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The Patient Safety Culture Scale in Patient Falls: A Scale Development Study

Hasta Düşmelerinde Hasta Güvenliği Kültürü Ölçeği: Bir Ölçek Geliştirme Çalışması

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Abstract

Introduction: Patient safety culture is a very important concept for both patients and employees. It is more important for nurses, who make up the majority among health professions and spend more time with patients during working hours. Although there are many studies within the scope of patient safety in the literature, there is no scale study specific to patient falls for nurses.
Objective: In this study, it was aimed to develop the "Patient Safety Culture Scale in Patient Falls", which is thought to have an important place within the scope of patient safety culture and is not included in the literature specifically for patient falls.
Method: This study is a scale development study, which was designed according to the stages recommended for scale development studies in the literature. The draft scale (45 items) created by the researchers was primarily presented to the expert opinion. 15 items were eliminated in line with expert opinions and a draft scale of 30 items was obtained. Explanatory and confirmatory factor analyses, test-retest method and internal consistency analysis were used as statistical methods. A measurement structure consisting of 4 sub-dimensions and 23 items was obtained as a result of the exploratory factor analysis. The validity of this construct was confirmed by confirmatory factor analysis. The reliability of the scale was examined by test-retest reliabilty and internal consistency analysis.
Results: The stability coefficient of the scale was determined as 0.929 and the Cronbach Alpha internal consistency coefficient as 0.891 after the analysis
Conclusion: The findings obtained from the study show that "The Patient Safety Culture Scale in Patient Falls" is a valid and reliable measurement tool for the nurses in the sample. It is thought that "The Patient Safety Culture Scale in Patient Falls", will contribute to the preventive studies by evaluating the awareness level of the nurses working in the field.

Keywords: Patient Safety Culture, Patient Falls, Scale Study, Nursing Care Practices.

Özet

Giriş: Hasta güvenliği kültürü hem hasta hemde çalışanlar açısından oldukça önemli bir kavramdır. Sağlık meslek grupları arasında büyük bir çoğunluğu oluşturan ve çalışma saatleri içerisinde hastalara daha fazla vakit ayıran hemşireler için ise daha fazla önem taşımaktadır. Literatürde hasta güvenliği kapsamında birçok çalışma olmasına rağmen hemşirelere yönelik hasta düşmeleri özelinde yapılmış bir ölçek çalışması bulunmamaktadır.
Amaç: Bu çalışmada hasta güvenliği kültürü kapsamında önemli bir yere sahip olduğu düşünülen ve hasta düşmelerine özel literatürde yer almayan "Hasta Düşmelerinde Hasta Güvenliği Kültürü Ölçeği"nin geliştirilmesi amaçlandı.
Yöntem: Çalışma, literatürde ölçek geliştirme çalışmaları için önerilen aşamalara göre tasarlanmış bir ölçek geliştirme çalışmasıdır. Araştırmacılar tarafından oluşturulan taslak ölçek (45 madde) öncelikle uzman görüşüne

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sunuldu. Uzman görüşleri doğrultusunda 15 madde elenmiş ve 30 maddelik taslak ölçek elde edildi. İstatistiksel yöntemler olarak açıklayıcı ve doğrulayıcı faktör analizleri, test-tekrar test yöntemi ve iç tutarlılık analizi kullanıldı. Açımlayıcı faktör analizi sonucunda 4 alt boyut ve 23 maddeden oluşan bir ölçüm yapısı elde edildi. Bu yapının geçerliliği doğrulayıcı faktör analizi ile doğrulandı. Ölçeğin güvenirliği test-tekrar test güvenirliği ve iç tutarlılık analizi ile incelendi.

Bulgular: Analiz sonucunda ölçeğin kararlılık katsayısı 0,929 ve Cronbach Alpha iç tutarlılık katsayısı 0,891 olarak belirlendi.

Sonuç: Çalışmadan elde edilen bulgular, "Hasta Düşmelerinde Hasta Güvenliği Kültürü Ölçeği"nin örneklemdeki hemşireler için geçerli ve güvenilir bir ölçme aracı olduğunu göstermektedir. "Hasta Düşmelerinde Hasta Güvenliği Kültürü Ölçeği"nin sahada çalışan hemşirelerin farkındalık düzeylerini değerlendirerek önleyici çalışmalara katkı sağlayacağı düşünülmektedir.

