

Araştırma Makalesi / Research Article

**Aralıklı Kateterizasyon Uyum Ölçeği ve Aralıklı Kateterizasyon Zorluk Anketinin Türkçe Geçerlilik ve Güvenilirlik Çalışması**Senem DUMAN^{1*} | Tülay BAŞAK²**Reliability and Validity Studies of Turkish Versions of Intermittent Catheterization Adherence Scale and Intermittent Catheterization Difficulty Questionnaire****ÖZET**

Bu çalışmanın amacı "Aralıklı Kateterizasyon Uyum Ölçeği" ve "Aralıklı Kateterizasyon Zorluk Anketi"nin kültürlerarası Türkçe uyarlamasını yapmak, geçerlik ve güvenilirliklerini incelemektir. Bu çalışma 105 hasta ile yürütülen metodolojik bir çalışmadır. Veriler "Tanımlayıcı Özellikler Formu", "Aralıklı Kateterizasyon Uyum Ölçeği" ve "Aralıklı Kateterizasyon Zorluk Anketi" kullanılarak toplanmıştır. Omurilik yaralanması olan hastalar bu ölçekleri içeren bir anket formunu doldurmuşlardır. Her iki ölçeğin kapsam geçerlilik indeksi 0.80 ile 1 arasında değişmektedir. Aralıklı Kateterizasyon Uyum Ölçeği'nin Cronbach alfa değeri 0.73 (tekrar test, 0.93) ve Aralıklı Kateterizasyon Zorluk Anketi'nin Cronbach alfa değeri sıklık alt ölçeği için 0.82 (tekrar test, 0.92) ve yoğunluk alt ölçeği için 0.80 (tekrar test, 0.91) olarak bulunmuştur. Aralıklı Kateterizasyon Uyum Ölçeği'nin Türkçe versiyonunun orijinal yapısında olduğu gibi tek boyuttan oluştuğu belirlenmiştir. Aralıklı Kateterizasyon Uyum Ölçeği'nin DFA modelinde RMSEA değeri 0.08; SRMR değeri 0.09; χ^2/df değeri 1.60; CFI değeri 0.98; TLI değeri 0.96 olarak bulunmuştur. "Aralıklı Kateterizasyon Uyum Ölçeği" ve "Aralıklı Kateterizasyon Zorluk Anketi"nin kültürel olarak Türkçe'ye uyarlanmıştır ve daha sonraki çalışmalarda kullanılmak üzere geçerli ve güvenilir görünmektedir.

Anahtar kelimeler: Aralıklı Kateterizasyon, Geçerlilik, Güvenilirlik, Hasta Uyum


ABSTRACT

This study aimed to perform the transcultural adaptation of the "Intermittent Catheterization Adherence Scale" and the "Intermittent Catheterization Difficulty Questionnaire" to Turkish language and analyze their validity and reliability. This is a methodological study conducted with 105 patients. The data were collected using a "Descriptive Characteristics Form", the "Intermittent Catheterization Adherence Scale", and the "Intermittent Catheterization Difficulty Questionnaire". The patients with chronic spinal cord injury who completed a survey form that included these scales. The content validity index of both scales was between 0.80 and 1. The Cronbach's alpha of the Intermittent Catheterization Adherence Scale was 0.73 (re-test, 0.93), and the Cronbach's alpha of the Intermittent Catheterization Difficulty Questionnaire was 0.82 (re-test, 0.92) for the frequency subscale and 0.80 (re-test, 0.91) for the intensity subscale. It was determined that the Turkish version of the Intermittent Catheterization Adherence Scale consisted of one dimension, as in its original structure. In the CFA model of the Intermittent Catheterization Adherence Scale, RMSEA value was 0.08; SRMR value was 0.09; χ^2/df value was 1.60; CFI value was 0.98; TLI value was 0.96. The Turkish versions of the "Intermittent Catheterization Adherence Scale" and the "Intermittent Catheterization Difficulty Questionnaire" were successfully culturally adapted to the Turkish language and seemed valid and reliable to be used in further studies.

