, Svavarsdottir et al., 2022; Berger et al., 2014).

Nursing staff have a unique opportunity to promote the inclusion of the family in health care, as this will meet the needs of the patient and promote the well-being of the entire family (Benzein et al., 2008; Wright & Bell, 2009, 2021). Families that participate in the care of their relatives during hospitalization show greater satisfaction, while patients present better health outcomes (Alfaro-Díaz, Svavarsdottir et al., 2022). Likewise, family members report feeling less anxious and generally more positive (Northouse et al., 2012). However, the implementation

of practices that promote and support family participation in patient care has been slow (Berger et al., 2014).

Similar to other countries, in Spain, there has been a growing interest in adopting and using a more family-oriented care approach in health care settings. Different studies in the Spanish context report that health care practitioners are changing their practices to involve families in care and decision-making process (Alfaro-Díaz, Esandi et al., 2022; García-Ventura et al., 2021). However, still some difficulties to fully implement family centered care exist, such as the lack of supportive attitudes of nurses toward families'

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involvement in nursing care (Alfaro-Díaz, Esandi et al., 2022; Duhamel, 2017; Svavarsdottir et al., 2015).

Patient- and family-centered care is a constant challenge in health care. Therefore, based on the positive impact that family participation has on nursing care and to implement family-centered care in clinical practice, it is important to have valid and reliable instruments to accurately assess nurses' attitudes toward the importance of including the family in their clinical practice.

Background

Positive attitudes of nursing professionals toward the importance of including the family in their clinical practice are recognized as a key factor that influences the quality of the relationship established between the nurse and the family (Benzein et al., 2008; Svavarsdottir et al., 2015; Sveinbjarnardottir et al., 2011). Nurses who recognize the importance of caring for the family for patient recovery show a supportive attitude toward the family and are more likely to practice family-focused care (Benzein et al., 2008).

Due to the growing interest in examining and improving nurses' relationships with families in the clinical setting, a wide variety of instruments have been developed in different populations and contexts to measure nurses' attitudes toward the importance of including families in their clinical practice (Alfaro Díaz et al., 2019). An extensively used instrument is Families' Importance in Nursing Care-Nurses' Attitudes (FINC-NA). This instrument was developed inductively by Benzein et al. (2008), with the aim of measuring nurses' attitudes toward the importance of involving families in nursing care. Since its initial use in 2008 in Sweden, the FINC-NA has been translated to different languages, including Spanish (Pascual Fernandez et al., 2015).

In 2011, Saveman et al. (2011) developed a refined version of the instrument, which kept the 26 items of the original version but increased the response scale from 4- to a 5-point Likert-type scale (from 1 = *totally disagree* to 5 = *totally agree*). This change gave the instrument greater score distribution, increased homogeneity among items, showed stable factor solutions and an absence of differential item functioning (DIF) for gender and good stability, and increased internal consistency (Saveman et al., 2011). In addition, according to a recent systematic review of instruments that measure nurses' attitudes toward the importance of involving the family in their clinical practice, the refined version of the FINC-NA scale was identified as the most suitable instrument for this purpose (Alfaro Díaz et al., 2019). According to the COnsensus-based Standards for the selection of health Measurement INstruments (COSMIN) checklist, this version of the instrument presented adequate evidence for most of the psychometric properties, which supports the suitability of the instrument to assess nurses' attitudes in a valid and reliable way (Alfaro Díaz et al., 2019).

To date, several studies have translated and validated the psychometric properties of the refined version of the

FINC-NA scale in other languages, such as German (Naef et al., 2021), Danish (Hagedoorn et al., 2018), and Portuguese (Oliveira et al., 2011). However, in the Spanish context, although the 4-point version of the scale has been translated and validated (Pascual Fernández et al., 2015), no study has been carried out to validate the psychometric properties of the refined 5-point version (Saveman et al., 2011). In addition, all validation studies of the FINC-NA scale carried out to date have been performed using a classical test theory (CTT) approach to assess reliability, validity, and sensitivity to change along with acceptability and other parameters. However, evidence recommends the use of the Rasch model (Rasch, 1980) combined with the CTT approach to evaluate patient-reported outcome measures (PROMs) and self-reported measures (Cano & Hobart, 2011; Hobart & Cano, 2009; Rodriguez-Blazquez et al., 2021). The Rasch model (Rasch, 1980), one of the most used applications of item response theory, allows us to complete the information provided by CTT, as it provides additional and relevant information about the measurement properties of a scale, such as unidimensionality and the DIF by individual groups. In addition, it also provides measures on a linear scale (Rodriguez-Blazquez et al., 2021; Tennant & Conaghan, 2007).

Currently, the revised version of FINC-NA instrument is most widely used in Europe to measure nurses' attitudes about the importance of involving families in nursing care (Alfaro Díaz et al., 2019). The availability of the refined Spanish version of the FINC-NA would allow making international comparisons and contribute to measure specific interventions that are targeted at changing nurses' attitudes to promote family centered care. Therefore, the aim of this study is to evaluate the psychometric properties of the refined Spanish version of the FINC-NA according to classical test theory and the Rasch model. Suggestions for the modification of the FINC-NA scale are presented accordingly.

