

Research Article

Validity and Reliability Study of the Turkish Form of Post-Discharge Surgical Recovery Scale

Fatma Eti Aslan¹ , Fadime Çınar² , Evin Korkmaz¹ , Hatice Azizoğlu³ ¹Department of Nursing, Bahçeşehir University Faculty of Health Sciences, İstanbul, Turkey²Department of Health Management, Sabahattin Zaim University, Faculty of Health Sciences, İstanbul, Turkey³Department of Nursing, Van Yüzüncü Yıl University Faculty of Health Sciences, Van, Turkey

ORCID iDs of the authors: F.E.A. 0000-0003-0965-1443; F.Ç. 0000-0002-9017-4105; E.K. 0000-0002-0587-1396; H.A. 0000-0002-7859-7236.

Cite this article as: Eti Aslan, F., Çınar, F., Korkmaz, E., & Azizoğlu, H. (2021). Validity and reliability study of the Turkish form of Post-Discharge Surgical Recovery Scale. *Florence Florence Nightingale J Nurs*, 29(2), 158-166.

Abstract

AIM: This study was carried out to adapt the "Post-Discharge Surgical Recovery Scale " developed by Kleinbeck into Turkish and analyze the scale's validity and reliability.**METHODS:** The study sample consisted of 343 patients who underwent surgery in a state hospital operating in the province of Diyarbakır, in the province of İstanbul. The sample consisted of 271 people due to voluntary participation and reasons for not being able to reach. This research, which is of methodological type, was carried out between April and July 2019. The Individual Information Form and the Post-Discharge Surgical Recovery Scale, which the researchers developed by scanning the literature, were used to collect the data. In the validity and reliability study of the scale; Linguistic equivalence, content validity for expert assessment, the correlation between items for internal consistency/reliability, and calculating Cronbach alpha values and confirmatory and exploratory factor analyzes were performed for construct validity. IBM SPSS Statistics 25 and IBM SPSS Amos 21 programs were used for statistical evaluation of the data.**RESULTS:** It was determined that the content validity index of the scale was 0.96, the correlation values between the items were $r=0.47-0.97$, the explained variance was 75.238%, and it was gathered under a single factor. The general reliability of the scale is very high as $\alpha=0.975$. In the confirmatory factor analysis for the scale, the fit indices of the scale were CFI = 0.76; NNFI = 0.93; It was determined that RMR = 0.11 and RMSEA = 0.13, AGFI=0.69, GFI=0.77.**CONCLUSION:** The research results suggest that the Turkish version of the "Post-Discharge Surgical Scale" is a valid and reliable measurement tool and can be used in scientific research and health care institutions to measure recovery post discharge.**Keywords:** Discharge, early post-operative recovery, improved recovery

Introduction

Technological advances experienced in recent years have led to improvements in anesthesia, surgical techniques, diagnosis, and treatment methods. These developments have led to a reduction in post-operative complication rates and ensured that surgical intervention is the preferred modality where warranted (Cengiz & Aygin, 2019; Malley et al., 2015). With the increasing number of surgical interventions, the provision of quality care services became prominent, and preventing or minimizing complications stemming from surgical interventions and maintaining the health of the individual became the main objective (Dal et al., 2012). A rapid recovery process after a surgical intervention enables a de-

crease in the length of hospital stay and health costs and an increase in the patient's adaptation process to health. Healing is a process of change that individuals undergo to improve their health and well-being and to live a self-managed life and reach their full potential (Şenocak et al., 2019). A significant part of recovery happens in the period after discharge from the hospital. The fact that the care necessary to get better is provided to the patients is ensured by the effectiveness of the care, education, and guidance given before discharge. The importance of post-operative recovery has led to a change of paradigms together with the evidence-based studies performed recently, especially in implementing the "fast-track surgery" in America and enhanced recovery after surgery (ERAS) in Europe. The basic philosophy of

these protocols is to reduce metabolic stress stemming from surgical intervention and normalization of basic functions in a short time and return to physical activities as soon as possible. According to these protocols, for a patient to be discharged after a surgical intervention, the following stages are required:

1. Not requiring intravenous fluid and being able to get enough nutrition orally;
2. Being able to provide pain control by oral analgesics;
3. Having sufficient mobilization;
4. Having restored bowel functions;
5. Not showing any symptoms and signs in terms of infection;
6. Being willing to go back home (Dağistanlı et al., 2018; Ersoy & Gündoğdu, 2007; Gündoğdu, 2018; Şenocak et al., 2019).

