

Psychometric Evaluation of the Persian Version of Family Collaboration Scale: Collaboration between Relatives of Older Patients and Nurses

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ABSTRACT

Background

Family-nurse collaboration is critical when caring for hospitalized elderly patients. In order to assess this collaboration in clinical settings, a scale based on the culture of the local country is required. This study aimed to investigate the Psychometric Evaluation of Persian version of Family Collaboration Scale (FCS).

Material and Methods

This methodological study measured the FCS in hospitals affiliated with Golestan University of Medical Sciences in 2022. After permission was obtained from the developer, the FCS was translated from English into Persian and back-translated into English based on the World Health Organization's model. The translated version was then examined for its psychometric properties, including initial reliability, face validity, content validity, construct validity, convergent validity, and overall reliability. Ultimately, the reliability of the Persian version was assessed using the Intraclass Correlation Coefficient (ICC), Cronbach's alpha, and McDonald's Omega coefficient. The obtained data were analyzed statistically in SPSS-16 and AMOS-24.

Results

The initial reliability of the whole scale and its subscales was confirmed with values greater than 0.7. Regarding qualitative face validity, some items of the scale were modified based on the comments of the target groups. The calculation of the item factor, CVR, and CVI led to the confirmation of 42 items, the elimination of 5 items, and the confirmation of the remaining items, respectively. In addition, 6 items were eliminated following exploratory factor analysis. Finally, there remained a total of 31 items on the scale. The next step was built on a confirmatory factor analysis approach and fit indices, demonstrating that the FCS could be used in the Iranian population. In addition, $CR > 0.7$, $AVE > 0.5$, and $CR > AVE$ confirmed the convergent validity of this scale. Cronbach's alpha, McDonald Omega coefficient (Ω), and ICC (test-retest) for this scale were obtained as 0.87, > 0.80, and 0.82, respectively. Moreover, there was a significant correlation between the two stages of the test ($p < 0.001$). As a result, the reliability of the Persian version of the FCS was confirmed.

Conclusion

The translation and psychometric evaluation of the FCS suggested that it is a valid and reliable scale that can be used in Iran to evaluate how well families of elderly patients and nurses collaborate in clinical settings.

Keywords

Collaboration; Caregivers; Family; Nurses; Elderly; Scale

INTRODUCTION

Given the rise in the population of older adults, population ageing is now recognized as an important phenomenon¹. According to statistics, the elderly population in Iran was 7% in 2016, and it is predicted that the elderly population will increase to more than 30% in Iran² and 16% on a global scale³ by 2050. The majority of older adults suffer from one or two chronic diseases, which can result in hospitalization, increased need for healthcare, and unpredictable costs for older adults and their families¹. Informal caregivers are among the key pillars of caring for older adults in clinical settings⁴. They include family, relatives, neighbours, or friends⁵ who care for older adults for free^{4,6}.

Since the family plays a more prominent role than other informal caregivers, most countries emphasize the collaboration between families and nurses in the process of caring for elderly patients. This is referred to as the context for the collaboration between the family and healthcare providers. Even though family members are usually preoccupied with their own lives, they cannot forget their role as caregivers because

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their presence as a caregiver can reduce family stress and lead to patient adaptation⁷. Older adults also prefer to have their families involved in their physical and mental care⁸, and they tend to visit medical settings with their family members⁹. The degree to which the family collaborates with the medical staff, particularly nurses, depends on the cultural and environmental contexts; such collaborations tend to be more followed by Asian and Far Eastern nations⁷.

The concept of collaboration with the medical staff, particularly nurses, was first introduced in the medical literature in the mid-1950s. The Picker Institute highlighted the significance of family cooperation in patient care¹⁰. Lindhardt expanded on this concept and then developed a questionnaire called the Family Collaboration Scale (FCS) for this purpose¹¹. Families who are aware of the patient's condition are a crucial and valuable resource in care provision¹². Families and nurses should collaborate to improve the quality of nursing care so that families' knowledge of older adults' health status and functional issues can be utilized, and they can participate in planning, decision-making, and care provision for older adults¹¹.