Keywords: Intermittent Urethral Catheterization, Patient Adherence, Reliability, Validity

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INTRODUCTION

Self-catheterization (SC) is emptying the bladder with a catheter inserted into the bladder through the urethra in patients who cannot empty their bladder. Patients with spinal cord injury generally use this method lifelong; 40-90% of patients with advanced multiple sclerosis, 15% of patients who have had a stroke, 37-72% of patients newly diagnosed with Parkinson's disease, and 61% of patients newly diagnosed with spina bifida use the method (Dorsher & McIntosh, 2012; Le Danseur et al., 2018). Although SC is the most reliable method for bladder emptying in patients with neurogenic bladder during rehabilitation, complications may develop in long-term use (Kelly et al., 2014, Ozcelik & Buyukgonenc, 2024).

Providing adequate patient training, ensuring patient adherence, and providing psychosocial support during rehabilitation reduce the risk of SC-related complications (Seth et al., 2014; Newman & Willson, 2011; Bardsley 2015; Cameron et al., 2010). Many studies reported that SC patient training is an important factor that provides comfort in daily life and facilitates adherence to SC (Bardsley 2015; Engberg et al., 2020; Girotti et al., 2011; Motavasseli et al., 2018). However, factors such as catheter complications, catheter type, and duration of catheter use in SC users negatively affect adherence to the procedure (Kelly et al., 2014; Bardsley 2015; Engberg et al., 2020; Girotti et al., 2011; Batista-Miranda et al., 2014). In the study conducted by Girotti et al. (2011), it was reported that the adherence rate of patients performing SC 6 months after the first treatment was 61.7%, but after 12 months decreased to 58%. According to Batista-Miranda et al. (2014) at 24 months 52,7% of the patients complied with the procedure. Cobussen Boekhorst et al. (2016) reported that 86% of the patients performing SC had adherence at the 12th month.

Using standard measurement tools allows the existing problems to be determined objectively. Notably, the objective evaluation of the problems encountered in the health and the presentation of problem-specific solutions directly affect the quality of health services provided to patients (Bull et al., 2019). There are a

limited number of standardized measurement tools for patients undergoing SC in the Turkish population. The Self-confidence Scale for Clean Urinary Intermittent Self-Catheterization and The Intermittent Self-Catheterization Questionnaire, scales were translated into Turkish (Çulha & Acaroğlu). The Intermittent Self-Catheterization Questionnaire an instrument used to evaluate the quality of life of individuals performing SC already translated to Turkish language Yeşil et al. (2020), was used as a criterion to analyze the criterion validity of The IC- Adherence Scale. Evaluation of the complications that develop in patients performing SC and adherence of patients to the procedure is very important for the success of the SC method. However, no scale to evaluate the difficulties and adherence in these patients is available for the Turkish language. The IC- Adherence Scale, developed by Amandine Guinet-Lacoste et al. (2018), evaluates patients' adherence to the procedure. This scale is based on patients' self-reports. It was also adapted into Italian by Giovanni et al. (2021). The "IC- Difficulty Questionnaire" developed by Amandine Guinet-Lacoste et al. (2016) measures the frequency and intensity of difficulties related to SC application. This scale is filled with patients' self-reports. Dutch and Arabic adaptations of the scale were made (Ghroubi et al., 2020; Hervé et al., 2019). In particular, it is important for patients performing SC to report their adaptation to the procedure and the difficulties they experience while performing the procedure, using standard measurement tools to create a common language. It is thought that the use of Turkish versions of the scales will contribute to determining the current difficulties experienced by patients performing SC and their adherence to the procedure. The present study aimed to translate, adapt, and investigate the validity and reliability of the IC- Adherence Scale' and 'IC- Difficulty Questionnaire' in the Turkish language.

METHODS

Study design

This methodological study was conducted to perform the translation of the IC-Adherence Scale and IC-

Difficulty Questionnaire to Turkish language and verify their validity and reliability. The study was conducted in a physical therapy and rehabilitation hospital in Ankara between December 2020 and May 2021.

Instruments

1. Descriptive Characteristics Form: The form contains 11 questions regarding age, education level, medical diagnosis, duration of IC, frequency of IC, type of catheter used, daily fluid intake, problems experienced during IC, whether they received training before IC, and hospital admission for IC checkups. These questions were developed by the researcher based on the literature (Seth et al., 2014; Newman & Willson, 2011; Bardsley 2015; Cameron et al., 2010; Guinet-Lacoste et al, 2016& 2018; Hervé et al., 2019; Ghroubi et al., 2020).