Nursing monitoring and care are very important in the process of increasing patient comfort, supporting healing, and preventing surgical complications in the post-operative period (ERAS Society, Accessed July 2019; Mitchell, 2011). For the goal of treatment and nursing care to be achieved in the post-operative period, the problems experienced by the patients because of the surgical processes should be diagnosed with a close and holistic approach. The control of the symptoms experienced by patients and the supporting of recovery in the post-operative period will improve the success of the surgical intervention and the quality of care, prevent complications associated with the surgical intervention, and positively contribute to the reduction of hospitalizations and mortality rates (ERAS Society; Mitchell 2011). Because close follow-up of patients and their diagnosis after the surgical intervention will contribute to the planning of initiatives aimed at improving the quality of nursing care after surgery, and therefore, the quality of care, it is important that evaluations are made to determine the biological, psychological, physiological, and social problems experienced by patients after the surgical intervention. A study conducted to investigate the effectiveness of the Post-Discharge Surgical Recovery Scale (PSRS) in the literature reported that the scale was an appropriate tool to measure recovery after discharge (Carpenter et al., 2017). However, when we scanned the literature, we found that studies on this subject were inadequate and studies aimed at measuring post-operative recovery at a national level were insufficient. Standard, valid, and reliable tools to mea-

sure post-operative recovery levels are needed to evaluate the recovery state of patients and their care needs in the post-operative period and to develop suggestions that will lead to better care. Therefore, this study aimed to perform the validity and reliability study of the PSRS by adapting it to Turkish. It is believed that the study of this scale, which is suitable for the structure of Turkish society, which can be applied to all the patients who have had surgical interventions, and which can measure recovery after discharge, can fill this gap in the literature.

This study was performed by adapting the PSRS developed by Kleinbeck (2000) into Turkish to perform validity and reliability analyses so as to determine the recovery levels of patients after discharge from surgical clinics (Kleinbeck, 2000).

Research Questions

1. Does the Post-Discharge Surgical Recovery Scale, developed to determine the level of recovery of patients, apply to the Turkish community?
2. Is the Post-Discharge Surgical Recovery Scale developed to determine the level of recovery of patients reliable for the Turkish society?

Method

Study Design

This was a methodological study.

Sample

The population of the study consisted of 3,120 patients who underwent surgery in the previous year in the surgical clinics (general and cardiovascular surgery clinics) of a state hospital operating in Diyarbakır. This methodological study was conducted between September and November 2019. The literature states that an adequate number of samples is the number of items found in the scale 5 or 10 times the number of items (Karasar, 2005). Therefore, according to the knowledge of literature and the power analysis performed, the number of samples was determined as 343. In the study, 301 patients were recruited for the scale that had 15 items, and the scale was applied. A total of 271 participants who answered all the questions in the scale and agreed to participate in the study on a voluntary basis constituted the sample of the study, with the participation rate being 73.5%. Patients who were over 18 years of age and had surgery and who agreed to participate were included. All anesthesia protocols were

included in the patients. The details of the surgical interventions are indicated in Table 1. The questions were asked to the patient by the researcher, and 30 surveys with unanswered and wrongly marked questions were excluded.

Data Collection Tools

Data were collected with PSRS and Individual Information Form developed by the researchers (Kleinbeck, 2000)

Individual Information Form: A total of 12 questions aimed at evaluating the participants' personal

Table 1
Identifying Characteristics of the Participants (n = 271)

Characteristics		n	%
Sex	Female	126	46.5
	Male	145	53.5
Marital status	Married	196	72.3
	Single	75	27.7
Educational level	Illiterate	26	9.6
	Literate	74	27.3
	Primary education	102	37.6
	High school	61	22.5
Place of residence	University	8	3
	Village-Town	15	5.5
	District	100	36.9
Working status	Province	156	57.6
	Unemployed	142	52.4
	Employed	129	47.6
Chronic disease state	Yes	90	33.2
	No	181	66.8
Getting support for home care	Yes	11	4.1
	No	260	95.9
Previous surgery	Yes	109	40.2
	No	162	59.8
Urgency of surgical intervention	Organized	163	60.1
	Emergency	108	39.9
Number of days of hospitalization	0-4 days	208	76.8
	5-9 days	63	23.2
Receiving discharge training	Yes	78	28.8
	No	193	71.2
Total		271	100

characteristics regarding their age, sex, marital status, educational status, place of residence, working status, chronic disease status, receiving support for home care, previous surgical interventions, urgency of surgery, number of days of hospitalization, and discharge educational status were included in this form.

