The Study on the Validity and Reliability of the Family Nurse Caring Belief Scale in the Turkish Culture

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Abstract

Background: Family-centered care and family nursing practices are important in supporting the health and development of the child, establishing cooperation with the family, and better understanding the family's power and caregiving capacity. Measuring family nursing practice phenomena requires special attention.

Aim: This study was conducted to test the validity and reliability of the family nurse caring belief scale in Turkish culture.

Methods: This methodological research was performed with a total of 317 nurses working in the primary care, and pediatric departments of health-care institutions and university hospitals under the Ministry of Health in Türkiye. Content validity, structure validity, internal consistency reliability, and item analysis methods were used to determine the psychometric properties of family nurse caring belief scale.

Results: According to the results of the explanatory factor analysis conducted on the Turkish version of family nurse caring belief scale, the scale had 4 sub-dimensions and accounted for 82.37% of the total variance. As a result of the confirmatory factor analysis, the goodness-of-fit values of the scale calculated as $\chi^2/SD=4.434$, RMSEA=0.076, RMR=0.025, SRMR=0.065, GFI=0.918, AGFI=0.808, CFI=0.957, NFI = 0.946, and NNFI=0.958. In addition, item factor loads ranged between 0.479 and 0.943. The total Cronbach's alpha internal consistency coefficient of the scale was found as 0.965, while that of its sub-dimensions ranged from 0.726 to 0.984.

Conclusion: The research has concluded that family nurse caring belief scale is a valid and reliable evaluation tool that can be applied specifically to Turkish society. The scale can be used in the research, training, and practices on family health nursing.

Keywords: Family care, nurse, reliability scale, validity

Introduction

Although children are tried to be brought up without getting sick, they may suffer from one or more diseases in some period of their lives.[1] The experiences of illness and hospitalization include frightening, uncomfortable, and painful experiences for the child. Entering the hospital environment, which is foreign to them, causes traumatization and anxiety.[2-4] Hospitalization of a child is a stressful experience for the child and his family.[5] It is important to maintain interaction with the primary caregiver during the hospitalization period to provide the child with the necessary support he/she needs.[4] The family-centered care approach is very effective in minimizing the child's stress level, reducing pain, and adapting the family to hospitalization and care.[6] As a nurse, it is necessary to carry out the healthcare process in a way that includes the family, taking into account the structure, dynamics, and all processes of the family, rather than planning the care specific to the individual and giving priority to this approach, which is gaining more importance today.[7] The aim of family-centered care is not only to care for the child but to consider the family as a whole. It is to maintain the bond between the child and the family, to ensure that the family is effective in the care of the child, to ensure the cooperation of the family, and to enable the child and the family to cope positively with the reactions to the illness and hospitalization. In addition, it is to maximize the mental, physical, and psychological potential of the child and to prevent or try to minimize the negative effects of hospitalization. In addition, it is the empowerment of individuals in the roles and responsibilities of family members, and the increase of

competence and skills.[8,9] In the family-centered care philosophy, the family is the most important support system that is in strong cooperation with the health personnel in the child's care process and is the basis of care.[10] For this reason, the nurse should have a holistic approach to the child and his family in the care process, should identify the characteristics of the family, especially its strengths and weaknesses, and evaluate the coping methods used.[11] In this regard, family health nurses and child health nurses have important duties. Family health nursing includes all efforts and attempts to ensure that all family members achieve maximum health and well-being within the family system. The nurse uses individual-oriented theories and models when evaluating the family. This approach is based on mother–child nursing expertise, and its philosophy is based on the philosophy of maternal and child healthcare settings.[12] Family health nurses and child health nurses, who are a special field of professional profession, continue family-centered care practices. By adopting family-centered care, family health nurses and child health nurses aim to gain, maintain, and improve the health of the child and family.[9,11,13,14]

When studies on family-centered care in our country are evaluated, the "Family-Centered Care Questionnaire" validated and reliable by Doğan, the "Family-Centered Care Scale" developed by Altıparmak and Arslan, and the "Family-Centered Care Attitude Scale" developed by Kara, validity and reliability of the "Parental Involvement Attitude Scale" by Yıldırım were used.[15-18] It has been observed that there are few measurement tools in the evaluation of family-centered care in our country.