Method

Design of the Study and Sample

A cross-sectional descriptive study was carried out with a convenience sample of clinical nurses working at Clinica Universidad de Navarra, Spain. The inclusion criteria were (a) working at the time of the study, (b) Spanish fluency, and (c) working in the current position for a minimum of 3 months.

According to international criteria, the sample size was calculated following the recommendation of a ratio of 10 participants per item (Nunnally & Bernstein, 1994; Polit & Beck, 2004). Considering that the FINC-NA scale is a 26-item scale, we decided to aim for more than 260 respondents.

A total of 293 nursing professionals were invited to participate in the study, 263 of whom agreed to complete the Spanish version of the FINC-NA questionnaire (response rate 89%). All the participants were women, with a mean age of 41.4 (standard deviation, $SD = 10.9$) years. Regarding

Table 1. Participants' Demographic Characteristics (n = 263).

Characteristics	Respondents
Age, M (SD)	41.4 (10.9)
Sex	
Female, n (%)	263 (100.0)
Highest qualification	
Diplomate, n (%)	140 (53.2)
Graduate, n (%)	87 (33.1)
Master's program, n (%)	36 (13.7)
Job training	
Specialization, n (%)	238 (90.5)
Expert, n (%)	52 (19.8)
Specialization and expert, n (%)	47 (19.0)
Workplace	
Hospitalization plant, n (%)	98 (37.3)
Consultation room, n (%)	59 (22.4)
Other, n (%)	106 (40.3)
Years since graduation as RN, M (DE)	18.9 (10.9)
Years of employment in the current service, M (DE)	12.8 (10.7)
Employment status	
Temporary staff, n (%)	47 (17.9)
Permanent staff, n (%)	209 (79.5)
Other, n (%)	7 (2.7)
Education in family nursing ^a	
Yes, n (%)	45 (17.1)
Family approach ^b	
Yes, n (%)	151 (57.4)
Had a seriously ill family member ^c	
Yes, n (%)	175 (66.5)

Note. M = mean; RN = registered nurse; SD = standard deviation.

^aHas a member of your family ever been seriously ill?

^bIs there a general approach to the care of families at your place of work?

^cHas a member of your family ever been seriously ill?

years of experience as a nurse, the mean was 18.9 ($SD = 10.9$) years. Most (79.5%) of the participants had a permanent employment contract, and the mean duration in their current job position was 12.8 ($SD = 10.7$) years (Table 1).

The STrengthening the Reporting of OBservational studies in Epidemiology (STROBE) checklist was followed to enhance methodological rigor (see Online Appendix S1).

Measures

Sociodemographic data, such as age, workplace, employment situation, and educational level, were collected. In addition, the Spanish versions of the following self-report instruments were administered.

The FINC-NA. The FINC-NA instrument assesses nurses' attitudes about the importance of including the family in nursing care. It consists of 26 items that are grouped into four subscales: (a) Family as a resource in nursing care

(Fam-RNC), which refers to a positive attitude toward the presence of families in nursing care; (b) Family as a conversation partner (Fam-CP), referring to the recognition of the patient's relatives as conversation partners; (c) Family as a burden (Fam-B), which refers to the statements of experiencing the family as a burden; and (d) Family as its own resource (Fam-OR), which refers to the family's own resources to face the health situation (Benzein et al., 2008).

In this study, the refined version of the FINC-NA scale was used with a 5-point Likert-type format ranging from 1 "strongly disagree" to 5 "strongly agree." Therefore, the potential score range of the questionnaire was from 26 to 130 points, with a higher score on the questionnaire indicating a more positive attitude of the nurse toward the importance of including the family in nursing care. We used the version previously translated into Spanish by Pascual Fernández et al. (2015).

Previous studies have reported an acceptable stability and internal consistency, with a Cronbach's α from .73 (Fam-B) to .87 (Fam-RNC) for the subscales (Saveman et al., 2011). Studies have also shown a high test-retest reliability with intraclass correlation coefficients (ICCs) between .89 and .71 (Saveman et al., 2011).

The Iceland Health Care Practitioner Illness Beliefs Questionnaire. The Iceland Health Care Practitioner Illness Beliefs Questionnaire (ICE-HCP-IBQ), developed by Svavarsdottir et al. (2018), evaluates the beliefs of health professionals about their understanding of the meaning of the illness experience of families. This is a one-dimensional questionnaire (illness beliefs) that includes seven items with a 5-point Likert-type scale (from 1 = *never* to 5 = *always*) and four open-ended questions. A higher score indicates more reassurance or confidence regarding health care professional beliefs.

The ICE-HCP-IBQ has been translated and validated in the Spanish context, showing good psychometric properties, with a Cronbach's alpha of .83 for the whole questionnaire (Alfaro-Díaz et al., 2020).