Post-Discharge Surgical Recovery Scale: This is a scale developed by Kleinbeck (2000) aimed at determining the discharge status of the patient, consisting of 15 items, each of which is scored between 1 and 10 (Figure 1). Scoring of the items on the scale is as 1=strongly disagree to 10=strongly agree. The items in the scale consist of 5 main themes, such as health status, activity, fatigue, work ability, and ethnographic. The calculation of the score helps determine the percentage of the patient's readiness for discharge. The highest score that can be obtained from the scale is 150 and the lowest score is 15. The score obtained from the scale is divided by the total possible score and multiplied by 100 (for example, $120/150 \times 100 = 80\%$). The score obtained shows the improvement after discharge in percentage. High scores indicate a better post-operative recovery. The Cronbach's alpha value of the scale's internal consistency reliability was specified as 0.80.

Statistical Analysis

The obtained data were evaluated in 95% confidence interval, Statistical Package for Social Sciences version 25.0 for Windows program (IBM SPSS Corp., Armonk, NY, USA). The interpretation of the distribution of the questions in the personal information form was evaluated as frequency and percentage.

Cronbach's alpha, Spearman-Brown correlation and factor analysis tests, Kaiser-Meyer-Olkin (KMO), anti-image correlation, Bartlett test, principal components analysis, and varimax rotation method were used to determine the validity and reliability of the scale. Content validity analysis was performed to determine whether the number of items in the scale would be reduced or not.

The reliability of the scale was evaluated by internal consistency, item analysis, and invariance over time (test-retest). The Turkish version of the scale was tested with confirmatory factor and exploratory factor analyses. The repetition of the test was applied twice on 50 participants within a 2-week interval.

Ethical Considerations

Before adapting the scale to Turkish, permission was obtained from the researchers who developed the scale, regarding its adaptability. Permission was also obtained from the ethics committee of a foundation Sabahattin Zaim University (Ethics number: 20292139-050.01.04) and from the public hospitals association to which the hospital where the study was conducted was attached.

After informing the participants that participation in the study was voluntary, written consent was obtained from them. The study was carried out in accordance with the principles of the Helsinki Declaration. Permission was obtained from the person who developed the scale via email.

Results

Linguistic Equivalence

In the scale adaptation process, linguistic equivalence studies were performed first, and then item analyses for construct validity and reliability were completed. To ensure the linguistic equivalence of the scale, the PSR was first translated from English into Turkish. The form created was translated back into English. Finally, the items in the form translated into English and the original scale items were examined by 2 experts who differed in terms of grammar, meaning, and vocabulary. A consensus was reached that both forms were similar, and the final version of the scale was developed. Once the translation processes were completed, the application phase was implemented to determine the linguistic equivalence statistically. At this stage, primarily a bilingual group pattern was adopted, and the scale was applied to 30 students studying at the 3rd and 4th grades of a foundation university where the researchers worked. Correlation analysis was performed for linguistic equivalence; as a result, a positively oriented significant relation was found ($r = .085$, $p < .001$) between the Turkish form ($= 2.68$, $ss = .41$) and the original form ($= 2.82$, $ss = .31$) of the scale.

Individual Characteristics of Participants

The average age of the participants was 44.64 ± 13.34 (18–76) years, 53.5% were found to be male, 72.3% married, 37.6% primary school graduates, 57.6% city-dwellers, and 52.4% unemployed. It was found that 66.8% of the participants had chronic disease, 95.9% had no previous support for home care, and 59.8% had no previous surgical interventions. It was determined that 60.1% of the partic-

ipants had planned surgical intervention, 76.8% of them stayed in the hospital for 0–4 days, and 28.8% of them had discharge training as a result of surgical intervention (Table 1).