2. IC- Adherence Scale: The scale was developed by Amandine Guinet-Lacoste et al. in 2018 and consisted of 8 questions. The first seven questions are answered yes=1 and no=0 (fifth question with reverse scoring). The eighth question has a 5-point Likert-type range and is scored as 0=never, 0.25=sometimes, 0.50=often, 0.75=, and 1=always. The Cronbach's alpha of the scale is 0.73. The total score obtainable from the scale is 8. According to the score results, patient adherence is classified into three ranges: Strong adherence=0, average adherence=1-2, and low adherence=3-8. The scale was developed in French, and the language compatibility of the English version was provided by Guinet-Lacoste et al. 2018. The scale has been adapted to Italian (Galeoto et al., 2022).

3. IC-Difficulty Questionnaire: The scale was developed by Amandine Guinet-Lacoste et al. (2016) and consists of 13 questions that measure both the frequency and the intensity of difficulties related to SC application. The questionnaire measures the frequency and intensity of difficulties related to SC application. The Cronbach's alpha of the scale is 0.94. The questionnaire has a 4-point Likert-type scoring. The frequency subscale is scored as 0=never, 1=sometimes, 2=often, 3=always, and the intensity subscale is scored as 0=not at all, 1=a little, 2=moderate, 3=a lot. The scale was

developed in French by the author (Guinet-Lacoste et al., 2018). Dutch and Arabic adaptations of the scale were made (Ghroubi et al., 2020; Hervé et al., 2019).

4. Intermittent Self-Catheterization Questionnaire: The scale was developed by Pinder et al. in 2012, and the Turkish validity and reliability study of the scale was conducted by Yeşil et al. in 2020. The questionnaire measures the quality of life of patients performing SC and consists of 24 questions and 4 subscales: Ease of use (eight questions), convenience (four questions), discreteness (six questions), and psychological well-being (six questions). Each item is rated on a 5-point Likert-type scale between 0=strongly disagree, and 4=strongly agree. A high score on the scale indicates a higher quality of life. The Cronbach's alpha is 0.94 in the original study (Pinder et al., 2012). This scale was used in the criterion validity analysis with the adapted IC- Adherence Scale.

Ethical considerations

In order to adapt the scales to Turkish, permission was taken from the authors of the scales via e-mail. Ethics committee approval was obtained prior to the study. The study was conducted after obtaining the Gulhane Ethics Committee's approval (decision no: 30 th November 2020/19) in accordance with the Helsinki Declaration. Moreover, the patients who underwent SC were informed about the study's purpose, the research's benefits, and the time they would spend for the interview. The data were collected after their verbal and written consent was taken.

Procedures

The study was conducted in two steps:

- (a) translation and cross-cultural adaptation,
- (b) the validity and the test-retest reliability

a) Translation and Cross-Cultural Adaptation

The cross-cultural adaptation of both scales was carried out according to the steps in Figure 1, in line

with WHO recommendations (World Health Organization, 2017).