Anahtar Kelimeler: Hasta Güvenliği Kültürü, Hasta Düşmeleri, Ölçek Çalışması, Hemşirelik Bakım Uygulamaları.

INTRODUCTION

Patient falls are undesirable situations that develop in all institutions where health care is provided. Patient falls develop due to both patient-related factors and the inadequacy of the measures taken by institutions within the scope of patient safety. Regardless of the reason, patient falls occur as an important problem that threatens patient safety in all institutions providing health care services. Patient falls, which cause the onset of a difficult and troublesome process from the patient's point of view, are an important and preventable patient safety problem (1-5).

Patient falls take the first place among the situations that threaten patient safety worldwide. Regardless of other health problems, both individuals and their families are greatly affected in terms of quality of life due to complications that develop due to falling; because falls can cause many complications, such as injuries, disabilities, the development of fractures at different levels, an increase in the need for additional treatment, an increase in the length of hospitalization, and death (4,6).Looking at the literature, studies in which patients are given the risk of falls and rates of fall development during the provision of services in medical institutions show that the results are distributed over a wide range. The main reason for this situation is the change in the characteristics of the patient population and clinic. Differences in the definition of falls, keeping records in order, differences in prevention strategies and evaluation methods are also other important factors affecting the results (7,8).

The view and awareness of healthcare professionals about patient safety culture has significant effects on patient falls. Ensuring patient safety during nursing care and practices always has an important place. Nursing is a profession that will greatly contribute to reducing falls if they plan proper care by determining the patient's risk status (7,9).

METHOD

Our study is a scale development study, and it was planned by considering the literature review and all the methodological steps that should be done in a scale development study (10). These stages and their sub-headings are given in Figure 1.

Stage 1: Creating the Draft Scale
- Literature review.
- Creating the item pool.

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Stage 2: Ensuring the Content Validity of the Draft Scale
- Submitting the items in the item pool to the opinion of nurse academicians who are experts

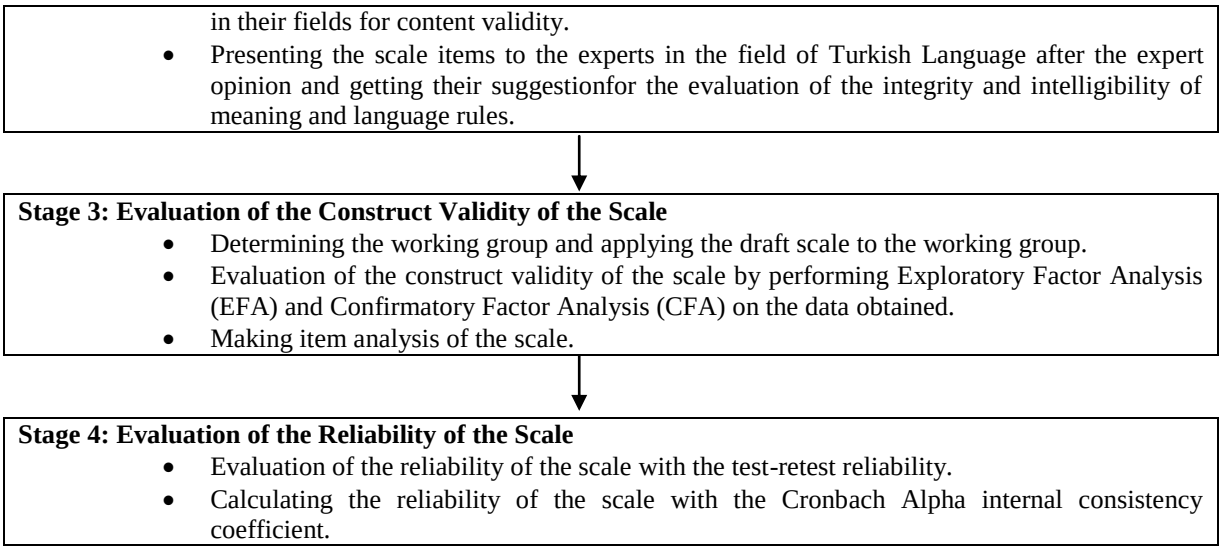

Figure 1. Process of the "Patient Safety Culture Scale in Patient Falls" development