The participants who felt “Better than I thought” were determined as 6.97 ± 1.59 at good level, “Live” as 7.89 ± 1.45 at good level, “No pain” as 6.90 ± 1.74 at good level, “Energetic” as 6.64 ± 1.59 at moderate level, “Recovered” as 7.08 ± 1.79 at good level, “Normal activity” as 7.64 ± 1.61 at good level, “Moves normally” as 7.75 ± 1.58 at good level, “Doesn’t need to sleep during the day” as 8.18 ± 1.49 at good level, “1–2 days were enough to recover” as 5.86 ± 2.06 at moderate level, “Ready to go out” as 6.92 ± 1.96 at good level, “Intestines in a bad state” as 7.99 ± 1.54 at good level, “Ready to work” as 6.47 ± 2.12 at good level, “Doing exercise” as 7.38 ± 1.56 at good level, “Can perform self-care” as 8.35 ± 1.70 at good level, “Back to normal” 7.20 ± 1.75 at good level, “PSRS” total mean score as 111.26 ± 21.70 and total score ($111.26/150 \times 100 = 74.17$) at good level (Table 2).

Content Validity of the Scale

The validity of the scale was determined according to the Lawshe method. For content validity, the 15-item scale was sent to 4 faculty members from the Nursing Department, 4 faculty members from the Department of Nutrition and Dietetics, 2 health professionals and 1 assessment and an evaluation specialist, and their opinions were taken. A form was prepared for their expert opinions. This form emailed to experts was graded as: (1) “Each item measures the targeted structure,” (2) “The item is related to structure but unnecessary,” and (3) “The item does not measure the targeted structure.” In this method, the opinions of experts on any item were gathered and coverage validity rates were obtained. Content validity ratios (CVR) were obtained by subtracting 1 from the ratio of the number of experts who stated “Required” on any item to the total number of experts who expressed opinion on the item (Öztürk & Babacan, 2012). The items, which could not be understood and had to be corrected in the Turkish form according to expert opinions, were corrected. CVI values were determined as high as 97, indicating that the content validity of the scale was good.

Pilot application was performed on 50 patients undergoing surgery, and questions that the participants had difficulty in understanding during the pilot implementation were organized.

Table 2
Post-Discharge Surgical Recovery Scale Mean Scores

Items	N	Mean ± SD	Min.	Max.	Scale Range
Better/worse than I thought	271	6.97 ± 1.59	2	10	0-10
Live/lethargic	271	7.89 ± 1.45	3	10	0-10
No pain/worst possible pain	271	6.90 ± 1.74	2	10	0-10
Very tired/energetic	271	6.64 ± 1.59	2	9	0-10
More recovery time required/recovered	271	7.08 ± 1.79	2	10	0-10
No activity/normal activity	271	7.64 ± 1.61	3	10	0-10
Hardly moves/moves normally	271	7.75 ± 1.58	3	10	0-10
Does not need to sleep during the day/not required	271	8.18 ± 1.49	3	10	0-10
Healing took a long time/1-2 days were enough to recover	271	5.86 ± 2.06	1	9	0-10
Need to stay home/ready to go out	271	6.92 ± 1.96	1	10	0-10
Intestines in a bad state/no problem	271	7.99 ± 1.54	3	10	0-10
Ready to work/not ready	271	6.47 ± 2.12	1	9	0-10
Doing exercise/cannot exercise	271	7.38 ± 1.56	3	10	0-10
Can perform self-care/needs help	271	8.35 ± 1.70	2	10	0-10
Back to normal/in a very different state	271	7.20 ± 1.75	2	10	0-10
Post-discharge surgical recovery scale total mean score	271	111.26 ± 21.70	50	143	0-10