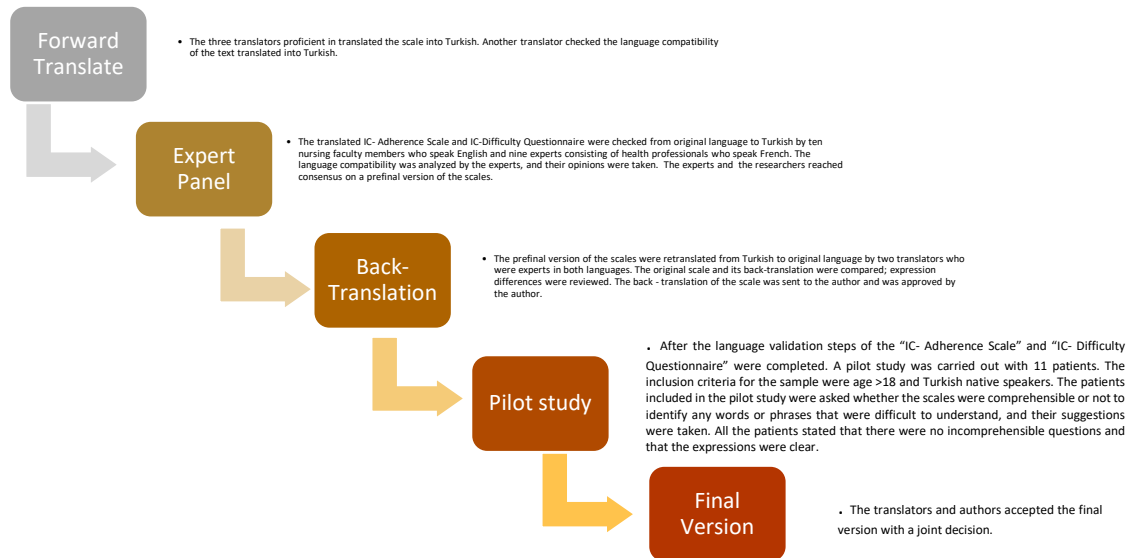


Figure 1. Translation and Cross-Cultural Adaptation

Data analysis: The scale items were evaluated regarding comprehensibility, ability to serve the purpose, discrimination, and cultural compatibility. The experts were asked to evaluate each item from "1" to "4" (1=absolutely inappropriate, 4=absolutely appropriate). According to the content validity coefficients calculated using the Davis (1992) content validity index (CVI) method were 0.8 and over (Davis, 1992).

b) The Validity and The Test-Retest Reliability

Sample

The research population consisted of all hospitalized patients who underwent SC in the spinal cord injury rehabilitation and subacute rehabilitation clinics of a rehabilitation center in Turkey between February 2021 and April 2021. The G*Power version 3.1 software package (Franz Faul, Christian-Albrechts-Universität Kiel, Kiel, Germany) was used for sample size calculation. A study by Guinet-Lacoste (2018) found the

correlation value between the original "IC- Adherence Scale" and "IC- Difficulty Questionnaire" to be 0.38. Therefore, the expected correlation value between the two scales in the calculation of the sample size in this present study was 0.4. The sample size was calculated as 105 with the expected correlation between the two scales ($r=0.4$) with statistical power =0.90, $\alpha=0.05$. Patients aged 18 and over, who volunteered to participate in the study, who had been performing SC for at least the last 6 months, and whose mother tongue was Turkish were included in the study, whereas patients with mental illness and those who could not communicate were not included.

Data collection

The data in the study were collected by face-to-face interview method. After informing about the purpose of the study, patients who met the inclusion criteria were invited. Written and verbal consent was taken from the patients who agreed to participate in the

study. Those who voluntarily agreed to participate were applied the “Descriptive Characteristics Form”, “IC- Adherence Scale”, “IC- Difficulty Questionnaire”, “Intermittent Self-Catheterization Questionnaire”. In the literature, it is recommended to apply the test-retest method between 2-4 weeks (Büyüköztürk et al, 2008). The test-retest method was applied to 45 patients in the sample group after 4 weeks.

Data analysis

The IBM SPSS (Statistical Package for Social Sciences) 22.0 program was used for the data analysis and the IBM AMOS (Analysis of Moment Structures) 23.0 statistical program was used for factor analysis.

Shapiro-Wilk and Kolmogrov-Smirnov tests were used to determine the fitness of the data to the normal distribution. The descriptive data of the study were presented as number, percentage, mean±standard deviation. Pearson’s correlation coefficient was used to analyze the relationship between “IC- Adherence Scale”, “IC- Difficulty Questionnaire”, and descriptive characteristics. To examine between the groups, one-way analysis of variance (ANOVA) was used for more than two groups. Significance test was used for the difference between two means in independent paired groups. A p-value of <0.05 was considered an indicator of significant difference. The validity and reliability analyses of IC- Adherence Scale and IC- Difficulty Questionnaire used in the study are given in Table 1.

Table 1. Validity and Reliability Analyses of IC-Adherence Scale and IC-Difficulty Questionnaire

Validity and Reliability Analyses of IC-Adherence Scale	
Analyses	Measurements
Validity Analyses Language Validity Content Validity (CVI) Criterion Validity	Davis Technique Pearson Product-Moment Correlation Coefficient Confirmatory Factor Analysis
Reliability Analyses Internal Consistency Reliability	Item Average Standard Deviation
Test-Retest Reliability	Item-Total Correlation Cronbach’s Alpha
Validity and Reliability Analyses of IC-Difficulty Questionnaire	
Analyses	Measurements
Validity Analyses Language Validity Content Validity (CVI) Criterion Validity	Davis Technique Pearson Product-Moment Correlation Coefficient
Reliability Analyses Internal Consistency Reliability	Item Average Standard Deviation
Test-Retest Reliability	Item-Total Correlation Cronbach’s Alpha