The Structure of the Scale

The "Patient Safety Culture Scale in Patient Falls" that we plan to develop is planned as a 7-point Likert type scale. The items in the scale range from 1 point to 7 points, and the scoring is as follows: "7=strongly agree", "6=agree", "5=somewhat agree", "4=neither agree nor disagree", "3=somewhat disagree", "2=disagree" and "1=strongly disagree". The closer to 7 points, the higher the level of agreement with the statement in the relevant item, and the closer to 1 point, the lower the level of agreement to the statement in the relevant item.

Process of the "Patient Safety Culture Scale in Patient Falls" Development

Stage 1: Creating the Draft Scale

Literature review: The items in the item pool of the draft scale were created by scanning the literature. In this context, a scan was made using the concepts of patient falls, nursing care, and patient safety. Source books and guides for nursing practices have also been examined for this purpose (11-15).

Creating the item pool: After a literature review, the item pool of the draft scale was created by the researchers. There were a total of 45 items in the draft scale created, 43 of which were positive and 2 of which were negative.

Stage 2: Ensuring the Content Validity of the Draft Scale

Submitting the items in the item pool to the opinion of nurse academicians who are experts in their fields for content validity: Content validity defines the adequacy of the items in the scale that is planned to be developed for the power to cover the situation intended to be measured. According to this definition, the items included in the scale should have the property of measuring, and the full detail of the quantity planned to be measured should be questioned by the items on the scale. In other words, the developed measurement tool has content validity at the level that it measures the conceptual infrastructure of the quantity intended to be measured in all aspects (10). The items of the first draft scale were submitted to the opinion of 11 academicians who are experts in the field of nursing in order to evaluate them in terms of content validity. The experts whose opinions were obtained have doctoral degrees in different fields of nursing and are working as academicians. The draft scale was sent to the e-mails of the experts and evaluations were made, and the evaluations returned by e-mail were accepted.

A Content Validity Index (CVI) analysis was performed for the items that were notified that they should not be in the item pool according to the experts' opinions. Depending on the results of the analysis, 15 items were removed from the scale and a new draft scale consisting of 30 items was obtained.

*Presenting the scale items to the experts in the field of Turkish Language and getting their suggestionfor the evaluation of the integrity and intelligibility of meaning and language rules:*The opinions of two academicians specializing in the field of Turkish Language were taken in order to evaluate the conformity and intelligibility of the new draft scale to the spelling rules of the articles. The statements were rearranged according to the suggestions presented and the final version of the draft scale was developed.

Stage 3: Evaluation of the Construct Validity of the Scale

Determining the working group and applying the draft scale to the working group: The study group of the research consisted of 550 nurses working in a Education and Research Hospital in Turkey. Simple random sampling method was used to determine the study group. The nurses included in the sample were informed about the purpose of the study and the nurses who agreed to participate in the study on a voluntary basis and filled out the scale items were allowed to participate in the study. The study data were collected by online surveys. The questionnaires were sent to the nurses online and the nurses were asked to fill in the questionnaires. At this stage, the questionnaires that were determined to be filled carelessly were not included in the evaluation. The data of 316 nurses for Exploratory Factor Analysis (EFA) and 255 nurses for CFA were included in the final evaluation. The data of 50 nurses were evaluated and the reliability of the scale was evaluated in the test-retest reliabilty, which was performed in the last stage. Data of 210 nurses were used for item analysis and calculation of Cronbach Alpha coefficient.

Ethical Dimension of the Study

For this study ethics committee approval was obtained from Adıyaman University Social and Human Sciences Ethics Committee. (Date: 29.07.2021, Issue: 124) and institution permission was obtained from the Ministry of Health Scientific Research Platform (Date: 25.06.2021, Form No: 2021-06-24_T12_27_01) Each participant was informed about the study and the questionnaires were sent online to the participants who agreed to participate in the study.