Note. Max. = Maximum; Mean = Mean value; Min. = Minimum; SD = Standard deviation

Table 3
Post-Discharge Surgical Recovery Scale Factor Structure

Dimension	Factor Load	Item-Total Correlation	Chronbach Alpha
(Explained variance = 75.238; alpha = .975) KMO: .96, χ^2: 4307.91, $p < .05$			
Q.1: Better/worse than I thought	.841	.815	.944
Q.2: Live/Lethargic	.629	.502	.977
Q.3: No pain/Worst possible pain	.841	.738	.974
Q.4: Very tired/Energetic	.889	.747	.973
Q.5: More recovery time required/Recovered	.926	.814	.972
Q.6: No activity/Normal activity	.930	.748	.972
Q.7: Moves hardly/Moves normally	.927	.726	.972
Q.8: Doesn't need to sleep during the day/Not required	.848	.640	.974
Q.9: Recovery took a long time/1-2 days were enough for recovery	.864	.780	.974
Q.10: Need to stay home/Ready to go out	.930	.761	.932
Q.11: Intestines in a bad state/No problem	.817	.626	.974
Q.12: Ready to work/Not ready	.910	.742	.973
Q.13: Exercise/Cannot exercise	.879	.683	.973
Q.14: Can perform self-care/Needs help	.831	.638	.974
Q.15: Back to normal/In a very different state	.903	.764	.973

Total Variance=75.238%; Overall Reliability (Alpha) = .975

Note. KMO = Kaiser-Meyer-Olkin sample adequacy value; χ^2 = chi-squared suitability value.

Structural Validity Analysis

Exploratory factor analysis was performed to determine construct validity and factor structure for the scale. The Bartlett test performed ($p = .000 < .05$) found a relationship between the variables included in the factor analysis. As a result of the test ($KMO = .835 > .60$), the sample size was found to be sufficient for factor analysis. In the factor analysis application, the varimax method was chosen to enable the structure of the relationship between the factors to remain the same. As a result of factor analysis, the total explained variance of the variables was collected under a single factor, which was 75.24%. Because there were no items on the scale with a factor load less than .4, no item was removed. The overall reliability of the scale was found to be very high with Cronbach's alpha as .975. According to the Cronbach's alpha coefficient regarding its reliability and the variance value, the post-discharge surgical recovery scale was found to be a valid and reliable tool (Öztürk & Babacan, 2012). Item-total score correlations of 15 items in the item analysis of the scale and the scale were examined. The item-total correlation coefficients in the scale were found to be between $r = .502$ and $.815$, positively oriented, and statistically significant (Table 3). Confirmatory factor analysis (CFA) is a type of structural equation model that can measure the relationship between observed variables and latent variables (Brown, 2006). In the study, the goodness of fit indices, which are the most frequently used in the literature, were used. In the CFA performed for the scale, the fit indices of the scale were found to be $CFI = .76$; $NNFI = .93$; $RMR = .11$, and $RMSEA = .13$, $AGFI = .69$, $GFI = .77$. When the Eigen value line graph (Scree plot)

of the single factors of the scale was examined, the graph curve was found to decrease at the first point (Figure 1).

Internal Consistency Analysis for Reliability

Internal consistency of the scale regarding its reliability was tested, and Cronbach's alpha values were evaluated. The overall reliability of the scale was found to be .975, very high. The reliability values of the items of the scale were found to vary between .932 and .977 (Table 3). According to the alpha found regarding its reliability and the variance value explained, it was found to be a valid and reliable tool for the post-discharge recovery scale. Invariance over time (test-retest): For repetition, 50 patients took the survey twice in 2-week intervals. In the analysis made by repeating the test, in the analysis made with the answers given by the participants, the correlation values between the scale items were $r = .40-.74$ and Cronbach's alpha value was .87. The KMO value of the scale was found to be .83, with a factor load $>.40$, and the scale was composed of a single factor of 15 items. In the analysis made by test repetition, Pearson correlation value was found to be .831 ($p = .000$).

Discussion

All the existing studies were reviewed along with a wide literature review within the scope of this study. As a result, no special scale measuring the recovery rate after discharge in our country was found. Therefore, this study was performed on a sample of patients who underwent surgical intervention. This scale is thought to be a useful and instructive guide for measuring the recovery rate in patients for discharge after a surgical intervention. The scales used in the study are the measurement tools used to classify, sort, or quantify the cases subject to measurement. The two important criteria expected from these measurement tools are that they are valid and reliable. Validity is the correct degree of measurement, a measuring tool that measures the property that it aims to do so without confusing it with another property. Reliability is a measurement tool having the same measuring degree each time or the answers of the respondents to the scale being consistent. Accordingly, the measurement tool is considered reliable if it measures correctly (Çınar et al., 2018; Kleinbeck, 2000). In this study, surface and content validity were used for validity test. Content validity was performed to determine whether