By collaborating and communicating with the family, nurses play a crucial part in providing comprehensive care and meeting the needs of older adults¹³. Furthermore, they recognize the importance of family involvement in patient care¹². The nurse-family collaboration will be more significant in cases where older adults lack sufficient knowledge and information or the ability to participate in care¹⁴. For example, decisions about medical care are made in collaboration with the family in the case of elderly patients who have lost the ability to make decisions¹⁵.

The collaboration of the family members of elderly patients with the medical staff is crucial in the decision-making process regarding elderly patients' discharge, transfer, or other care-related issues¹¹, despite the stressful and difficult nature of the collaboration between nurses and families of elderly patients, who serve as informal caregivers¹⁶. The professional, personal, and organizational factors all affect how nurses understand the importance of family collaboration in care¹⁷. Family members frequently participate in decision-making when collaborating with nurses in a relationship built on respect and trust^{18,19}. The collaboration of the family of elderly patients with nurses can shorten the length of stay, lessen complications, and reduce the

risk of readmission. It also improves family members' emotional and physical well-being. As a result, it can increase a sense of confidence and trust in both the family members and the medical staff¹⁸. Lindhardt in Denmark designed a scale with 46 items and 5 subscales to measure the collaboration between family members of elderly patients and nurses in terms of trust, information level, discharge process, decisions, and quality of contact with nurses¹¹. In another study, Swedish researchers evaluated the psychometric characteristics of the Danish version of the FCS and developed a new version with 42 items and the same subscales⁸. Hagedoorn *et al.* also developed and employed a questionnaire in the Netherlands with 20 items and subscales such as trust in nursing care, availability of nurses, and influence on decisions to describe the perceived level of cooperation between nurses and family caregivers of elderly patients¹⁸.

It is noteworthy that the FCS was modified to fit each country's native culture despite the generally similar cultures and clinical settings of the Scandinavian countries, such as Denmark and Sweden. Therefore, the culture and common language, as well as the clinical conditions of elderly patients, should be considered when designing a scale for measuring the collaboration between the family members of elderly patients and nurses. Besides, given the dearth of data due to the absence of relevant scales, it is necessary to assess the current situation in order to understand how the family members of elderly patients collaborate with nurses in clinical settings in Iran. In order to easily and reliably gather useful information about the collaboration between family members of elderly patients and nurses, it is necessary to develop a native, trustworthy, and reliable scale. Therefore, this study aims to investigate the psychometric evaluation of the FCS.

METHODS

This methodological study was conducted in hospitals affiliated with Golestan University of Medical Sciences in 2022 and 2023. The psychometric evaluation of the FCS consisted of translation, calculation of initial reliability, evaluation of face, content, convergent and construct validity, and assessment of scale reliability. The FCS was developed and published by Lindhardt *et al.* (2018) in Denmark¹². This scale consists of 45 items in 5 subscales: quality of contact with nurses (9 items), trust and its prerequisites (11 items), information level (5

items), influence on decisions (10 items), and Influence on discharge (7 items). The items are scored based on a 6-point Likert scale (1: always, 2: very often, 3: often, 4: sometimes, 5: rarely, and 6: never) and a 4-point Likert scale (1: to a great extent, 2: to some extent, 3: to a lesser extent, and 4: not at all). Accordingly, a score of 1 indicates the highest level of collaboration, and a score of 4-6 indicates the lowest level of collaboration (Table 1).

Table 1: The initial reliability of the Family Collaboration Scale (FCS)

Cronbach's alpha	Number of Item	Subscale
0.84	9	Quality of contact with nurses
0.88	11	Trust and its prerequisites
0.90	5	Information level
0.91	7	Influence on discharge
0.85	10	Influence on decisions
0.89	42	Total

Translation

After permission was obtained from the developer, the FCS was translated and back-translated based on the 2022 4-step guidelines of the World Health Organization (WHO)²⁰. First, the FCS was translated into Persian by two translators fluent in English and familiar with nursing concepts. The research team then made changes to the translated texts to improve semantic clarity while examining any discrepancies and contradictions between the translated texts. Finally, the translation was confirmed by combining the initial translated texts. The target group was interviewed to ensure the intelligibility of items and the absence of ambiguities. The final Persian translation was then back-translated into English by a third translator who was not aware of the translation procedure. The original Persian translation and the back-translation were then sent to the scale designer, who approved the back-translated version. Therefore, the translated version of the scale was used to assess face, content, and construct validity and reliability.