Data Collection

Data collection was carried out between March and May 2019. To access the sample, meetings were held with the nurse supervisors of each unit, explaining the purpose of the study and requesting their collaboration in recruiting participants. Subsequently, information sessions were organized in the different units of the hospital to which potential nurse participants were invited. In these sessions, the principal investigator explained the main characteristics of the study, the objectives, and the confidential nature of the data.

The nurses who voluntarily agreed to participate in the study signed an informed consent form, and the principal investigator personally distributed the paper-and-pencil questionnaires. The participants completed the questionnaires individually in the presence of the principal researcher.

Ethical Considerations

This study was approved by the Clinical Research Ethics Committee (CREC) of the University of Navarra (Reference 2018.086). Before starting the study, permission was obtained from the creator of the original version of the instrument as well as from the creator of the Spanish version.

Data Analysis

Descriptive statistics were used to determine the sociodemographic characteristics of the participants. Frequency measures were calculated for categorical variables, and measures of dispersion and central tendency were calculated for continuous variables.

Since a total score is calculated in the original FINC-NA, this was maintained in the CTT analysis. The following psychometric attributes were analyzed according to CTT.

Feasibility and Acceptability. The descriptive item analysis consisted of examining the quality of the data through the distribution of the responses. The feasibility of the instrument was estimated by analyzing missing data (acceptable limit between 5% and 10%). Acceptability was considered satisfactory when all possible scores were observed, the difference between the mean and the median was <10% (Hobart et al., 2001), ceiling and floor effects were <15% (McHorney & Tarlov, 1995), and skewness values ranged from -1 to +1.

Construct Validity. For convergent validity, in the absence of a gold standard, convergent validity tests the correlation between two instruments thought to measure the same or a similar construct (Polit & Yang, 2015). In this study, the correlation between the ICE-HCP-IBQ and the FINC-NA was evaluated, as other studies have confirmed the influence of facilitating beliefs when working with the family and a positive attitude toward family support in clinical practice (Årestedt et al., 2015; Duhamel et al., 2015). Therefore, the hypothesis guiding this analysis was that the more confident nurses are in their belief about their understanding of the meaning of the illness situation for families, the more positive the attitude toward including the family in their clinical practice will be (Årestedt et al., 2015). The Pearson correlation coefficient (r) was estimated, and a moderate positive correlation was expected ($r = .30-.59$; Fisk et al., 2005). Internal validity, defined as the intercorrelations between the FINC-NA scale dimensions (standard, $r_s = .30-.70$; Hobart et al., 2001), was evaluated. For discriminative validity or known groups, analysis of variance (ANOVA) was used to check whether there were statistically significant differences in the FINC-NA questionnaire scores, differentiating the groups according to the variables age, years of experience (these 2 variables were grouped by quartiles), academic level, professional training, workplace, training in family

nursing, family care approach in the workplace and having a seriously ill family member.

Reliability. Internal consistency was calculated using Cronbach's alpha coefficient (criterion value $\geq .70$; Streiner, 2003). In addition, the corrected item total correlation (criterion: $r \geq .30$; Streiner et al., 2015) and the item homogeneity index (criterion: $> .30$; Clark & Watson, 1995) were calculated. To examine test-retest reliability, the questionnaire was administered a second time to a random sample of 51 participants 10 to 15 days after the first administration, and the weighted kappa coefficient, with biquadratic weights for the items ($r > .60$), and ICC (criterion: $> .7$) were calculated (Polit & Beck, 2004).

For the Rasch model, the following measurement properties were analyzed: fit to the Rasch model, reliability (person separation index[PSI], adequacy of the response scale [Are the thresholds ordered?]), local independence of items (Is the answer to one item independent from the answer to another one?), and unidimensionality (Do all items measure a single trait?). In addition, DIF (Are items biased?) was analyzed by the following factors: age groups (42 years or younger vs. older than 42 years) and experience time groups (11 years or lower vs. more than 11 years), defining groups by the respective median. DIF analyses allowed to test if, regardless of sex or years of experience, the respondents answered the scale in an unbiased way.

According to the Rasch model, a one-parameter Item Response Theory model, the response to a certain item is a function of the person's ability (or experience level of the construct) and the item's difficulty (or the measured level of the construct by that item), expressed in logits (Rasch, 1980). Fit to the Rasch model was assessed by checking if there was a nonsignificant χ^2 difference between the data and the Rasch model, with Bonferroni correction by the number of items (Tennant & Conaghan, 2007). In addition, the residuals distribution was checked, it should be normal (mean of 0; SD of 1) and fall within the ± 2.5 range. According to Linacre (1994), a sample size of 250 is adequate even in the case of poor targeting. There are excellent tutorials providing complete and accessible information on Rasch analysis (Pallant & Tennant, 2007; Tennant & Conaghan, 2007).

Reliability was expressed by the PSI and interpreted similar to Cronbach's α . A threshold is the point of equal response probability between two adjacent categories. Its order was analyzed, and in the case of disordered thresholds, adjacent categories were collapsed. For items to be locally independent, we expected low correlations ($< .30$ of the average correlation) between item residuals, as expressed in the residual correlation matrix (Baghaei, 2007). Unidimensionality was measured through a principal component of the residuals, and person estimates were compared using t tests. A lower bound of the associated binomial 95% confidence interval (CI) $< 5\%$ indicated unidimensionality (Smith, 2002; Tennant & Pallant, 2007). For DIF, ANOVAs with Bonferroni corrections were conducted for all factors (Tennant & Pallant,

Table 2. Feasibility, Acceptability and Reliability of the FINC-NA Scale.