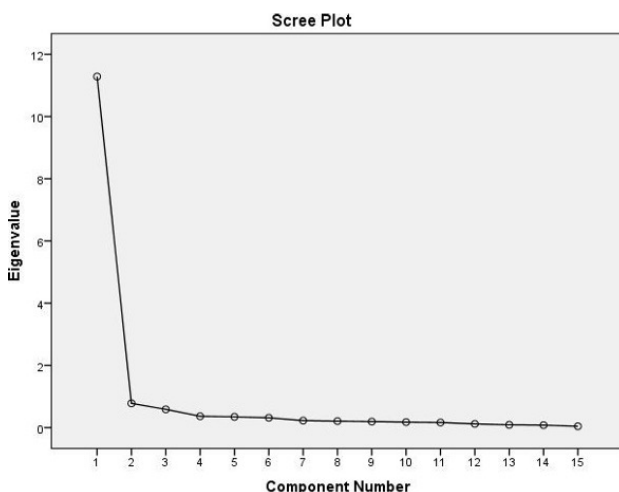


Figure 1
Slope Deposition Graph of Components (Scree Plot)

the items of the draft scale correctly represented the area of interest. The validity of the scale was determined according to Lawshe method. For content validity, the 15-item scale was communicated to 4 faculty members from the Nursing Department, 4 faculty members from the Department of Nutrition and Dietetics, 2 health professionals, and 1 assessment and evaluation specialist, and their opinions were sought. A form, specially prepared for their expert opinions, was emailed to the experts to be graded as: (1) "Each item measures the targeted structure," (2) "The item is related to the structure but unnecessary," and (3) "The item does not measure the targeted structure." In this method, the opinions of experts on any item were gathered, and coverage validity rates were obtained. CVRs were obtained by subtracting 1 from the ratio of the number of experts who stated "Required" on any item to the total number of experts who expressed opinion on the item (Lawshe, 1975). The items that could not be understood and had to be corrected in the Turkish form according to expert opinions were corrected. CVI values were determined as high as .97, indicating the content validity of the scale was good.

When testing the reliability of the draft scale, internal consistency analysis was performed to determine the homogeneity of the scale. Internal consistency was evaluated with this analysis and item-total score correlation and Cronbach's alpha values were taken into consideration. The relationship between the total score of the scale and the total score of the items is determined by item-total correlation. If the score obtained from 1 item of the scale and the score obtained from the whole and the total score show a positive and high correlation score, it is assumed that these items are similar to each other, and the item is taken into the scale (Kleinbeck, 2000; Şahin Orak & Ecevit Alpar, 2012). The coefficients of the item-total score correlation values of the scale for 15 items were found to be positively oriented, between $r = .502$ and $.815$. It was stated that this value should be $r = .30$ and higher (Şahin Orak & Ecevit Alpar, 2012). Because there were no items below $r = .30$, no items were removed from the scale. The high Cronbach's alpha coefficient in the literature emphasizes the high reliability of the scale. If this value is between $.60$ and $.80$, it indicates that the scale is reliable; and if it is between $.80$ and 1.00 , it indicates that the scale has high reliability (Dağıştanlı et al., 2018; Gundogdu, 2018; Mitchell, 2011). The overall reliability value of the PSRS was determined as $\alpha = .97$. Therefore, the scale was found to be highly reliable.