Psychometric evaluation steps

Initial reliability

The internal consistency of the Persian version was assessed through Cronbach's alpha. To this end, the

translated scale was completed by 30 family members of elderly patients admitted to Shahid Sayad Shirazi Teaching-Medical Center. A Cronbach's alpha of 0.7 indicates an acceptable level of internal consistency²¹.

Face validity

Both quantitative and qualitative face validity methods were applied in this study. Ten people—five women and five men—from the families of elderly patients in hospitals (the target group) were interviewed face-to-face as part of the qualitative face validity evaluation. They were questioned about the difficulty, appropriateness, and ambiguity of each item. Once ambiguities were resolved and the suitability of the items was confirmed, quantitative face validity was assessed by determining the item impact score using the formula: Item Impact Score = Frequency (%) × Importance. In this approach, participants rated the items on a 5-point Likert scale: very important (5 points), important (4 points), moderately important (3 points), slightly important (2 points), and not important (1 point). Items with an impact score exceeding 1.5 were deemed appropriate for further analysis²².

Content validity

The content validity of a questionnaire indicates whether the items completely cover the desired characteristic²³. The content validity of the studied scale was measured in qualitative and quantitative methods. Nurses experienced in geriatric care (n=3), geriatric specialists (n=2), geriatric nursing researchers or others with research experience in this field (n=6), and a social medicine specialist (n=1) were asked to rate the content of the scale. Moreover, they were requested to note their comments in terms of scaling, clarity, simplicity, item allocation, and wording. This was done to check the content validity qualitatively. To quantitatively assess content validity, the content validity ratio (CVR) and content validity index (CVI) were computed. For the CVR calculation, experts and professionals evaluated the necessity of each item using a 3-point Likert scale: 3 = necessary, 2 = useful but not necessary, and 1 = not necessary. The Lawshe Table for Minimum Values of CVR was used to calculate the numerical value of CVR. The calculated value was compared to the standard in the table based on the number of experts. If the calculated value is greater than the value in the table, it suggests that the presence of an item with a statistically significant level ($P < 0.05$) is required in the scale. According to the above-mentioned table,

the minimum acceptable value for CVR with 12 experts is 0.56. Waltz and Bausel's CVI is utilized to check whether the items are made in the best possible way to measure the desired constructs²⁴. To this end, the experts in this study examined the "relevance" of each of the items on a 4-point Likert scale (1=not relevant, 2=somewhat relevant but needs basic revision, 3=relevant but needs slight revision, and 4=completely relevant). The modified Kappa coefficient of agreement (K*), the content validity of individual items (I-CVI), and the content validity of the overall scale (S-CVI) were also calculated. Kappa coefficients >0.74, 0.6-0.74, and <0.6 are considered excellent, good, and poor, respectively²⁵.

Convergent validity

When a hidden construct is measured using an observable variable, the correlation between its items can be calculated using convergent validity²⁶. The average variance extracted (AVE) measures the degree of variance that a construct shares with its indicators. A stronger correlation between a construct and its indicators indicates a better model fit. Fornell and Larcker suggest that convergent validity is established when the AVE exceeds 0.5²⁷.

Construct validity

To assess a scale's construct validity, you must first answer the question, "What exactly does this scale measure?" Factor analysis is a common and reliable method for determining construct validity. Factor analysis, comprising exploratory factor analysis (EFA) and confirmatory factor analysis (CFA), is used to identify and analyze the intricate internal relationships among variables²⁸.

Exploratory factor analysis

Although there is no set rule for calculating sample size for construct validity, the ratio of the number of samples to the number of items is recommended to be 5 to 1 or 10 to 1. In this study, since the scale consisted of 42 items and 10 samples were taken for each item, the sample size was determined to be 420. However, considering an attrition rate of 20%, the final sample size was decided to be 500. In order to gather data, the author personally visited the hospitals. In each ward, family caregivers of the hospitalized elderly were invited to participate in the study. If they were willing to do so, they were requested to sign a written informed consent form and were briefed on how to complete

the questionnaire. In addition, the author completed the demographics and clinical forms for each elderly patient. EFA was performed on obtained data in SPSS-16 through the Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity, whereby the factor loadings of the items were specified.