Although it is stated that parental involvement in the care of the hospitalized child cannot be ensured actively, the regulations regarding the handling of the hospitalized child and the family together and the ethical problems experienced are not sufficient, it is emphasized that studies on the subject should be increased.[9,18-20] It is observed that the regulations are insufficient to evaluate the beliefs and practices of the children, to support the participation of families in care, and to increase the quality of care given to the child, and the lack of research on the subject draws attention. There is a need to adapt the family nursing caring belief scale (FNCBS) to Turkish culture as a valid and reliable measurement tool to increase the quality of measurement tools that can be used in the evaluation of the views of the nurses working in the pediatric clinic on the participation of the parents in the care of the hospitalized child and their understanding of family-centered care. This study was conducted to test the validity and reliability of the FNCBS in Turkish culture.

Materials and Methods

Study Question

Is the FNCBS a valid and reliable measurement tool for Turkish culture?

Type of Study

This study was planned and carried out in a methodological type to adapt the FNCBS developed by Meiers et al[21] to Turkish culture and to conduct its validity and reliability.

Population and Sample of Study

The population of the study was thought to consist of nurses working in the pediatric departments of a university hospital in a province of Türkiye and primary healthcare organizations affiliated with the health directorate of the same province. Due to the coronavirus pandemic measures, the research was conducted online through social media accounts including nurses, as meeting face-to-face with people would increase the risk of contact. Thus, the population of the study consisted of nurses in Türkiye. To conduct factor analysis in validity and reliability studies, it is recommended that the sample size should be at least 5 times the number of scale items.[22] For this reason, no sample selection was made, and people who were reached from the population, who volunteered to participate in the study, who worked as nurses in the field, and who had been caring for children and newborns for at least 1 year were included in the study. Three hundred seventeen nurses participated in the study, which is approximately 12 times the number of items.

Data Collection Tools

The data were collected using the Personal Information Form for Nurses and the FNCBS, which were prepared by the researchers by examining the literature.

Personal Information Form for Nurses

It contains descriptive information about the nurses participating in the study and consists of a total of 7 questions.

Family Nursing Caring Belief Scale

The scale was developed by Meiers et al to assess nurses' attitudes toward the provision of family-sensitive care by applying it to 163 nurses working in pediatric intensive care and neonatal intensive care units. The scale consists of 4 factors: ethical caring practices, orientation to family, child advocacy, and normalizing milieu. The items are on a 5-point Likert scale ranging from "strongly agree" to "strongly disagree" and consist of 25 items. Nine questions are reverse coded (4, 7, 10, 13, 16, 18, 20, 23, and 24). The total score that can be obtained from the scale varies between 25 and 125, and high scores indicate nurse attitudes that are sensitive to the family; low scores indicate the attitudes of nurses that tend to least tend toward family-sensitive care. The total Cronbach's alpha value of the scale was found to be 0.81.[21]

Data Collection

Data collection forms determined for the research were transferred to the electronic environment with the Google Forms application and collected online between November 2020 and June 2021. The link to the study was shared with members from various social media accounts. The voluntary consent condition for participation in the study was stated at the beginning of the questionnaire, and the nurses who agreed to participate in the study started to answer the questions after confirming their acceptance to participate in the study electronically. Answering the forms took an average of 10-15 minutes. Data were collected over a period of approximately 7-8 months.

Ethical Aspect of Study

For the adaptation of the scale to Turkish, permission was obtained from Sonja J. Meiers, one of the authors of the scale, through E-mail. Ethical Commitee approval was obtained from the Ethics Committee of Nevşehir Hacı Bektaş Veli University (Approval Number: 2020.20.303, Date: 16.11.2020). Written consent was received from thethe nurses who participate in this study.

Data Evaluation

Data were evaluated using AMOS 20.0 and Statistical Package for the Social Sciences 25.0 package programs. Descriptive statistics (mean, SD, frequency, and percentage) were used to analyze the data, and the Davis technique was used to calculate the language content validity index (CVI) of the scale. Explanatory factor analysis (EFA) and confirmatory factor analysis (CFA) were examined on the data obtained for the construct validity of FNCBS. Cronbach's alpha value was used for the internal consistency reliability test. Corrected item-total correlation coefficients were examined in item analyses. The analyses included a 95% CI and $P < .05$ significance level as criteria.