Statistical criterion	FINC-NA scale				
	Fam-RNC	Fam-CP	Fam-B	Fam-OR	Total
Missing data (%)	1.5	1.9	2.3	0.1	5.7
<i>M</i> (<i>SD</i>)	41.93 (5.13)	32.67 (4.03)	14.99 (2.82)	16.26 (2.45)	105.86 (11.80)
Median	43.00	33.00	15.00	16.00	105.50
Observed range	21–50	19–40	7–20	5–20	65–130
Floor effect (%)	0.4	0.4	0.8	0.4	0.4
Ceiling effect (%)	5.4	5.4	8.6	13.4	2.4
Skewness	−0.612	−0.321	−0.170	−0.422	−0.218
Cronbach's α	.84	.77	.64	.74	—
Item-total correlation	.464–.661	.211–.633	.189–.589	.476–.624	—
Item homogeneity	0.36	0.29	0.32	0.42	0.27
Agreement (%)	92.37–95.64	90.20–96.30	92.88–95.59	91.94–95.42	—
Weighted kappa	0.20–0.59	0.15–0.63	0.49–0.61	0.27–0.60	—
ICC	.73	.83	.86	.72	.86

Note. FINC-NA = families' importance in nursing care-nurses' attitudes; ICC = intraclass correlation coefficient; Fam-RNC = family as a resource in nursing care; Fam-CP = family as a conversational partner; Fam-B = family as a burden (reverse scores); Fam-OR = family as its own resource.

2007). Model modifications were evaluated iteratively. Once model fit was obtained, subtests were created for each dimension and tested for fit to the Rasch model. This allows to inquire is there is a hierarchical structure with an overarching construct formed by several dimensions. IBM SPSS version 22.0 (IBM Corp.) was used for all CTT analyses, and RUMM2030 was used for Rasch analysis.

Results

Characteristics of the Sample

Of the 293 nursing professionals who were invited to participate in the study, 263 (89%) completed the Spanish version of the FINC-NA questionnaire. All the participants were women, with a mean age of 41.4 ($SD = 10.9$) years. Regarding years of experience as a nurse, the mean was 18.9 ($SD = 10.9$) years. Most of the participants (79.5%) had a permanent employment contract, and the mean duration in their current job position was 12.8 ($SD = 10.7$) years (Table 1).

CTT Analysis

The feasibility and acceptability results indicated that the percentage of missing data for the subscales was <5%. The total score was calculated for 248 (94.2%) participants with fully computable data. There were no ceiling or floor effects in the total score or in the subscales. The mean total score was 105.86 ($SD = 11.80$), with a median of 105.50 (difference with the $M = 0.36$) and an asymmetry of -0.218 , indicating that the data approached a normal distribution. Table 2 presents further feasibility and acceptability results.

Convergent validity was confirmed, as the total score of the FINC-NA scale had a positive and moderate correlation

($r = .38$) with the ICE-HCP-IBQ, as expected. Regarding the subscales, the highest correlation coefficient was between the Fam-CP subscale and the ICE-HCP-IBQ ($r = .39$).

Internal validity analysis indicated that the subscales had adequate correlation coefficients between them ranging from .60 to .73 ($p < .001$), except for the Fam-B subscale, whose correlation coefficients ranged from .27 to .37 ($p < .001$; Table 3).

Regarding discriminative validity, the total score of the FINC-NA scale showed significant differences regarding academic training (higher scores among nurses with a master's degree in nursing, $p = .031$), workplace (higher scores among nurses who work in consultation, $p = .014$), and care approach (higher scores among nurses who considered that their unit has a family care approach, $p = .001$; Table 4).

Regarding internal consistency, all subscales showed Cronbach's α coefficient greater than .70, except for the Fam-B subscale ($\alpha = .64$). Likewise, the item homogeneity index was greater than 0.30 for all the subscales, except for the Fam-CP subscale (.29; Table 2).

Regarding test-retest reliability, the weighted kappa coefficient values for the items ranged from .20 to .59 for the Fam-RNC subscale, from .15 to .63 for the Fam-CP subscale, from .49 to .61 for the Fam-B subscale, and from .27 to .60 for the Fam-OR subscale. The percentage of agreement was greater than 90% for all items. The ICC for the total score was satisfactory (.86), indicating that the stability of the questionnaire was adequate. The subscales had an ICC ranging from .72 (Fam-OR subscale) to .86 (Fam-B subscale; Table 2).

Rasch Analysis

The first Rasch analysis, with the total number of items, showed disordered thresholds for 15 out of the 26 items. The

Table 3. Convergent Validity and Internal Validity of the FINC-NA Scale.