Confirmatory factor analysis

CFA was carried out in AMOS-24, utilizing indices such as χ^2 , df/χ^2 , GFI, and CFI. These fit indices are crucial for evaluating the alignment between the proposed research model and the actual data. Accordingly, calculations were performed for chi-square, p-values, degrees of freedom, the goodness-of-fit index (GFI), the adjusted goodness-of-fit index (AGFI), the normed fit index (NFI), the incremental fit index (IFI), the comparative fit index (CFI), and the root mean square error (RMSE).

Reliability

The reliability of the Persian version of the FCS (FCS-P) was tested using the Intraclass Correlation Coefficient (ICC) and test-retest method. The degree of stability and internal consistency of a scale in repeated and numerous measurements is known as reliability. The reliability of a scale is usually measured through ICC, the McDonald Omega coefficient, and the test-retest method³⁰.

RESULTS

The majority of the 500 participants of this study were female (n=292, 58.4%), had a high school diploma (n=170, 34%), were of Persian ethnicity (n=214, 42.8%), and were housewives (n=185, 37%). In addition, most of the participants were children of the admitted patients (n=223, 44.6%) with a mean age of 41.69 ± 11.83 years; the mean hours of their presence at the bed was 8.59 ± 4.29 per day. On the other hand, the mean age of patients was 69.50 ± 6.90 ; most of them (n=261, 52.2%) were female; 358 of them (71.6%) were admitted to the internal-surgical ward; and their mean length of stay was 4.96 ± 2.81 days.

Cronbach's alpha was verified in the initial reliability assessment with a coefficient of 0.89 (Table 1). Afterwards, 18 items (2-3-5-12-16-17-20-21-23-24-25-26-27-33-36-37-39-40) were revised based on the qualitative face validity assessment. As a result, the qualitative face validity was confirmed. All items obtained an impact factor of 1.5 during the quantitative assessment of face validity; therefore, they were decided

to remain in the scale.

The expert panel's opinions led to the revision of 15 items (4-9-12-16-17-20-28-29-31-32-35-39-40-41-42) based on the qualitative content validity assessment. The CVR calculation results for the quantitative assessment of content validity led to the removal of 5 items (30, 32, 34, 38, 41), bringing the total number of items down to 37. Based on the CVI evaluations, the S-CVI/AVE score was 0.98, while the S-CVI/UA score was 0.89. Furthermore, the kappa coefficient for all items was found to be excellent. To evaluate construct validity, participants were instructed to complete the scale independently. Using a simple random sampling method, 500 samples were collected, with 200 allocated for EFA and 300 for CFA. EFA was conducted using the KMO test and Bartlett's test of sphericity. The KMO test yielded a value of 0.879 (>0.6), confirming the adequacy of the sample size for factor analysis. Additionally, the statistical significance of Bartlett's

test ($p < 0.001$) indicated that factor analysis was appropriate for identifying the factor model's structure.

The results indicated that the FCS explained 55.34% of the total variance (Table 2). The results of CFA on the FCS after a varimax rotation showed that the remaining items of the Persian version of the scale (31 items) were divided into 5 subscales (Figure 1). Accordingly, Item 1: "I had no problem expressing criticism", Item 6: "Nurses had time to talk to me", Item 12: "During the previous hospitalization, I noticed mistakes and inadequate care for my relative (patient)", Item 20: "I had to make sure that my relative (patient) received the care he/she needed", Item 23: "My communication with nurses started through my relative (patient)", and Item 27: "Symptoms of illness caused my relative's admission were totally cured" were eliminated. In addition, Item 14 "I realized that the nurses were busy" was removed.