It was stated that the concepts and characteristics, which the scale measures and how accurately it measures them, would be found with construct validity according to literature (Çınar et al., 2018; Karakoc & Donmez, 2014; Kleinbeck, 2000). To determine the structure validity and factor structure for the PSRS, explorative factor analysis was performed. The Bartlett test performed ($p = .000 < .05$) found a relationship between the variables included in the factor analysis. As a result of the test ($KMO = .835 > .60$), the sample size was found to be sufficient for factor analysis. The varimax method was chosen to enable the structure of the relationship between the factors to remain the same. As a result of factor analysis, the total explained variance of the variables was collected under a single factor, which was 75.238%. Because there were no items on the scale with a factor load less than $.4$, no item was removed. The overall reliability of the scale was found to be very high with Cronbach's alpha as $.975$. A Cronbach's alpha coefficient of $< .40$ indicates that the scale is not reliable, between $.40$ and $.59$ indicates low reliability, between $.60$ and $.79$ indicates that it is very reliable, between $.80$ and 1.00 indicates that it is highly reliable (Büyüköztürk, 2016; Öztürk & Babacan, 2012; Saydam et al., 2010; Sipahi et al., 2008; Sümbüloğlu & Sümbüloğlu, 2005). In the CFA performed for the scale, the fit indices of the scale were found to be CFI = $.76$; NNFI = $.93$; RMR = $.11$ and RMSEA = $.13$, AGFI = $.69$, GFI = $.77$. The results of the analysis determined that the adaptation statistics calculated by confirmatory factor analysis were at an acceptable level with the adaptation indices specified in the literature (Hooper et al., 2008; Schumacker & Lomax, 2010; Sümer, 2000; Şimşek, 2007; Tabachnick et al., 2007; Waltz et al., 2010; Wang & Wang, 2012). According to the alpha found regarding its reliability and the variance value explained, it was found to be a valid and reliable tool for PSRS. In this study, that the correlation coefficient obtained by the test-retest method was $.831$ showed that there was a strong relationship between the measurements of the PSRS performed at 2 different times and revealed the invariance of the scale over time. Our findings show that the structure is consistent over time.

Study Limitations

This study was limited to the data of 271 patients who underwent surgery in a public hospital in Diyarbakır and the data obtained from the scale items.

Conclusion and Recommendation

This study showed that the content, construct validity, internal consistency analysis, the correlation of the total scores of the items, and the Cronbach's alpha value performed aimed at the reliability and validity of the scale developed were found to be high. Therefore, it can be said that the scale developed to measure recovery rate is important in terms of its use in the evaluation of recovery after discharge. Because there is no similar scale in the literature, we believe that it may be a reference for future studies to be performed. We believe that the Turkish form of the PSRS is a valid and reliable measurement tool and can be used in similar studies to measure post-discharge recovery in healthcare institutions.

Ethics Committee Approval: Ethics committee approval was received for this study from the ethics committee of Sabahattin Zaim University (Ethics number: 20292139-050.01.04).

Informed Consent: Written informed consent was obtained from participants who participated in this study.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept – F.E.A.; Design – F.E.A., F.Ç.; Supervision – F.E.A., F.Ç.; Resources – F.Ç., E.K., H.A.; Materials – E.K.; Data Collection and/or Processing – E.K.; Analysis and/or Interpretation – F.Ç., E.K.; Literature Search – E.K., H.A.; Writing Manuscript – E.K.; Critical Review – F.E.A., F.Ç.; Other – F.E.A., F.Ç., E.K., H.A.

Conflict of Interest: The authors have no conflicts of interest to declare.

Financial Disclosure: The authors declared that this study has received no financial support.

References

Büyüköztürk Ş. (2016). *Manual of data analysis for social sciences*. Ankara: Pegem Akademi.

Brown, T.A. (2006). *Confirmatory factor analysis for applied research*. The Guilford Press, New York, USA.

Carpenter, J. S., Heit, M., Chen, C. X., Stewart, R., Hamner, J., & Rand, K. L. (2017). Validating the Postdischarge Surgical Recovery Scale 13 as a Measure of Perceived Postoperative Recovery After Laparoscopic Sacrocolpopexy. *Female Pelvic Medicine & Reconstructive Surgery*, 23(2), 86-89. [Crossref]

Cengiz, H. & Aygin, D. (2019). Validity and reliability of the Turkish version of the postoperative recovery index of patients undergoing surgical intervention. *Turkish Journal of Medical Sciences*, 49, 566-573. [Crossref]

Çınar, F., Şengül, H., Çapar, H., Çakmak, C. & Bilge, Y. (2018). Health news perception: A scale development study. *G.O.P. Taksim Education Research JAREN*, 4(3), 164-171. [Crossref]

Dağistanlı, S., Kalaycı, M. U., & Kara, Y. (2018). Genel cerrahide ERAS protokolünün değerlendirilmesi. [Evaluation of ERAS protocol in general surgery]. *İstanbul Kanuni Sultan Süleyman Medical Journal*, 10(Additional issue), 9-20.