RESULTS

Stage 3: Evaluation of the Construct Validity of the Scale

Findings on Construct Validity

Factor analysis is a frequently used method in order to determine the measurement structure of the relevant scale in scale development studies. The general factor of the scale planned for development, information on the number of sub-dimensions and sub-dimensions are obtained by factor analysis. The basic structure of the scale is created by naming the sub-dimensions obtained after the analysis. It was aimed to determine the measurement structure of the scale with the data of 316 nurses and exploratory factor analysis (EFA) was performed on the data obtained at this stage of our study. The most important criterion is that the sample size is sufficient for the application of EFA. Kaiser-Meyer-Olkin (KMO) test statistics were used to determine the adequacy of the sample size. In the literature, a KMO value of 0.90 is accepted as perfect. If the KMO value is around 0.80, it is defined as very good. A KMO value between 0.70 and 0.60 is defined as fair, while below 0.50 is reported to be unacceptable (16).

According to the draft scale developed in our study, the KMO statistic was calculated as 0.874 in the data. This value shows that the sample size is very good and sufficient for our study (Table 1).

Another important test for the implementation of EFA is the Bartlett sphericity test. The Bartlett sphericity test is used to decode whether there are significant relationships between variables. The high correlation relationship between the variables is important for factor analysis (17). The Bartlett test statistic is expected to be high and significant in order to ensure the assumption of sphericity (16). It was determined in the draft scale that we developed in our study that there is both a high and significant relationship between the variables and the assumption of sphericity is provided ($\chi 2$=6155,481; p<0,001).

EFA was applied to 30 items in the scale by basic components analysis and varimax rotation methods. to determine the factor structure of the scale we plan to develop. After this analysis, 7 overlapping items that did not fit into any factor were removed from the draft scale. EFA was reapplied to the remaining 23 items (Table 1).

Table 1. Results of EFA

Sub dimensions	Items	Factor Load Value	Eigenvalue	Variance (%)	Cumulative Variance (%)
Factor 1	Item 1	0.693	10.589	35.298	35.298
	Item 2	0.843			
	Item 4	0.852			
	Item 5	0.751			
	Item 6	0.844			
	Item 7	0.601			
	Item 10	0.836			
	Item 11	0.728			
	Item 12	0.841			
Factor 2	Item 18	0.708	3.072	10.240	45.538
	Item 19	0.537			
	Item 20	0.668			
	Item 21	0.716			
	Item 23	0.672			
Factor 3	Item 27	0.715	1.838	6.128	51.666
	Item 28	0.807			
	Item 29	0.702			
	Item 30	0.774			
Factor 4	Item 13	0.752	1.606	5.354	57.020
	Item 14	0.587			
	Item 16	0.565			
	Item 17	0.782			
	Item 26	0.635			

The coefficient of self-worth is an important value used to determine the number of factors, and the fact that it is equal to 1 or greater than 1 indicates the appropriateness of the factors. In the literature, this criterion is known as the Kaiser criterion (10). According to the EFA result, 4 sub-dimensions with an eigenvalue greater than 1 were obtained in our study. An important criterion both in determining the number of sub-dimensions and in ensuring the validity of the structure is the total described variance. According to the results of the EFA conducted in our study, the total variance of the 4-factor draft scale structure was found to be 57.020%. The variance rates explained by each factor were found to be 35.298% for Factor 1, 45.538% for Factor 2, 51.666% for Factor 3 and 57.020 for Factor 4 (Table 1).

It is reported in the literature that the factor load values of 0.45 and above are a sufficient criterion for item selection (18). In our study, it was determined that the factor loads of the

items were in the range of 0.537-0.852. In line with this finding, it can be stated that the factor loading levels of the items in the 4-factor model are high and sufficient.

CFA was performed using the AMOS 23 program to examine the validity of the measurement construct. Data from an independent sample of 210 nurses were used for CFA. Fit indices such as χ2/sd, GFI, CFI, TLI, IFI, RMSEA are used to evaluate whether the measurement model prepared after CFA practice is compatible with the data in the literature (19). The reference intervals of the relevant fit indices are classified in Table 2 as good fit and acceptable fit(20) and the values we obtained in our study are seen together in the same table.