Subscales	Fam-RNC	Fam-CP	Fam-B	Fam-OR	FINC-NA
Fam-CP	0.725**				
Fam-B	0.267**	0.349**			
Fam-OR	0.600**	0.706**	0.368**		
ICE-HCP-IBQ	0.239**	0.392**	0.289**	0.383**	0.380**

Note. Fam-RNC = family as a resource in nursing care; Fam-CP = family as a conversational partner; Fam-B = family as a burden (reverse scores); Fam-OR = family as its own resource; ICE-HCP-IBQ = Iceland health care practitioner illness beliefs questionnaire. Pearson correlation coefficients; ** $p < .01$.

Table 4. Known Groups' Validity.

Categories	N	M (SD)	p^*
Highest qualification			
FINC-NA Diplomat	135	104.87 (12.855)	.031*
Graduate	78	105.41 (9.905)	
Master's program	35	110.69(10.473)	
Workplace			
FINC-NA Hospitalization plant	86	107.26 (9.362)	.014*
Consultation room	57	108.37 (12.125)	
Other	105	103.36 (12.982)	
Family-approach ^a			
FINC-NA Yes	140	108.01 (11.718)	.001**
No	106	103.08 (11.473)	

Note. ANOVA = analysis of variance

^aIs there a general approach to the care of families at your place of work? ANOVA; * $p < .05$. ** $p < .01$.

middle categories were collapsed, but the model misfit remained (Table 5), $\chi^2(104) = 334.375$, $p < .001$, as well as multidimensionality (binomial 95% CI: [0.198, 0.251]). Therefore, each scale dimension was analyzed separately. Table 6 summarizes the model modifications and goodness of fit to the Rasch model for the four dimensions.

For Dimension 1 (Fam-RNC), Item 10 ("The presence of family members eases my workload") showed significant misfit and an item fit residual of 3.060. After deleting this item, model fit was achieved, $\chi^2(27) = 46.535$, $p = .0011$ (Bonferroni corrected p value, .0055), with a PSI = 0.784, local independence of items, marginal unidimensionality (binomial 95% CI: [0.057, 0.110]), and absence of DIF by age and experience time. The person item threshold map shows a lack of persons for lower levels of the construct (Figure 1).

Dimension 2 (Fam-CP) displayed good model fit, $\chi^2(24) = 41.130$, $p = .016$ (Bonferroni corrected p value, .00625), a PSI = 0.765, local independence of items, unidimensionality (binomial 95% CI = [0.00, 0.053]), and absence of DIF by age or experience time. Lower levels of the construct were not represented by any person (person item threshold map; Figure 1).

Table 5. Rescoring of Disordered Thresholds.

Item	Collapsed categories (12345 ^a)
1	2-4
3	2-4
4	2-4
5	2-3
8	2-3
11	2-3
13	2-3
15	2-3
18	2-3
19	2-3
20	2-3
22	2-3
25	2-4
26	2-3

^a12345 is the response scheme, where 1, totally disagree; 2, disagree; 3, not agree or disagree; 4, agree; 5, totally agree.

After deleting Item 8 ("I do not have time to take care of families") due to item misfit and a high fit residual (3.142), Dimension 3 (Fam-B) displayed adequate model fit, $\chi^2(9) = 19.236$, $p = .0203$ (Bonferroni corrected p value, .01667), a PSI = 0.610, unidimensionality (binomial 95% CI = [0.00, 0.053]), and absence of DIF by age or experience time. The person item threshold map indicates that all item thresholds are represented by some participants on the person distribution (Figure 1).

Dimension 4 (Fam-OR) presented good model fit, with a PSI = 0.659, local independence of items, and unidimensionality (binomial 95% CI = [0.00, 0.053]). All items were free from DIF by age or experience time, except Item 17 ("I encourage families to use their own resources so that they have the optimal possibilities to cope with situations by themselves"), which displayed DIF by age, with nurses aged 43 or above overestimating item scores (Figure 2). The item-person item threshold map is presented in Figure 1.

Finally, four subtests were created, one by dimension, and the resulting good item-trait interaction model fit, but not at the dimension (subtest) level. In addition, there was multidimensionality (binomial 95% CI = [0.073, 0.125]).

Table 6. Goodness of Fit to the Rasch Model and Modifications Realized to Achieve Model Fit.

Statistical criterion	Fam-RNC	Fam-CP	Fam-B	Fam-OR
Items deleted	Item 10 (fit residual 3.060)	None	Delete item 8 (fit residual 3.142)	None
Item fit residual ($M = 0, SD = 1$)	$M = -0.271$ $SD = 1.154$	$M = 0.0018$ $SD = 1.398$	$M = 0.373$ $SD = 0.847$	$M = -0.353$ $SD = 1.449$
Person fit residual ($M = 0, SD = 1$)	$M = -0.348$ $SD = 1.103$	$M = 1.801$ $SD = 1.303$	$M = 1.202$ $SD = 1.442$	$M = 1.752$ $SD = 1.562$
Model fit (nonsignificant p value with Bonferroni correction)	$\chi^2(27) = 46.535,$ $p = .0011 > .0055$	$\chi^2(24) = 41.130,$ $p = .016 > .00625$	$\chi^2(9) = 19.236,$ $p = .0203 > .01667$	$\chi^2(12) = 25.195,$ $p = .0143 > .0125$
PSI (>0.70)	0.784	0.765	0.610	0.659
Item local independency	OK	OK	OK	OK
Unidimensionality (binomial 95% CI, lower bound ≤ 0.05)	Marginal (0.057–0.110)	OK (0.00–0.053)	OK (0.00–0.053)	OK (0.00–0.053)
DIF by age	No	No	No	Item 17 (nurses 43+ years overestimate item scores)
DIF by time experience	No	No	No	No
Person item threshold map	Lack of persons for lower levels of construct	Lack of persons for lower levels of construct	OK	OK