Results

Descriptive Characteristics of Participants

Among the nurses who participated in the study, 87.4% were female and 74.1% were undergraduates, and the mean age was 30.44 ± 6.42 years (minimum: 21 to maximum: 48). The average number of years of working in nursing the participants was 7.91 ± 6.76 (minimum: 1 to maximum: 26), and the average time of caring for children in the field they worked was 6.13 ± 5.42 (minimum: 1 to maximum: 24) years. Most of the nurses work in the departments of child health and diseases (36.3%), pediatric intensive care unit (21.1%), and Family Health Center (17.0%). About 37.5% of the participants stated that they had previously received training on "communication with the children and his family, rights, and needs of families, family-centered care."

Language Content Validity

The scale items were translated into Turkish by the researchers and 2 English linguists who are native speakers of Turkish and have a good command of both languages, cultures, and terminology. The Turkish form of the scale was created by choosing the most appropriate expressions from the translations of the FNCBS items by the researchers. The original version of the scale and the newly created Turkish version were submitted to the opinion of 6 specialists (2 individuals from the Department of Child Health and Diseases Nursing, 2 from the Department of Public Health Nursing, and 2 from the pediatric service, and pediatric intensive care service nurses who completed their doctorate). The scale was evaluated by specialists in terms of grammar, meaning, and format. Corrections were made in line with the suggestions received. The scale was translated back into English by a linguist who had not seen the English version of the questionnaire before and sent back to the author who developed the form. After 6 expert opinions evaluating the scale items according to the Davis Technique, the CVI was found to be "0.83" for 4 items (4, 10, 11, 15) and "1.00" for the other 21 items. The Turkish form of the FNCBS was translated back into English and sent to the author through E-mail and his approval was obtained. The scale was then applied to 10 people with similar characteristics to the nurses to be included in the study, and finalized by taking their opinions on whether there were any expressions, words, or inappropriate content that they did not understand.

Item Analyses

The item analyses of FNCBS are given in Table 1. The mean scores of the items ranged between 2.23 ± 1.28 and 3.63 ± 1.53. The item-total correlation values of the items in the scale ranged from 0.366 to 0.907. The general Cronbach's alpha coefficient of the scale was found to be high at 0.965 and the Cronbach's alpha coefficients obtained when the item was deleted ranged between 0.962 and 0.967.

Table 1. Item Analysis Results of the Sub-Dimensions of the Family Nursing Care Belief Scale

Items	Mean $\pm$ SD	Item-Total Correlation	Cronbach α When the Item Was Deleted
Item 1	3.62 ± 1.59	0.885	0.962
Item 2	3.63 ± 1.53	0.907	0.962
Item 3	3.62 ± 1.60	0.891	0.962
Item 4	2.59 ± 1.31	0.514	0.965
Item 5	3.45 ± 1.56	0.895	0.962
Item 6	3.49 ± 1.52	0.874	0.962
Item 7	2.57 ± 1.34	0.546	0.965
Item 8	3.56 ± 1.59	0.897	0.962
Item 9	3.51 ± 1.53	0.892	0.962
Item 10	2.29 ± 1.38	0.426	0.966
Item 11	3.35 ± 1.56	0.789	0.963
Item 12	3.26 ± 1.56	0.807	0.963
Item 13	2.93 ± 1.47	0.675	0.964
Item 14	2.93 ± 1.38	0.721	0.964
Item 15	3.18 ± 1.41	0.784	0.963
Item 16	2.34 ± 1.23	0.344	0.967
Item 17	3.48 ± 1.57	0.867	0.962
Item 18	2.23 ± 1.28	0.422	0.966
Item 19	2.99 ± 1.45	0.724	0.964
Item 20	2.44 ± 1.31	0.369	0.967
Item 21	3.50 ± 1.58	0.874	0.962
Item 22	3.40 ± 1.54	0.831	0.963
Item 23	2.56 ± 1.33	0.542	0.965
Item 24	2.62 ± 1.43	0.366	0.967
Item 25	3.16 ± 1.51	0.773	0.963

Construct Validity

The adequacy of the study sample for factor analysis was evaluated using Kaiser–Meyer–Olkin (KMO), and the suitability of the sample for factor analysis was evaluated by applying Bartlett's test of sphericity (BTS) analysis. In the study, it was determined that the KMO test result was 0.922 and the BTS test result was 11391.481 statistically significant ($P < .05$).