Table 2. References and Scale Values of the Fit Indices

Fit Indices	Good Fit	Acceptable Fit	Scale Values
χ2/sd	≤ 3	≤ 5	2.767
GFI	≥ 0,90	≥ 0,85	0.897
IFI	≥ 0,95	≥ 0,90	0.936
TLI	≥ 0,95	≥ 0,90	0.913
CFI	≥ 0,97	≥ 0,95	0.973
RMSEA	≤ 0,05	≤ 0,08	0.683

GFI; goodness of fit index; IFI; incremental fit index; TLI; tucker-lewis index; CFI; comparative fit index; RMSEA; root mean square error of approxi-mation.

When the fit indices of the scale were examined, it was accepted that χ2/sd and CFI values showed good fit. For the IFI, TLI, GFI and RMSEA values, it was determined that these values showed an acceptable fit, and the validity of the 4 sub-dimensional measurementstructure was verified on an independent sample. The regression coefficient refers to the factor load of the items and it should be significant in the CFA (19). The standard factor load value above 0.40 in CFA is important for construct validity (21). The regression coefficients obtained with CFA are shown in Table 3.

Table 3. Standard Regression Coefficients of Items as a Result of CFA

Items	Factor 1	Factor 2	Factor 3	Factor 4
1. It is important to evaluate the risk of falling patients regularly with objective assessment tools.	0.731			
2. I attach importance to taking the necessary measures to prevent patients from falling.	0.726			
4. I know the importance of protective-preventive practices for the prevention of falls.	0.873			
5. I know the risky areas for patient falls in the hospital environment.	0.766			
6. I am aware of the factors that increase the risk of falls in patients.	0.728			
7. I provide training for all patients and their relatives to prevent falls.	0.629			
10. I take care that the borders of the patient beds are removed.	0.711			
11. I take care that the brakes of the patient beds are locked.	0.776			
12. I plan the practices to prevent falls during the transfer of patients from bed to stretcher and from stretcher to bed.	0.720			
18. The consequences of falls negatively affect the lives of patients and their relatives.		0.708		
19. Patient falls increase the cost of care.		0.737		
20. Providing education to patients and relatives is effective in preventing falls.		0.868		
21. I am aware that employee attitudes are important in preventing patient falls.		0.716		
23. Whether there is a risk of falling or not, a call ring device should be available to every patient.		0.772		
27. I report equipment malfunctions and deficiencies that may cause patients to fall.			0.715	
28. I ensure regular control of medical devices that may cause patients to fall.			0.807	
29. I take care not to keep unnecessary items in the patient's room that may cause tripping and falling in order to prevent patients from			0.702	

falling.				
30. When the transfer of patients to another department is planned, I convey the information about the risk of falling of the patient to the responsible nurse of the other department.			0.774	
13. I attend in-service trainings aimed at preventing patient falls.				0.752
14. It is the nurse's responsibility to assess the risk of patients falling.				0.787
16. I make sure that patients are not left alone in places with wet floors, such as bathrooms and toilets, in case they fall.				0.765
17. I ensure that my teammates participate in in-service trainings aimed at preventing patients from falling.				0.822
26. I know the right time when patients' fall risk should be re-evaluated.				0.635
AVE	0.552	0.581	0.563	0.569

CFA: Confirmatory Factor Analysis; AVE: Average Variance Extracted.

It is seen in Table 3 that the factor loads are greater than 0.40. This indicates that the developed scale is at an acceptable level in terms of construct validity. Another important indicator in terms of construct validity is AVE values. The AVE value provides information about whether the Items collected under the factor are in harmony. If this value is greater than 0.5, the factor has a compliance validity. If this value is less than 0.5, it refers to the measurement error, which means there is no compliance validity (22). It was found that the AVE value was greater than 0.5 in all factors (Table 3) in our study. In accordance with these findings, it can be stated that it has structural validity for the scale we are developing.