Table 2: The percentage of variance explained Family Collaboration scale for each factor

Factors	Initial Eigenvalues			Sum Of Squared Factor Loadings Before Varimax Rotation			Sum Of Squared Factor Loadings After Varimax Rotation		
	Percent	Percentage of variance	Cumulative variance percentage	Percent	Percentage of variance	Cumulative variance percentage	Percent	Percentage of variance	Cumulative variance percentage
1	9.21	28.68	28.67	9.21	28.68	28.67	2.54	7.93	7.93
2	3.70	11.75	40.42	3.70	11.75	40.42	3.98	12.40	20.31
3	3.94	6.16	46.69	3.94	6.16	46.69	4.40	13.71	34.03
4	1.65	4.73	51.32	1.65	4.73	51.32	1.79	4.61	38.65
5	1.27	3.98	55.30	1.27	3.98	55.30	5.35	16.69	55.34

from the subscale "trust and its prerequisites" to the subscale "influence on discharge", and Item 26 "I need information/training on how to best help my relative (patient)" was removed from the subscale "influence on discharge" to the subscale "information level" (Table 3).

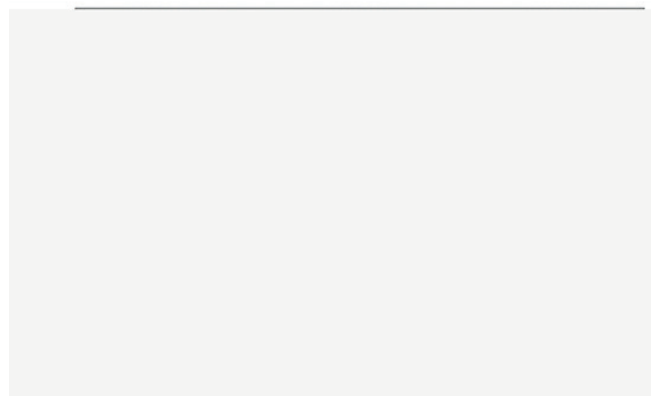
Table 3: Factor loadings after varimax rotation.

Item	Factor 1: Quality of contact with nurses	Factor 2: Trust and its prerequisites	Factor 3: Information level	Factor 4: Influence on discharge	Factor 5: Influence on decisions
1	Delete				
2	0.707				
3	0.625				
4	0.725				



Item	Factor 1: Quality of contact with nurses	Factor 2: Trust and its prerequisites	Factor 3: Information level	Factor 4: Influence on discharge	Factor 5: Influence on decisions
5	0.701				
6	Delete				
7	0.742				
8	0.660				
9	0.621				
10		0.802			
11		0.768			
12		Delete			
13		0.612			
14				0.788	
15		0.722			
16		0.669			
17		0.557			
18		0.580			
19		0.615			
20		Delete			
21			0.855		
22			0.711		
23			Delete		
24			0.636		
25			0.606		
26			0.592		
27				Delete	
28				0.750	
29				0.742	
31				0.653	
33					0.714
35					0.733
36					0.633
37					0.655
39					0.614
40					0.580
42					0.526

Scree Plot

**Figure 1:** Scree plot in exploratory factor analysis.

The CFA results demonstrated that the model's fit indices were consistent with the data from this study (Table 4); as a result, 31 items of the FCS were confirmed, and the Persian version of this scale, named FCS-P, was finalized (Figure 2).

