

## Validity and Reliability of SCOPA Sleep Scale Turkish Version in Parkinson's Disease

Neşe SÖNMEZ KONGUR<sup>1</sup>, Zeynep TOSUN<sup>2</sup>, Serhat ÖZKAN<sup>3</sup>, Nilda TURGUT<sup>4</sup>, Aysun ÜNAL<sup>4</sup>

<sup>1</sup>Çorlu State Hospital, Tekirdağ, Turkey

<sup>2</sup>Tekirdağ Namık Kemal University, School of Health, Tekirdağ, Turkey

<sup>3</sup>Eskişehir Osmangazi University, Medical Faculty, Department of Neurology, Eskişehir, Turkey

<sup>4</sup>Tekirdağ Namık Kemal University, Medical Faculty, Department of Neurology, Tekirdağ, Turkey

### ABSTRACT

**Introduction:** The aim of this study was to form the Turkish adaptation of the SCOPA-SleepScale to be used in evaluating sleep quality in individuals with Parkinson's disease and to test its psychometric properties.

**Method:** Data for this methodological study was collected between May and December 2017 in the neurology outpatient clinic of a hospital through face to face interviews with patients with a diagnosis of Parkinson's disease. The sample of the study consisted of 105 patients of 18 years of age and above with no additional neurological diseases who volunteered for the study. The SCOPA Sleep Scale was translated into Turkish through translation and back translation, and expert views were taken to test content validity. The reliability analyses of the scale were performed using item- total score correlations, test-retest correlations, and internal consistency. Exploratory factor analyses were conducted for construct validity and the Pittsburgh Sleep Quality Index (PSQI) and Epworth Sleepiness Scale (ESS) were applied for criterion validity.

The appropriateness of data for factor analysis was examined using the Kaiser-Meyer-Olkin (KMO) and Bartlett's tests.

**Results:** The factor loads of the SCOPA Sleep Scale varied between 0.743 and 0.901, and the Turkish version of the scale exhibited a two factor structure in compliance with the original scale. The Cronbach's alpha coefficient was found 0.907 for the nighttime sleep sub-dimension and 0.906 for the daytime sleepiness sub-dimension. In the test-retest evaluation, a correlation of 0.948 was obtained in the nighttime sleep sub-dimension of the scale and a correlation of 0.956 was obtained in the daytime sleepiness sub-dimension of the scale. The nighttime sleep sub-dimension of the scale showed a positive correlation with PSQI, while the daytime sleepiness sub-dimension showed a positive correlation with ESS.

**Conclusion:** The Turkish form of the SCOPA Sleep Scale is a valid and reliable tool to evaluate the sleep quality of individuals with Parkinson's disease

**Keywords:** Parkinson's disease, SCOPA sleep scale, validity, reliability

**Cite this article as:** Sönmez Kongur N, Tosun Z, Özkan S, Turgut N, Ünal A. Validity and Reliability of SCOPA Sleep Scale Turkish Version in Parkinson's Disease. Arch Neuropsychiatry 2022;59:33–37.

### INTRODUCTION

Parkinson's disease (PD) is a widespread neurodegenerative disease with a prevalence of 1% over the age of 60 (1). The disease is characterized by motor and non-motor symptoms. Although the effect of the non-motor symptoms on quality of life are more pronounced compared to the effects attributed to motor symptoms (2,3), non motor symptoms are often disregarded during patient follow ups (4).

Sleep problems among the non-motor symptoms of the disease are very important because of their high prevalence and the negative effects they have on the quality of life of both the patient and care provider (5,6). At least half of all individuals with Parkinson's disease experience sleep problems (5,6,7,8,9) and the prognosis of the disease worsens as sleep problems increase. The progression of the disease, in turn, increases sleep problems (5).

Although polysomnography (PSG) is accepted as the standard method of evaluating sleep problems, the limited number of centers providing PSG, the length of applying PSG, test adaptation being low among individuals with PD, and the high costs of the test all make it necessary to perform

### Highlights

- The Turkish form of the scale showed a two-factor structure.
- The Cronbach alpha coefficient of the scale is excellent in both sub-dimensions.
- The scale can be used to assess sleep quality in Parkinson's patients.

preliminary evaluations using standard sleep evaluation scales (10,11). Appropriately developed, applied, and interpreted evaluation scales also constitute a good option for clinical studies (11).