Findings Regarding Item Analysis

It was determined that the scale had Construct validity and item analysis was made with the data collected from 210 nurses. For this purpose, item analysis based on item total score correlation and item analysis based on lower and upper groups were made.

Item Analysis Based on Item-Total Point Correlation

Using the item analysis evaluation based on the item-total score correlation, it is evaluated whether there is a correlation between the scores of each item in a scale and the total score obtained from the scale. Then a decision is taken on which items should be removed from the scale (23). Items with a coefficient value lower than 0.20 are removed from the scale, while items higher than 0.30 remain on the scale because they are similar to the overall scale. Items with a coefficient of 0.20-0.30 are evaluated according to their status on the scale and it is decided whether they will remain or not (18).

As a result of the analysis, it was determined that the item total correlation coefficient was greater than 0.30 in all 23 items. It was determined that the relevant items moved in the same direction as the entire scale, and at this stage, no items were removed from the scale (Table 4).

Table 4. Total Point Correlation of Items

Item	Total Point Correlation of Items	Item	Total Point Correlation of Items
Item 1	0.566	Item 17	0.522
Item 2	0.612	Item 18	0.491
Item 4	0.487	Item 19	0.422
Item 5	0.459	Item 20	0.518
Item 6	0.542	Item 21	0.631
Item 7	0.623	Item 23	0.643
Item 10	0.391	Item 26	0.388
Item 11	0.511	Item 27	0.586
Item 12	0.532	Item 28	0.513
Item 13	0.518	Item 29	0.453
Item 14	0.583	Item 30	0.571
Item 16	0.601		

Item Analysis Based on Lower and Upper Groups

It is recommended to conduct item analysis based on the lower and upper groups in order to select items that have the ability to distinguish between likert-type scale development studies in the literature (24). In order to examine the distinguishing capacities of the 23 items included in the scale in this diagram, the total scores of the scale obtained with the participation of 210 nurses were sorted from largest to smallest. The total score averages of the participants were t-tested for independent samples for the data of 57 nurses in the lower and upper groups of 27% (Table 5). In addition, a comparison was made for the entire scale and for each item separately (Table 6). It was found that the difference was statistically significant when the mean scores of the lower and upper groups were compared ($p<0.05$). When the average scores between the upper and lower groups of the 23 items in the scale were compared, it was determined that there was a significant difference ($p<0.05$). The findings show that all 23 items in the scale are distinctive and should remain in the scale.

Table 5. Comparison of the Lower and Upper Group Averages of the Scale

Groups	N	x̄	SD	t	p
Upper	57	71.63	8.45	19.558	0.001
Lower	57	145.36	2.34		

*p<0.01

Table 6. Comparison of the Means for Item Discrimination

Item	Group	N	x̄	SS	t	p	Item	Group	N	x̄	SS	t	p
Item 1	Upper	57	6.75	0.71	11.521	0.000	**Item 13**	Upper	57	6.43	1.42	4.573	0.001
	Lower	57	3.23	0.58				Lower	57	3.24	1.53		
Item 2	Upper	57	6.62	1.02	9.610	0.000	**Item 14**	Upper	57	6.17	1.27	22.17	0.000
	Lower	57	2.96	0.78				Lower	57	2.03	1.45		
Item 3	Upper	57	6.18	0.55	7.662	0.001	**Item 15**	Upper	57	6.73	0.21	3.881	0.000
	Lower	57	3.01	0.82				Lower	57	3.12	1.11		
Item 4	Upper	57	5.97	1.12	10.592	0.000	**Item 16**	Upper	57	5.59	1.03	7.412	0.000
	Lower	57	3.08	0.85				Lower	57	2.08	0.42		
Item 5	Upper	57	6.45	0.73	13.411	0.000	**Item 17**	Upper	57	6.78	0.84	5.457	0.000
	Lower	57	2.93	0.47				Lower	57	3.13	1.13		
Item 6	Upper	57	5.88	0.51	10.084	0.000	**Item 18**	Upper	57	5.84	0.43	6.236	0.000
	Lower	57	3.08	0.63				Lower	57	3.78	1.16		
Item 7	Upper	57	6.06	0.29	12.281	0.000	**Item 19**	Upper	57	6.41	0.12	14.213	0.001
	Lower	57	4.23	0.89				Lower	57	3.17	0.41		
Item 8	Upper	57	5.78	0.84	8.082	0.000	**Item 20**	Upper	57	6.78	1.22	3.775	0.000
	Lower	57	3.27	1.12				Lower	57	2.84	0.41		
Item 9	Upper	57	4.89	0.75	6.123	0.001	**Item 21**	Upper	57	5.87	0.49	5.121	0.000
	Lower	57	2.45	0.53				Lower	57	3.41	0.75		
Item10	Upper	57	5.51	1.42	15.174	0.000	**Item 22**	Upper	57	6.11	1.14	6.421	0.000
	Lower	57	3.07	0.43				Lower	57	2.81	0.91		
Item 11	Upper	57	4.24	1.53	13.112	0.000	**Item 23**	Upper	57	5.78	2.01	4.374	0.001
	Lower	57	2.86	2.12				Lower	57	2.64	1.22		
Item 12	Upper	57	6.81	0.72	11.964	0.000							
	Lower	57	2.87	1.84									