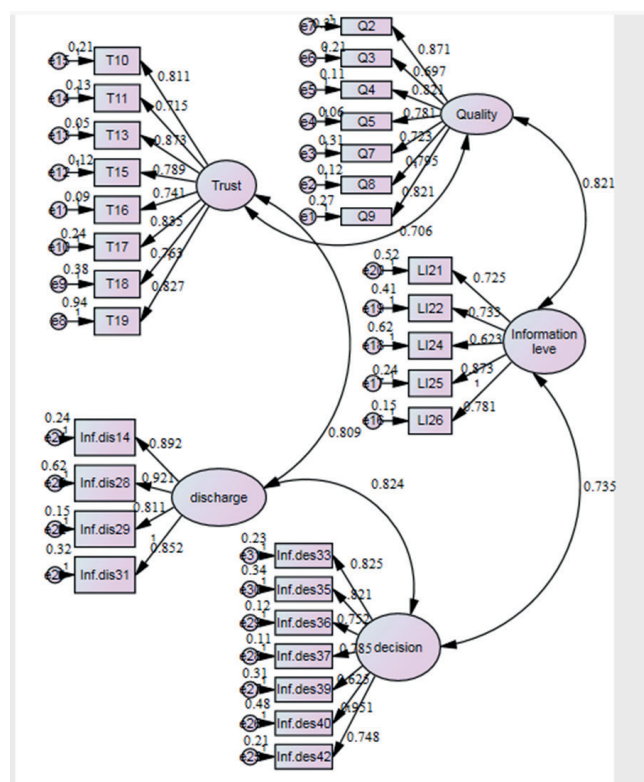


Figure 2: The measurement model for the interpretation of data obtained from integration based on standard factor loadings F1: Quality of contact with nurses, F2: Trust and its prerequisites, F3: Information level, F4: Influence on discharge, F5: Influence on decisions

The scale's convergence validity was confirmed by $CR > 0.7$, $CR > AVE$, and $AVE > 0.5$ (Table 5). Furthermore, the ICC results revealed that Cronbach's alpha coefficient had the desired and acceptable level of data reliability, as the alpha coefficient of the entire FCS-P was equal to 0.87, and the evaluated McDonald's omega values were greater than 0.8. In addition, the scale's ICC was obtained at 0.827 using the test-retest method. All these figures confirmed the reliability of the FCS-P (Table 6).

Table 4: The results of the FCS fit indices model

Reported value	Desired limit	Indices
1284.25	≤ 0.05	χ^2
0.07	≤ 0.05	p-value
450	-	df
2.853	≥ 3	χ^2/df
0.921	≤ 0.9	GFI
0.911	≤ 0.9	AGFI
0.928	≤ 0.9	NFI
0.968	≤ 0.9	IFI
0.942	≤ 0.9	CFI
0.03	≥ 0.05	RMSEA

Table 5 : Convergent validity and divergent validity of FCS –P

Subscales	AVE	MSV	ASV	CR
Quality of contact with nurses	0.612	0.443	0.392	0.711
Trust and its prerequisites	0.689	0.452	0.385	0.825
Information level	0.521	0.391	0.256	0.728
Influence on discharge	0.648	0.532	0.407	0.832
Influence on decisions	0.572	0.328	0.301	0.709
Total	0.584	0.360	0.342	0.766

Table 6: Reliability results of internal consistency and version stability of the FCS-P.

P-Value	Upper Limit	Lower Limit	Intra Class Correlation (ICC)	Cronbach's Alpha	Number Of Item	Subscale
0.00	0.839	0.789	0.821	0.78	7	Quality of contact with nurses
0.00	0.895	0.802	0.879	0.81	8	Trust and its prerequisites
0.00	0.815	0.712	0.811	0.88	5	Information level
0.00	0.889	0.758	0.824	0.79	4	Influence on discharge
0.00	0.834	0.725	0.804	0.86	7	Influence on decisions
0.00	0.867	0.813	0.827	0.87	31	Total

DISCUSSION

This study translated and back-translated the FCS and then assessed the initial reliability, face validity, content validity, convergent validity, construct validity, and reliability of its Persian version (FCS-P). The results showed that the FCS-P can be used in the geriatric and nursing communities of Iran. The scale in this study was translated and back-translated under WHO guidelines. The translation and cultural adaptation process, as well as the step-by-step procedure based on a specific pattern, improve the quality of research results. The correct translation of the instrument increases the instrument's item homogeneity³¹. Some researchers believe that at least four standards are needed to validate and apply scales in research communities, including one type of content validity, one type of construct validity, and two types of reliability³².

In this study, qualitative face validity was assessed by applying the target group's comments and suggestions to 42 items of the scale, with some items being slightly changed. Since the impact score for every item was higher than 1.5, quantitative face validity was deemed to be appropriate. Face validity measures how easy or difficult the scale's items are for the target group to understand³³. The qualitative content validity of the scale was confirmed based on the opinions of the expert panel about 42 items of the studied scale. Given the CRV values, five items were eliminated: "I was influential in decisions about discharge", "I am influential in decisions and post-discharge plans", "I

was satisfied with the influence I had", "My opinions were also taken into account in decision-making", and "I was influential in medical decisions". The content validity assessment examines items in terms of covering all important aspects of the intended concept; the more knowledgeable and experienced the expert panel regarding the subject, the better the assessment results will be²³. As regards the Swedish version of the FCS, the CVR was not calculated, and only the CVI was measured⁸. This seems to be possibly due to cultural and linguistic similarities between the two Scandinavian countries.