IC- Adherence Scale: By applying the IC- Adherence Scale and Intermittent Self-Catheterization Questionnaire scales to the study's participants, the Pearson product-moment correlation coefficient was calculated between the measurements, and evidence

for criterion validity was presented. In order to provide evidence for the construct validity of the IC- Adherence Scale, Confirmatory Factor Analysis (CFA) was performed, and the model-data fit of the model established with eight items was evaluated. Analyzes

were made in the Mplus-7 program. Since seven items in the scale are in a double-scored item structure, and the eighth item is in a 4-point Likert-type item structure, seven related items in the Mplus program are defined as categorical, and the eighth item is ordinal. Since the items in the scale are categorical, the Robust Weighted Least Squares (RWLS) method was preferred as the estimation method (Büyüköztürk, 2008). Confirmatory factor analysis for applied research. Guilford publications). All these regression coefficients were significant at a level of 0.05. It was stated that the standard regression coefficient (factor load) for each item in confirmatory factor analysis above 0.32 was acceptable in terms of model-data fit. (Tabachnick & Fidell, 2011). RMSEA, SRMR, χ^2 , χ^2/sd , and TLI values were interpreted in evaluating the model-data fit of the established factor model. In addition to the evidence presented for the construct validity of the measurements obtained from the IC-Adherence Scale, the total scores obtained from the scale were compared according to the participants' gender, age, and duration of SC use in the context of the construct validity study of the scale. For this purpose, while the Independent sample T-test was used for the gender variable with two categories, One Way ANOVA was used for the difference analyses of duration of SC use and age with more than two categories. Test-retest method, Cronbach's alpha (α), and item-total correlation coefficients were calculated to provide evidence for the reliability of the measurements obtained from the scales. In this study, Cronbach's alpha was accepted as 0.70 and above (Brown, 2015; Tavakol & Dennick, 2011). Standardized Cronbach's alpha (α), test-retest reliability, and item-total correlation values were calculated to provide evidence for the reliability of the scales (>0, 30 and above is considered consistent) (Anselmi et al., 2019).

IC- Difficulty Questionnaire: Correlation values between participants' IC -Adherence Scale scores were calculated to provide evidence for the criterion validity of the measurement results obtained from this scale. In order to evaluate the criterion validity of the IC - Difficulty Scale, the IC- Adherence Scale, whose

reliability and validity was ensured in the first stage of the study, was used. The Pearson product moment correlation coefficient was calculated between the IC-Adherence Scale total score and the IC- Difficulty Questionnaire frequency and intensity subscales. Adhering to the original development process of the IC Difficulty Scale, the total scores obtained from the construct validity scale were compared according to the participants' gender, age and duration of SC use. In order to evaluate the criterion validity of the IC- Difficulty Scale, the IC- Adherence Scale, whose reliability and validity was ensured in the first stage of the study, was used. The Pearson product moment correlation coefficient was calculated between the IC-Adherence Scale total score and the IC- Difficulty Questionnaire frequency and intensity subscales. Within the scope of construct validity, the IC-Adherence Scale scores of the patients were compared according to gender, age and duration of SC use, providing evidence for the validity of the measurements obtained from the IC- Difficulty Questionnaire. For this purpose, two-category Independent Sample t-test was used for the gender variable, while One-Way ANOVA was used in the difference analysis with more than two categories for age and duration of SC use. Test-retest method, Cronbach's alpha (α) and item-total correlation coefficients were calculated to provide evidence for the reliability of the measurements obtained from the IC- Difficulty Questionnaire (Brown, 2015; Tavakol & Dennick, 2011). In addition to these; In order to determine the consistency of the scores of the participants in the questionnaire, which consists of two parts, frequency and intensity, the intraclass correlation coefficient (>60 and above is considered consistent) was calculated (Taber, 2019). Analyzes were performed in SPSS 22 statistical software package. The validity and reliability analyzes of the IC-Adherence Scale and IC- Difficulty Questionnaire used in the study are given in Table 1.

RESULTS

The descriptive characteristics of patients are shown in Table 2.