*p<0.01

Stage 4: Evaluation of the reliability of the scale

Findings Regarding the Reliability of the Scale

Test-Retest Reliability of the Scale: It is recommended to apply the draft scale at least twice with an interval of fifteen days for test-retest reliabilty in scale development studies. The fact that the scores obtained from the scale are similar between the results of these two

applications indicates the similarity of the two results.Stability is a well-known reliability criterion in measurement tools that include measuring characteristics whose continuity is like attitudes, the ability to change is limited, and which are not easily changed in their target (16).

The stability of the scale we developed in our study was evaluated using the test-retest reliabilty on data collected from 50 nurses. The scale was applied with an interval of 20 days and the difference between the first and second application scores of the total and sub-dimensions was evaluated with the dependent group's t-test. Afterwards, the Pearson correlation coefficients between the two applications were calculated. The stability coefficients of the total and sub-dimensions of the scale are shown in Table 7.

Table 7. Test-re-Test Application Results

	Application	N	$\bar{x}$	SS	t	p	r	p
Interest	1.	50	47.21	3.85	0.769	0.352	0.923	0.000
	2.	50	47.83	4.09				
Information	1.	50	26.84	13.25	0.531	0.285	0.926	0.000
	2.	50	26.55	13.41				
Attention	1.	50	18.73	7.85	0.402	0.212	0.952	0.000
	2.	50	18.57	7.51				
Awareness	1.	50	29.52	14.37	0.543	0.292	0.937	0.000
	2.	50	29.39	14.75				
Total	1.	50	142.86	8.96	1.385	0.523	0.929	0.000
	2.	50	143.12	8.63				

*p<0.01

Considering the total and sub-dimensions of the scale, no significant difference was found between the results of the 1st and 2nd application (p>0.05). Finding similar results after the applications shows the reliability of the scale. However, it was determined that the test retest stability coefficients of the total and sub-dimensions of the scale were quite high and significant (p<0.01).

Internal Consistency Analysis

In Likert type scale development studies, there should be a relationship between the feature that is aimed to be measured and the items in the scale. Each item on the scale should measure similar attitude (16). The Cronbach α coefficient is used to check this hypothesis and to determine the reliability level. If the Cronbach α coefficient is greater than 0.70, the scale is considered reliable (10) and it is also stated that the higher this coefficient, the more consistent the items in the scale are (23).

The data of 210 nurses and the total scale and Cronbach's α coefficients for each sub-dimension were calculated in the item analysis phase of the internal consistency reliability of the scale we developed within the scope of our study. The relevant values are shown in Table 8 and each Cronbach α coefficient is greater than 0.70.

Table 8. Cronbach α coefficients of the total and sub-dimensions of the scale

	Number of Items	Cronbach α
Interest	9	0.851
Information	5	0.812
Attention	4	0.826
Awareness	5	0.752
Total	23	0.891

DISCUSSION

Our study aims to develop a scale that will measure nurses' awareness of their own practices regarding patient safety culture for patient falls, and to establish the validity and reliability of

this scale. In this context, the 45 item item pool created by the researchers was primarily evaluated with expert opinions and necessary analyzes. 15 of these substances were eliminated. Then, the draft scale consisting of 30 items was finalized by taking expert opinion in terms of language and meaning.