Dal, Ü., Bulut, H., & Demir, G. (2012). Cerrahi girişim sonrası hastaların evde yaşadıkları sorunlar. [Problems experienced by patients at home after surgical intervention]. *Bakırköy Journal of Medicine*, 8(1), 34-40. [Crossref]

ERAS Society, <https://erasociety.org/> (Accessed April 2019)

Ersoy, E., & Gundogdu, H. (2007). Cerrahi sonrası iyileşmenin hızlandırılması [Accelerating postoperative recovery]. *National Journal of Surgery*, 23(1), 35-40.

Gundogdu, H. (2018). ERAS: Tarihçe ve felsefesi. [ERAS: History and philosophy]. *İstanbul Kanuni Sultan Süleyman Medical Journal*, 10(Additional issue), 1-4.

Hooper, D., Coughlan, J., & Mullen, M. R. (2008). Structural equation modelling: Guidelines for determining model fit. *Electronic Journal of Business Research Methods*, 6(1), 53-60.

Karakoc, F.Y. & Donmez, L. (2014). Ölçek geliştirme çalışmalarında temel ilkeler. [Basic principles in scale development studies]. *Medical Education World*, 40, 39-49. [Crossref]

Karasar, N. (2005). *Scientific research method*. Ankara: Nobel Publication and Distribution.

Kleinbeck, S. V. M. (2000). Self-reported at-home postoperative recovery. *Research in Nursing Health*, 23(6), 461-472. [Crossref]

Lawsh C. H. (1975). A quantitative approach to content validity. *Personnel Psychology*, 28, 563-575. [Crossref]

Malley, A., Kenner, C., Kim, T., & Blakeney, B. (2015). The role of the nurse and the preoperative assessment in patient transitions. *AORN Journal*, 102, 181.e1181.e9. [Crossref]

Mitchell, M. (2011). The future of surgical nursing and enhanced recovery programs. *British Journal of Nursing*, 20(16), 978-984. [Crossref]

Öztürk, H., & Babacan E. (2012). A scale development study: Occupational safety scale for health personnel working in the hospital. *Journal of Education and Research in Nursing*, 9(1), 36-42.

Saydam, B. K., Ceber, E., Bilge, A., Can, H. O., Mermer, G., Demireloz, M., & Ozenturk, G. (2010). Reliability and validity of the reproductive health scale for Turkish adolescents. *Turkish Journal of Medical Sciences*, 30(2), 659-668. [Crossref]

Schumacker, R. E., & Lomax, R. G. (2004). *A beginner's guide to structural equation modeling*. Psychology press. New Jersey: Taylor & Francis; p. 1-8. [Crossref]

Sipahi, B., Yurtkoru, E. S., & Çinko, M. (2008). *Data analysis with SPSS in social sciences*. Istanbul: Beta Printing and Publishing Co. 10-32.

Sümbüloğlu, K., & Sümbüloğlu, V. (2005). *Biostatistics*. 11. Edition. Ankara. Hatipoğlu Printing and Publishing.

Sümer, N. (2000). Yapısal eşitlik modelleri: Temel kavramlar ve örnek uygulamalar [Structural equation models: Basic concepts and example]. *Apps Türk Psikoloji Yazıları*, 3(6), 49-74.

Şahin Orak, N., & Ecevit Alpar, S. (2012). Validity and reliability of the Nurses' Professional Values Scale's Turkish version. *Clinical and Experimental Health Sciences*, 2(5), 22-31.

Senocak, S. U., Arslantas, H., & Yuksel, R. (2019). Psikiyatrik iyileşmede yeni bir yönelim: İyileşme odaklı yaklaşım. [A new orientation in psychiatric recovery: A recovery-oriented approach]. *Archive Literature Review Journal*, 28(2), 83-97.

Şimsek, O. F. (2007). *Yapısal eşitlik modellemesine giriş: Temel ilkeler ve LISREL uygulamaları* [Introduction to structural equation modeling: Basic principles and LISREL applications] Ankara: Ekinoks. p.4-22.

Tabachnick, B. G., Fidell, L. S., & Ullman, J. B. (2007). *Using multivariate statistics* (Vol. 5). Boston, MA: Pearson.

Waltz, C. F., Strickland, O. L., & Lenz, E. R. (Eds.). (2010). *Measurement in nursing and health research*. Springer publishing company. p.176-8

Wang, J., & Wang, X. (2019). *Structural equation modeling: Applications using Mplus*. John Wiley & Sons.1-479. [\[Crossref\]](#)