Explanatory Factor Analysis

After determining that the data were suitable for factor analysis, principal component analysis and the varimax rotation method were used to examine the factor structure of the scale. According to the results of the factor rotation, when the items of the FNCBS were examined, as a basis for the analysis, it was determined that there were 4 components with an eigenvalue above 1 for 25 items. The contribution of these components to the total variance is

Table 2. Explanatory Factor Analysis Results Regarding the Family Nursing Care Belief Scale				
Items	F1	F2	F3	F4
Item 16	0.872			
Item 11	0.850			
Item 18	0.770			
Item 20	0.757			
Item 14	0.706			
Item 13	0.659			
Item 24	0.629			
Item 23	0.621			
Item 7	0.527			
Item 17		0.925		
Item 22		0.881		
Item 15		0.832		
Item 25		0.819		
Item 19		0.781		
Item 8			0.943	
Item 3			0.940	
Item 2			0.937	
Item 5			0.935	
Item 1			0.932	
Item 21			0.924	
Item 6			0.913	
Item 9				0.932
Item 12				0.872
Item 10				0.630
Item 4				0.479
Explained variance (%)		82.37		

Table 3. Confirmatory Factor Fit Index Results of the Family Nursing Care Belief Scale			
Fit Indices	Good Fit	Acceptable Fit	Measured Values
χ^2/SD	<2	<5	4.434
RMSEA	<0.05	<0.08	0.076
RMR	<0.05	<0.08	0.025
SRMR	<0.05	<0.10	0.065
NFI	>0.95	>0.90	0.946
NNFI	>0.97	>0.95	0.958
CFI	>0.97	>0.90	0.957
GFI	>0.95	>0.90	0.918
AGFI	>0.90	>0.85	0.808
AIC model	Smaller than the AIC of the comparison model		985.837 < 11351.534
CAIC model	Smaller than the CAIC of the comparison model		1948.999 < 11480.299
ECVI	Smaller than the ECVI of the comparison model		2.106 < 24.255

the second factor, 0.87 for the third factor, and 0.56 for the fourth factor; the combined reliability (CR) value was 0.93 for the first and second factors, 0.98 for the third factor and 0.83 for the fourth factor (Table 4).

Discussion

This study, it is aimed to examine the validity and reliability analysis of FNCBS and to bring it to the literature so that it can be used in our country. Validity and reliability analyses are used to ensure that the measurement tool used gives realistic, objective results and that accurate evaluations can be made as a result of the measurement.[23] The study findings also showed that the scale had acceptable values in terms of language, scope, content validity, and reliability analysis.

Content validity is carried out to evaluate whether the items in the scale fully reflect the concept that is intended to be measured.[24] To evaluate this in the study, the opinions of 6 experts were taken and the CVI was calculated accordingly. It was determined that the CVI values calculated in line with the opinions received were between 0.83 and 1.00. In the Davis technique, the CVI value is required to be 0.80 and above.[25] Accordingly, it can be said that the content validity of the scale is high.