According to the EFA findings, the FCS-P in the Iranian research community consisted of five domains, which explained a total of 55.34% of the variance. Hair *et al.* state that the extraction of factors is considered appropriate if the explained variance is greater than 50%³⁴. Based on the CFA results, Item 1: "I had no problem expressing criticism", Item 6: "Nurses had time to talk to me", Item 12: "During the previous hospitalization, I noticed mistakes and inadequate care for my relative (patient)", Item 20: "I had to make sure that my relative (patient) received the care he/she needed", Item 23: "My communication with nurses started through my relative (patient)", and Item 27: "Symptoms of illness causing my relative's admission were totally cured" were excluded from the FCS-P. Finally, 31 items were included in five subscales. However, in the Swedish version of this scale, the CFA results necessitated minor changes to

items⁸. Among the subscales of this scale, “contact with nurses” obtained the highest factor loading, which is similar to the Danish version of this scale. By contrast, the highest factor loading in the Swedish version was related to “influence on decisions”. The similarities and differences in EFA in the psychometric evaluation of different versions of FCS can indicate the influence of cultural, social, and family factors in various research communities. In fact, the factorial structure of the scale can produce different results in various societies and on various types of data depending on the social context, family structure, and clinical environment in which elderly patients are treated and cared for in each country^{8,11}. The CFA results in this study showed that the fit indices of the FCS-P were confirmed with 31 items after conducting EFA to validate the existing structural model. The data obtained from the statistical population were well fitted to the conceptual model derived from EFA. Based on previously acquired information, CFA develops and tests a path of relationships between obvious and hidden variables and makes a definitive and more accurate assessment of hidden factors³⁵. The construct validity and cross-cultural validity of the instrument are supported by the optimal values of the fit indices⁸.

The reliability of a questionnaire indicates the degree to which its items are compatible with one another and the degree to which it yields similar results across repeated measurements³⁶. The Intraclass Correlation Coefficient (ICC), Cronbach’s alpha, and McDonald’s Omega coefficient in this study confirmed the acceptable internal consistency of the total FCS-P and its subscales. Cronbach’s alpha for the Danish and Swedish versions of this scale are equal to 0.96 and 0.93, respectively. Although the internal consistency of the Persian version was also acceptable, lower values compared to other versions can be attributed to differences in clinical conditions, scope of collaborations between caregivers and elderly patients, and nurses’ scope of practice.

CONCLUSION

The findings of the study indicate that the FCS-P is a valid and reliable instrument for assessing the

collaboration between the relatives of elderly patients and nurses in clinical settings in Iran. Methodological research plays a crucial role in developing suitable scales for research communities. Following the translation, back-translation, and psychometric evaluation of the FCS-P was finalized, comprising 31 items across five subscales: quality of contact with nurses, trust and its prerequisites, information level, influence on discharge, and influence on decisions. Consequently, the FCS-P serves as a credible tool for evaluating the extent of collaboration between the relatives of elderly patients and nurses within the Iranian context.

Conflict of interest: The authors report no conflicts of interest

Source of fund: Golestan University of Medical Sciences, Gorgan, Iran

Ethical clearance: The study protocol was approved by the Institutional Ethics Committee (code: IR.GOUMS.REC.1401.304) and informed consent was obtained from all participants.

Acknowledgments

This paper is extracted from a master’s thesis on geriatrics at Golestan University of Medical Sciences, Gorgan, Iran. We would like to express our gratitude to the Deputy of Research and Technology of Golestan University of Medical Sciences for the financial and scientific support of this project and also to the older adults and their families who kindly helped us in this study. Also, the authors would like to give special thanks to Professor Tove Lindhardt Damsgaard who allowed us to perform psychometric evaluation of the scale and guided us.

Authors’ contribution:

Data gathering and idea owner of this study: NA, SK

Study design: NA, NN, AH, LTY, SK

Data gathering: NA, SK

Writing and submitting manuscript: NA, SK

Editing and approval of final draft: NA, NN, AH, LTY, SK

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