Table 2. Descriptive characteristics (n=105)

Variables	Number (n)	Percentage (%)
Gender		
Female	23	21.9
Male	82	78.1
Education level		
Primary school	17	16.2
Secondary school	14	13.3
High school	25	23.8
Associate/Bachelor	45	42.9
Postgraduate	4	3.8
Diagnosis		
Spinal cord injury	97	92.3
Brain damage	4	3.8
Stroke	3	2.9
Spina bifida	1	1.0
Catheter type		
Hydrophilic	90	85.7
Gel	15	14.3
Receiving training on SC		
Yes	98	93.3
No	7	6.7
	Mean± SD	Min-Max
Age	35.45±12.56	18-68
Amount of Fluid Taken/ml	2166.35±551.26	1000-4500
Frequency of Performing SC/per day	5.2±0.09	4-7
Duration of SC Use/month	45.75±51.44	6-228

CVI values for the IC -Adherence Scale and IC -Difficulty Questionnaire were 0.8 and over. Within the scope of the research, Intermittent Self-Catheterization Questionnaire was used to evaluate the criterion validity of the IC- Adherence Scale. According to the Pearson product-moment correlation coefficient analysis of the relationship between the patients' IC Adherence Scale and Intermittent Self-Catheterization Questionnaire scores, there was a positive, moderate significant correlation between the IC- Adherence Scale score and the total Intermittent Self-Catheterization Questionnaire score ($r=0.33$; $p<0.05$), ease of use subscale score ($r=0.31$; $p<0.05$) and

convenience subscale ($r=0.33$; $p<0.05$) score. There was a negative, weak significant correlation between patients' IC Adherence Scale score and the IC -Difficulty Questionnaire frequency ($r=-0.21$; $p<0.05$) and intensity ($r=-0.22$; $p<0.05$) subscale scores. As seen in Figure 2, all of the standardized regression coefficients (factor loads) for the single factor measurement model established with 8 items of the IC- Adherence Scale were above 0.32. In the CFA model established with the measurements obtained from the IC- Adherence Scale, RMSEA value was 0.08; SRMR value was 0.09; χ^2/df value was 1.60; CFI value was 0.98; TLI value was 0.96 (Table 3).

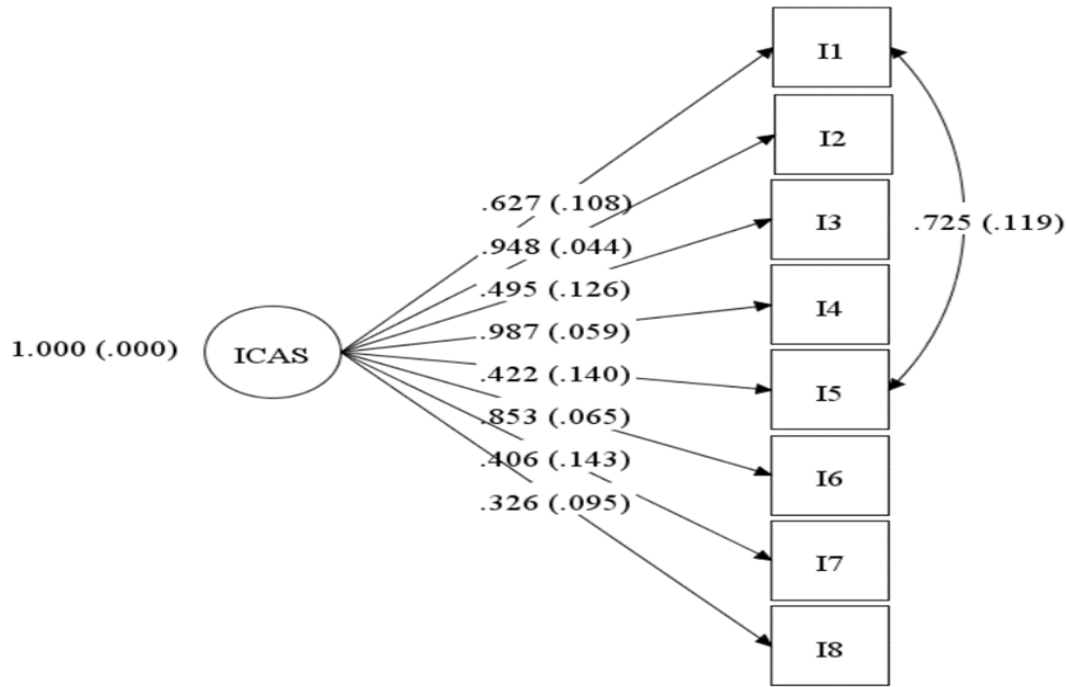


Figure 2. The path diagram of the Dfa model of IC-Adherence Scale consists of 8 items. Single-factor rectangles I1-I8 IC-Adherence Scale; One-way arrows show the correlation in path coefficients (factor loads) and two-way arrows in error variances. Values in parentheses indicate standard errors.