Note. Fam-RNC = family as a resource in nursing care; Fam-CP = family as a conversation partner; Fam-B = Family as a burden; Fam-OR = family as its own resource; DIF = differential item functioning; M = mean; CI = confidence interval; PSI: person separation index.

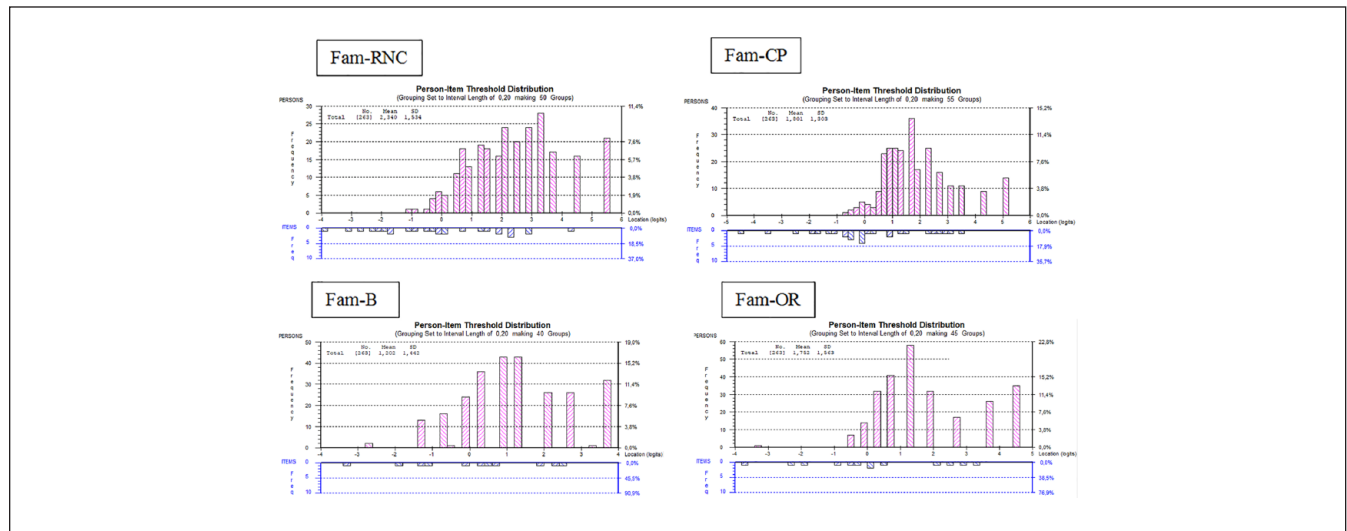


Figure 1. Item Person Item Threshold Map for Dimensions.

Note. Fam-RNC = family as a resource in nursing care; Fam-CP = family as a conversation partner; Fam-B = family as a burden; Fam-OR = family as its own resource.

Discussion

This is the first study to analyze the psychometric properties of the refined version of the FINC-NA scale in a Spanish sample according to CTT and the Rasch model. The results show that the refined version of the FINC-NA has sufficient evidence for its use in a Spanish context.

In general, all acceptability parameters fulfilled the standard criteria. Floor and ceiling effects were explored using

both CTT and Rasch analyses, and the subscales did not show ceiling or floor effects. The low proportion of missing data and the high response rate support the suitability of the scale for the target population.

Regarding convergent validity, the moderate correlation between the ICE-HCP-IBQ and the FINC-NA scale could be explained by the influence of higher confidence levels of the professionals in their belief that they understand the meaning that the disease has for the family and a positive