EFA was applied to determine the factor structure of the developed draft scale, and the items that could not be placed on any factor and were overlapping were removed from the scale. The scale structure consisting of 4 sub-dimensions and 23 items was obtained at this stage and it was determined that this scale explained 57.020% of the total variance. It has been reported that the limits of total variance should be between 40% and 60% in the literature (19).

It is reported in the literature that it is sufficient to have factor loads of Items obtained as a result of EFA above 0.45 (18). The factor loads of the scale that we developed changed between 0.537-0.852 within the scope of our study. In this direction, it can be stated that the factor load values are high and sufficient. The CFA was performed with an independent sample after this procedure. As a result of the CFA, it was determined that the scale model consisting of 4 sub-dimensions and 23 Items was compatible and the scale structure created with the EFA was valid on another sample. Factor loadings of all items were found to be high and significant after CFA. In addition, it was observed that the AVE values of the factors were higher than 0.50. These findings show that the scale has construct validity (10).

Item analysis was performed within the scope of Item-total correlation to Items belonging to “The Patient Safety Culture Scale in Patient Falls". It is requested in the literature that the correlation coefficient be greater than 0.30. It was found that the correlation coefficients of all the items in our study were higher than the lower limit (18). It has been determined that the whole scale and all of the Items have distinctive features as a result of the item analysis based on the lower and upper groups, which is a different item analysis.

The stability of the scale was determined by applying the scale developed in our study to the same sample twice in twenty days. It was determined at this stage that the scores for both the total scale and its sub-dimensions were similar and the stability coefficients were greater than 0.70. It can be stated that the measurement results of the scale developed in line with these findings are invariant, stable and reliable. The Cronbach α coefficients of the whole scale and its sub-dimensions were calculated to evaluate the internal consistency of the scale. Cronbach's α coefficients were found to be greater than 0.70 in the entire scale and its sub-dimensions.

The absence of a scale specific to patient falls in the literature, which is an important issue within the scope of patient safety, is the starting point of our research. The fact that it is aimed at an original area within patient safety increases the originality of the research. It is thought that the scale, which is planned to be developed, will contribute to the preventive studies by evaluating the awareness level of the nurses working in the field.

When the literature is examined, it has been seen that studies on falls are mostly studies on determining the risk of falling in patients, factors related to falling risk and preventing falls such as training methods, programs and tools, hospital systems development, policy and procedure development (7,25,26). Scale studies on patient safety are also included in this context. However, the section on falls covers a certain part of the scale. In other words, there are scales focused on patient safety as a broad concept (27,28). The scales related to patient falls are planned as fall risk determination scales. The scale we have developed in our study differs due to the way it is planned to contribute to the measurement of a specific area within the concept of patient safety from the point of view of nurses.

Another important point in the prevention of falls is related to the importance and value given to this issue. As the first and most important stage of prevention of patient falls, both individual and institutional culture should be formed. Establishing a safety culture is the first step of starting research and development studies, planning of other applications and developing an attitude for prevent the patient falls. Therefore, in this study, it is aimed to develop a scale that enables the definition of culture.

CONCLUSION

In accordance with the data and findings obtained from the study, it can be stated that "The Patient Safety Culture Scale in Patient Falls", is a valid and reliable measurement tool for patient falls on the relevant sample. The final version of the scale consists of 4 sub-dimensions and 23 items. All of the items in the scale are positive. Cronbach's alpha values for the sub-dimensions (Interest, Knowledge, Attention, Awareness) were determined as 0.851, 0.812, 0.826, 0.752, and 0.891 for the total scale, respectively.
It is thought that this scale will contribute to the preventive studies by evaluating the awareness level of the nurses working in the field. It is recommended to use this scale in other studies to be designed in the future, to demonstrate validity and reliability on the sample in related studies, to define individual and institutional culture for the prevention of falls, and to plan remedial development activities.

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