Table 3. Evaluation Criteria of the DFA Model

Index	Good fit	Acceptable fit	IC-Adherence Scale
χ^2 / df	$0 \leq \chi^2 / df \leq 2$	$2 < \chi^2 / df \leq 3$	1.60 (30.40/19)
RMSEA	$0 \leq RMSEA \leq 0.05$	$0.05 < RMSEA \leq 0.08$	0.08
SRMR	$0 \leq SRMR \leq 0.05$	$0.05 < SRMR \leq 0.10$	0.09
TLI (NNFI)	$0.97 \leq NNFI \leq 1.00$	$0.95 \leq NNFI < 0.97$	0.96
CFI	$0.97 \leq CFI \leq 1.00$	$0.95 \leq CFI < 0.97$	0.98

(χ^2 : Chi-square, df: Degree of freedom, RMSEA: Root-Mean-Square Error of Approximation, SRMR: Standardized Root Mean Residual Squares, CFI: Comparative Fit Index, NNFI: Non-Normed Fit Index)

The IC- Adherence Scale scores of the patients did not show a significant difference according to gender ($t=0.20$, $p=0.83$), and age ($F=0.96$, $p=0.43$), whereas a statistical difference was obtained according to the duration of SC use ($F=3.36$, $p=0.01$). A multiple comparison test was performed to determine the source of the difference. The IC- Difficulty

Questionnaire scores of the patients did not show a significant difference according to gender (Frequency; $t=0.08$, $p=0.94$ Intensity; $t=0.58$, $p=0.56$), age (frequency; $F=2.18$, $p=0.77$ intensity; $F=2.24$, $p=0.07$), and duration of SC use (frequency; $F=2.12$, $p=0.10$ intensity; $F=1.92$, $p=0.13$). The correlation value of each item of the IC- Adherence Scale with the overall

scale was 0.30 and over. The Cronbach's alpha (α), the internal consistency coefficient based on a single application of the scale items, was 0.73; the test-

retest reliability coefficient, which is based on two applications and considered reliability in terms of stability, was 0.93 (Table 4).

Tablo 4. IC- Adherence Scale item statistics and reliability values

Item No	N	Mean (\bar{X})	Std. deviation (SD)	Item-Total Score Correlation (r)
I1	105	0.44	0.49	0.62
I2	105	0.42	0.49	0.63
I3	105	0.34	0.47	0.50
I4	105	0.20	0.40	0.70
I5	105	0.35	0.48	0.53
I6	105	0.29	0.45	0.65
I7	105	0.35	0.48	0.40
I8	105	0.19	0.20	0.32
Cronbach Alpha (α)			:0.73	
Test-retest reliability			:0.93	

It was concluded that the value of the correlation of each item of the IC- Difficulty Questionnaire with the overall scale ranged between 0.32 and 0.80. The Cronbach's alpha (α), the single application-based internal consistency coefficient of the scale items, was 0.82 for the frequency subscale and 0.80 for the intensity subscale. The test-retest reliability, a coefficient based on two applications and considered

as reliability in terms of stability, was determined as 0.92 for the frequency subscale and 0.91 for the intensity subscale. In addition to these findings, intraclass correlation values were calculated to determine the consistency of participants' answers about the frequency and intensity of the same items. These correlation values ranged between 0.82 and 0.97. (Table 5)

Table 5. IC- Difficulty Questionnaire item statistics and reliability values

Item No	In-Class Correlation ICC	Frequency			Intensity		
		Mean (\bar{X})	Std. deviation (SD)	Item-Total Score Correlation (r)	Mean (\bar{X})	Std. deviation (SD)	Item-Total Score Correlation. (r)
I1	0.87	0.69	0.75	0.44	0.82	0.89	0.32
I2	0.89	0.69	0.72	0.73	0.62	0.62	0.76
I3	0.92	0.60	0.65	0.76	0.60	0.64	0.76
I4	0.97	0.58	0.69	0.78	0.59	0.72	0.77
I5	0.96	0.53	0.70	0.80	0.60	0.83	0.76
I6	0.93	0.64	0.84	0.56	0.59	0.75	0.67
I7	0.89	0.79	0.95	0.57	0.72	0.84	0.57
I8	0.82	0.65	0.79	0.38	0.75	1.01	0.37
I9	0.96	0.51	0.80	0.54	0.51	0.83	0.46
I10	0.89	0.59	0.79	0.50	0.59	0.78	0.51
I11	0.98	0.32	0.64	0.47	0.32	0.64	0.46
I12	0.95	0.78	0.82	0.44	0.81	0.86	0.44
I13	0.96	0.31	0.52	0.36	0.34	0.61	0.38
Cronbach Alpha (α)		0.82			0.80		
Test-retest reliability		0.92			0.91		