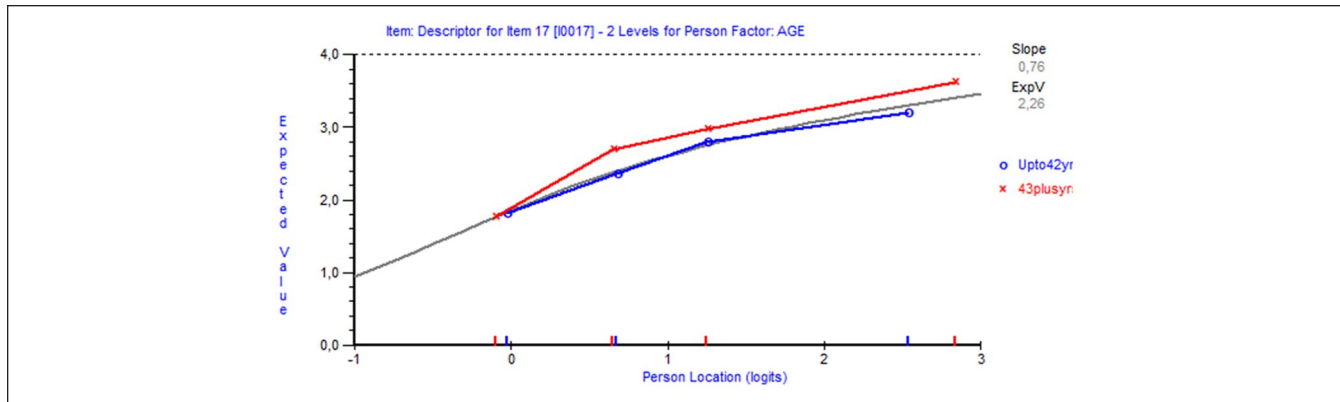


Figure 2. DIF by Time Experience (up to 42 Years vs. 43+ Years Old) for Item 17 (“I Encourage Families to Use Their Own Resources so That They Have the Optimal Possibilities to Cope With Situations by Themselves”).

Note. DIF = differential item functioning.

attitude toward family support in clinical practice, a finding also identified in previous studies (Alfaro-Díaz et al., 2020; Årestedt et al., 2015; Duhamel et al., 2015). Moreover, the highest correlation was found between the Fam-CP subscale and the ICE-HCP-IBQ, which emphasizes the synergy between holding facilitating beliefs when working with families and the importance of engaging with the patient’s family members and having a dialogue with them.

In the same way, all items were unbiased in terms of age and experience time in the Rasch analysis, except one (Item 17, “I encourage families to use their own resources so that they have the optimal possibilities to cope with situations by themselves”), which showed DIF by age. This indicates that older nurses have more positive attitudes about family as its own resource to cope with illness situations than younger nurses. However, further studies are needed to confirm these DIF results with larger samples and other settings. Results regarding this item should be interpreted with caution when comparing individuals by age.

The internal validity of the FINC-NA scale subscales was excellent, except for the Fam-B subscale, which had lower correlation coefficients with the rest of the subscales. Previous studies had similar findings (Benzein et al., 2008; Hagedoorn et al., 2018), and this may be due to two possible explanations: (a) the subscale measures a different construct or (b) not considering family as a burden is not associated with a higher appreciation of family members as conversation partners or a positive attitude toward families’ presence in nursing care. In addition, a high correlation between the Fam-RNC and the Fam-CP subscales was also observed. This result is in line with other findings that show that positive attitudes of nurses toward the presence of the family in nursing care promote the recognition of family members as conversation partners (Gusdal et al., 2017).

Regarding known group validity, a statistically significant association was found between nurses’ attitudes toward

involving families in nursing care and academic background, with nurses with master’s degrees obtaining higher scores. This finding is consistent with previous research that reported an association between higher education levels and more positive attitudes (Gusdal et al., 2017; Hagedoorn et al., 2021; Luttik et al., 2017; Østergaard et al., 2020; Sveinbjarnardottir et al., 2011). This is explained by the belief that less experienced nurses may still be learning and gaining skills with a greater focus on the physical care and safety of the patients and thus are more task-oriented. However, nurses with master’s degrees have acquired the knowledge and skills necessary to carry out effective family-focused care. Moreover, the more nurses apply their training and skills, the more they tend to acknowledge the usefulness and reward of family-centered nursing, which enhances their attitudes toward family involvement (Gusdal et al., 2017; Hagedoorn et al., 2021).

On the other hand, those nurses with a family-oriented approach to care had significantly higher total FINC-NA scores. This is in line with other studies, which found that nurses whose workplace had a general family-centered care approach had more positive attitudes toward involving families in nursing care (Benzein et al., 2008). In fact, evidence has demonstrated that the context of health care, the environment, and the culture of the organization can act as barriers or facilitators in regard to including the family in nursing care (Alfaro-Díaz, Esandi et al., 2022; Thürlimann et al., 2022). To the extent that family care is integrated into the organization’s processes and the nurse’s competence to work with the family is valued, nurses recognize family care as a priority aspect of their practice and dedicate a part of their nursing activity to interactions with family. However, if a task-oriented care approach prevails in the care setting, nurses’ attitudes toward working with the family are less positive (Hoplock et al., 2019). Moreover, in our study, nurses who worked in the consultation room presented the most supportive attitudes for family involvement. This may

be because nurses who have designated consultation time with patients have the most favorable conditions for implementing a more supportive approach to family-centered care (Østergaard et al., 2020; Gusdal et al., 2017). However, when demands are high and nurses do not have a designated consultation time, as occurs in hospitals, nurses must prioritize their work tasks, and it is possible that they put the care of the patient and their disease before the care of the family (Alfaro-Díaz, Esandi et al., 2022).