In scale validity and reliability studies, factor analysis is performed to test the structural validity, and KMO value and Bartlett's test should be examined in terms of sample adequacy beforehand. If a KMO measurement of 0.80 and above is obtained, it can be said that the sample adequacy for factor analysis, and if Barlett's test is found to be significant, the items in the scale are suitable for factor analysis.[26] The fact that the KMO value (0.922) of FNCBS was found to be sufficiently large and that Barlett's sphericity test result was found to be significant in this study shows that factor analysis can be performed.
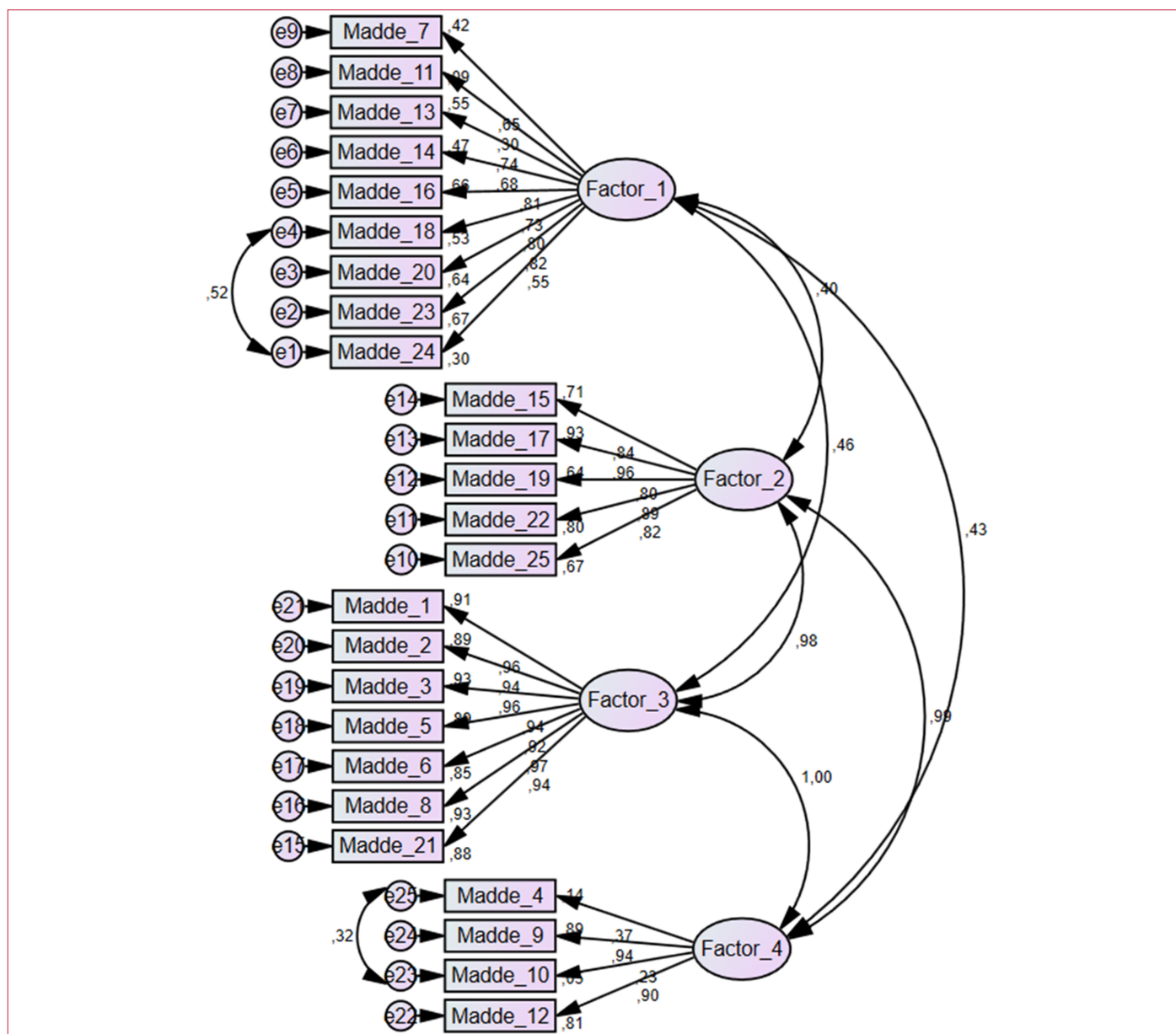
82.37%. The factor loadings of the items ranged between 0.479 and 0.943 (Table 2).

Confirmatory Factor Analysis For the construct validity of the scale, the newly created 4-factor structure was tested by examining the goodness of fit statistics in CFA. The fit indices obtained as a result of the analysis were χ^2/SD=4.434, RMSEA=0.076, RMR=0.025, SRMR=0.065, GFI=0.918, AGFI=0.808, CFI=0.957, NFI=0.946, and NNFI=0.958 (Table 3). The path diagram obtained in CFA is given in Figure 1.

Reliability Analysis

In the study, Cronbach's alpha value for factor 1 was 0.880, 0.939 for factor 2, 0.984 for factor 3, 0.726 for factor 4, and 0.965 for the total scale. The average variance explained (AVE) value showing the construct reliability of the scale was 0.46 for the first factor, 0.72 for

Figure 1. Path diagram of 25-item of family nurse caring belief scale.

Meiers et al reported that 24 items of the 25-item scale were grouped under 4 factors, and item 21 was independent and explained 43.2% of the total variance.[21] Similar to the original form of the scale, the Turkish version of the FNCBS was grouped under 4 factors and explained 82.37% of the total variance. The high explained variance value indicates that the scale has a strong structure.[27] Meiers et al reported that the total variance explained in the scale development study conducted with 163 nurses working in pediatric and neonatal intensive care units was low and that the construct validity should be tested again with a larger sample size by including nurses from other units working with children.[21] Therefore, it was decided to conduct this study with nurses working in neonatal and pediatric intensive care units, pediatric services, and primary care family health centers.