DISCUSSION

In this study, the values obtained as a result of content validity analysis show that the content validity of both scales was high (Davis, 1992). Therefore, it was determined that each item in the scale represented the area to be measured. Patients' scores on the IC- Adherence Scale and IC- Difficulty Questionnaire did not show a statistically significant difference according to gender and age ($p>0.05$). Similarly, studies by Guinet-Lacoste et al. (2016, 2018) found no difference between the patients' scores on the original IC- Adherence Scale and IC- Difficulty Questionnaire according to age and gender. This finding corresponded with those reported by this current our study.

The Intermittent Self-Catheterization Questionnaire was used for the criterion validity of IC Adherence Scale. A positive and moderately statistically significant relationship was established between the total score obtained from the IC Adherence Scale, the total score

obtained from The Intermittent Self-Catheterization Questionnaire, and the scores obtained from the ease of use and convenience sub-dimensions. This shows that the instrument met the required validity criteria. The IC- Adherence Scale was used for the criterion validity of the IC- Difficulty Questionnaire. There was a low level of statistically significant negative correlation between the scores obtained from the IC- Adherence Scale and the scores obtained from both the frequency and intensity dimensions of the IC- Difficulty Questionnaire. When patients experienced SC-related difficulties, SC compliance decreased. In the literature, there are studies which report that factors that negatively affect the quality of life such as urinary tract infection and dependency status, which are among the complications of SC, reduce the patient's compliance with SC (Seth et al., 2014; Newman & Willson, 2011; Bardsley 2015; Cameron et al., 2010). All of the standardized regression coefficients (factor loadings) of the one-factor measurement model established

with the 8 items in the IC- Adherence Scale were above 0.32 and statistically significant. In addition, the CFA model established with the eight items in the IC- Adherence Scale showed that the data fit was at an acceptable level (Büyüköztürk, 2008).

The Cronbach's alpha (α) of the IC- Adherence Scale in this study was the same as that in the original study, 0.73. In the Italian translation, Cronbach's alpha (α) is reported to be 0.845 (Çulha & Acaroğlu, 2020). The Cronbach's alpha (α) of the IC- Difficulty Questionnaire was 0.82 for the frequency subscale and 0.80 for the intensity subscale. The original scale's Cronbach's alpha (α) was reported as 0.94. It was reported that the Cronbach's alpha (α) value is 0.96 in the Arabic version of the scale (Ghroubi et al., 2020). In the Dutch translation, Cronbach's alpha (α) is reported to be 0.88-0.86. As a result of these analyses, it was found that the IC- Adherence Scale and IC- Difficulty Questionnaire are reliable (Hervé et al., 2019).

The test-retest method aims to obtain similar results with the measurements made at different times of the scale (Büyüköztürk, 2008). In order to accept the stability of a measurement tool, the correlation coefficient obtained from two applications at different times should be at least 0.70 (Karakoç & Dönmez, 2014). The test-retest reliability coefficient of the IC- Adherence Scale was 0.93. The test-retest reliability coefficient value of the IC- Difficulty Questionnaire was 0.92 for the frequency subscale and 0.91 for the intensity subscale. According to the results from the re-tests four weeks after the first application, the IC- Adherence Scale and IC- Difficulty Questionnaire were valid and reliable for Turkish language.

The Turkish versions of the "IC Adherence Scale" and the "IC Difficulty Questionnaire" were successfully culturally adapted to the Turkish language, and they seem valid and reliable to be used in further studies. It is recommended to apply both scales in a larger sample with different medical characteristics and increase the generalizability of the results. In the literature, studies recommend the follow up of compliance levels and difficulties experienced by patients undergoing SC. However, there are limitations to the follow-up of Turkish-speaking patients

undergoing SC. Studies also report the use of these scales may contribute to the follow-up of patients undergoing SC. In addition, these scales can be used as a standardized measurement tool in studies to be conducted on this subject.

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