Reliability was also explored using CTT and Rasch approaches. The internal consistency of the FINC-NA scale was satisfactory, with all dimensions exceeding the criteria of ≥ 0.70 for Cronbach's α , except for the Fam-B subscale ($\alpha = .64$). These results are in agreement with those described for the original scale (Saveman et al., 2011) and the Dutch version (Hagedoorn et al., 2018), where the Fam-B subscale, together with the Fam-OR subscale, presented lower levels of internal consistency, which may be due to the low number of items in the subscales (Cronbach, 1951). Furthermore, both subscales showed lower reliability (PSI) in the Rasch analysis. Therefore, more studies are recommended to verify the reliability of both domains.

Test-retest reliability was adequate, indicating that the scale and all FINC-NA subscales had acceptable temporal stability, with results similar to those of the original scale (Saveman et al., 2011). This finding shows strong evidence for the potential of the instrument in studying the effects of an educational intervention aimed at promoting family-centered practices in a health clinical context.

Rasch analysis provided important and unique information supporting the local independence of the items, unidimensionality at the subscale level, and DIF. Some modifications were proposed according to the Rasch model. First, the FINC-NA was multidimensional, which supports the use of subscores instead of a single total score. This means that the FINC-NA measures different constructs (the subscales); thus, dimension scores should be used instead of a total score.

Second, another modification suggested by Rasch analysis was the deletion of certain items. Again, they might be maintained in the scale administration, as they can provide useful clinical information. However, when calculating linear scores, these items should not be considered, as they are either redundant or measure a different construct (Tennant & Conaghan, 2007). In the present study, Item 10 ("The presence of family members eases my workload") and Item 8 ("I do not have time to take care of families") measured a different construct.

Finally, a unique contribution of Rasch analysis is the possibility of empirically checking how well the response categories work. Several items showed disordered thresholds, which indicated that individuals had difficulty differentiating between some response options (totally disagree/disagree and totally agree/agree). For this reason, this study proposes that the response scale should be codified differently than what was initially proposed, although this does not modify the scale administration. Instead of using a coding

scheme from 1 to 5, items should be coded from 2 to 3 or 2 to 4, depending on the item.

Limitations

Among the limitations of this research, it is worth mentioning the possible existence of selection bias as participation was voluntary and nonprobability sampling was performed. This may have led the nurses who chose to participate in this study to be more engaged or reflective in their practice and may limit the extrapolation of the results to other nurses. Moreover, as Saveman et al. (2011) stated, respondents can hold a belief that it is improper and derisory for nurses to deny the importance of families in nursing care. It is likely more socially desirable to believe that nurses should hold a positive view of families. However, the data obtained are close to real-world data, with an adequate distribution of responses and a high number of participants, which reinforces the value of the findings and provides more stable results. Further research is needed, especially including two-parameter item response theory methods, which might provide more information about the dimensionality of the scale. In addition, more research is needed to inform about the responsiveness and interpretability of the scale.

Conclusion

To the best of our knowledge, this is the first study to combine classical test theory with Rasch analysis to assess the psychometric properties of the FINC-NA instrument. This method of analysis generated new information on the choices in the instrument, allowing for detailed insight into the construct and content of the instruments' items and more efficient adjustments to the FINC-NA instrument.

This study has demonstrated that the refined Spanish version of the FINC-NA is a valid and reliable instrument with good psychometric properties related to reliability and construct validity, unidimensionality and local independence of items. Rasch analysis offers results on a linear scale, allowing for the use of parametric statistics.

In this sense, the FINC-NA scale is ready to be used in clinical practice and research to assess nurses' attitudes toward the importance of involving families in their clinical practice in a reliable way in the Spanish context. Moreover, the FINC-NA scale is a promising tool to measure the effectiveness of interventions aimed at promoting positive attitudes among nurses, which could lead to family-centered care in the health clinical context. Future studies should focus on assessing the psychometric properties of the scale in other contexts and countries to expand its use and make comparisons.

Relevance to Clinical Practice

Nurses' attitudes toward the importance of including family in their clinical practice affect their willingness to interact

with and involve families in care (Wright & Bell, 2009). Therefore, the psychometric validation of this questionnaire in the Spanish context is useful for nurses to assess their attitudes about families in a valid and reliable way and, if necessary, challenge them to promote patient and family-centered practices.

Ensuring that intervention studies include assessment instruments with strong psychometric properties may ultimately enable practitioners to assess client target problems with greater precision. Furthermore, increasing the availability of instruments with demonstrated reliability and validity may also help practitioners select evidence-based interventions that best match the needs of their clients (Cabrera-Nguyen, 2010). In this sense, the FINC-NA scale may be of interest for mapping nurses' attitudes and identifying their educational needs. The instrument has the potential to inform the development of educational interventions that support the implementation of a family-focused approach in health care.

In addition, the instrument could be applied to measure the effectiveness of such interventions due to its ability to produce stable responses over time. In this way, families could benefit from receiving family-focused care that promotes well-being, alleviates suffering, and fosters family functioning while living with the disease.

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Supplemental Material

Supplemental material for this article is available online.

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