As a result of the scale's EFA, the items' factor loading values are required to be 0.30[28] or >0.32[29] as a criterion. In this study, factor loadings were found to be the smallest at 0.479. The factor loadings of all items of the FNCBS were found to be sufficient. In this study, CFA goodness-of-fit values applied as another stage of construct validity was examined. Among the fit index values, χ^2/SD, RMSEA, RMR, SRMR, NFI, NNFI, CFI, GFI, AIC model, CAIC model, and ECVI values are at acceptable levels according to the criteria specified in the literature. The AGFI value was found just below the desired values.[30-34] In the literature, many different fit indices are used in studies and it is stated that there is no consensus on which results should be accepted as standard. Therefore, there is a view that it would be more accurate to evaluate the results as a whole.[33] It can be said that the model is compatible because one fit index is close to acceptable

Table 4. Sub-Dimensional Values and Reliability Analysis Results of the Family Nursing Care Belief Scale

Variables	Number of Questions	Mean ± SD	Cronbach's Alpha	AVE	CR
Family nursing care belief scale	25	76.81 ± 27.16	0.965	–	–
Ethical care practices	9	24.01 ± 8.86	0.880	0.46	0.93
Family orientation	5	16.23 ± 6.74	0.939	0.72	0.93
Child advocacy	7	24.89 ± 10.51	0.984	0.87	0.98
Supported family environment	4	11.67 ± 4.30	0.726	0.56	0.83

AVE, average variance explained; CV, combined reliability.

values, the others are in the desired range, and the factor loadings of all items are >0.479.

The Cronbach's alpha, AVE, and CR values of the factors were examined for the reliability of the measurement model. A Cronbach's alpha value of $0.80 \leq \alpha < 1.00$ is highly reliable, and $0.60 \leq \alpha < 0.80$ is considered a highly reliable scale.[35] These reliability values are higher than the total Cronbach's alpha value (0.81) of the original scale.[21] The CR value in the measurement model should be higher than 0.70 and the AVE value higher than 0.50.[36] Average variance explained value <0.5 is acceptable when other reliability measures are sufficient.[29] In this study, it was seen that the CR and AVE values were at an acceptable level, and the AVE value in the first factor was close to the limit. Again, the fact that CR values are higher than AVE values is a finding that supports convergent validity.[36]

According to the factor analysis performed in the original study of the scale, it was determined that it consisted of a total of 4 sub-dimensions.[21] According to the EFA result performed in this study, a 4-factor structure was obtained, as in the original scale with an eigenvalue >1. Item 3 *I believe, when a nurse uses family as an important source of information, child care develops/improves* has been replaced and item 21, *I believe, parents should be able to rely on the given up-to-date information about their child's condition, even if they are not in the hospital* is not included in any factor, but is included in the third factor. In the study by Magri (2018), in which the validity and reliability of the scale were examined only in neonatal nurses, it was seen that the third item was replaced by the third factor.[37] It is thought that the twenty-first item loaded on the same factor is compatible with the items in the third factor, which include beliefs such as the right of the family to know that the child is receiving treatment, being as honest as possible when informing, and being responsible for ensuring their well-being.

These cases were evaluated by the authors both independently and jointly, and it was decided to preserve the factor names as they are. The items in the first factor show the characteristics of ethical care in an empathetic environment (Ethical Caring Practices). The items in the second factor reveal a mandatory openness to collaborative practice in which the family directly influences nursing practice (Family Orientation). The items in the third factor express the theme of defending the child in the context of the family (Child Advocacy). Items in the fourth factor indicate the extent to which family members are supported in normalizing their roles such as decision-making, planning, and coordinating care (Supported Family Environment).

Conclusion

In this study, in which the psychometric properties of FNCBS were evaluated, it was seen that the language, content, construct validity, and reliability analyses of the scale had acceptable measurement values in line with the proposed standards. Family nurse caring belief scale can be used to evaluate before and after interventions planned to improve practices with families and to evaluate attitude change in nurses in complex family care situations. In addition, it is thought that FNCBS can be used as a tool in educational settings, in developing skills on nursing approaches to family systems, in family health theory courses designed to affect clinical care outcomes, and in clinical practice as a tool to evaluate the change in students' attitudes toward family-sensitive nursing, and it can be tested in this environment as well.

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