Although there are many scales for evaluating sleep disorders in PD (10), The International Parkinson and Movement Disorder Society has recommended only three scales for use. These are the Parkinson's Disease

Sleep Scale-PDSS, TheSCOPA Sleep Scale, and the Pittsburgh Sleep Quality Index-PSQI to evaluate general sleep quality (12). The SCOPA Sleep Scale is short and practical tool developed for use in scientific research and clinical studies to evaluate nighttime sleep quality and daytime sleepiness in PD (13). In the cultural adaptations performed so far, the SCOPA Sleep Scale has been shown to have good psychometric characteristics (13,14,15,16).

The aim of this study was to form the Turkish version of the SCOPA Sleep Scale to be used in evaluating sleep quality in PD and to test its psychometric properties.

## METHOD

Data for this methodological study was collected between May and December 2017 in the neurology outpatient clinic of a hospital through face to face interviews with patients followed up with a diagnosis of PD.

Although there is no consensus on studies evaluating psychometric properties, determining a sample size of at least five times the number of items in the scale to be evaluated is a generally accepted approach (17). Since the SCOPA Sleep Scale consisted of 12 items, the aim was to reach at least 60 individuals with PD to form the Turkish version of the scale. Patients diagnosed with idiopathic PD according to the diagnosis criteria of the "The United Kingdom Parkinson's Disease Brain Bank" and no other neurological diseases who were of 18 years of age and above and able to speak, read, and understand Turkish were included in the study. The study was completed with 105 patients among the 132 patients meeting the inclusion criteria who admitted to the clinic within the duration of the study.

### Data Collection Tools

Hoehn-Yahr (HY) staging was used to determine the severity of the disease. The HY staging system has a scoring between 0 and 5, where increasing stages indicate increasing disease severity and functional losses (18).

In the acquisition of sleep related data, PSQI and Epworth Sleepiness Scale (ESS) were applied alongside the SCOPA Sleep Scale.

PSQI was developed to evaluate sleep quality and sleeping habits within the last month (19). The scale has been tested for validity and reliability in Turkish (20). The PSQI consists of 7 components scored between 0 and 3. Although PSQI scores >5 indicate poor sleep quality, a recent study has suggested to take the cut-off score of the PSQI as 9 for the best specificity and sensitivity balance in PD (16).

ESS was developed by Johns (1991). The scale questions an inclination for sleep during eight daily activities. The Turkish form of the scale was shown to be valid and reliable (22). Each item on the scale has four different answers scored between 0 and 3. Higher total scores attained from the scale indicate greater levels of daytime sleepiness. The cut-off score point for daytime sleepiness for this scale has been suggested to be taken as >10 (21).

The SCOPA Sleep Scale was developed to evaluate sleep problems and sleep quality in PD. The scale consists of 5 items evaluating nighttime sleep, 6 items evaluating daytime sleepiness, and 1 item evaluating general sleep quality (13). The maximum scores for nighttime sleep and daytime sleepiness are respectively 15 and 18, and higher scores from both sub-dimensions indicate increased sleep problems. The cut-off score for poor sleep quality were stated to be >4 for the daytime sleepiness sub-dimension and >6 for the nighttime sleep sub-dimension (13).

**The Translation Process:** The translation-back translation technique was used for the Turkish adaptation of the scale (23). The scale was translated from English to Turkish by two independent translators who knew both languages very well. Both translations were combined to form a single tool. The combined translation was back translated from Turkish into its original language by another translator who knew both languages very well. The back translated scale was compared to the original scale and it was seen that no items were misunderstood.

**Content validity:** The translated scale was examined by 10 experts who performed studies regarding sleep disorders, PD, and/or scale validity and reliability. The experts were asked to score scale items between 1 and 4 with regard to clarity and appropriateness. The experts gave 4 points if they thought the item was very appropriate, 3 points if they thought the item was appropriate, 2 points if they thought the item was somewhat appropriate, and 1 point if they thought the item was not appropriate. According to those evaluations, the content validity index (CVI) of the scale was calculated to be 0.94. The suggestions of Erefe (2002) were taken as a basis in the calculation of CVI. After expert views were taken, a pilot study with 10 patients was performed, and since it was seen that there were no items that could not be understood, the researchers proceeded to the data collection phase.

### Ethical Considerations

In order to be able to perform the Turkish validity and reliability study of the scale, permission from the developer of the scale Jacobus Johannes van Hilten was taken via electronic mail. In order to conduct the study, ethical board permission from the institution where the study would be performed was taken (No:2016-127/11/08). The individuals who would participate in the study were informed on the aim of the study and gave written consent.

### Statistical Analysis

Data evaluation was performed using the SPSS (Statistical Package for the Social Sciences) 22.0 package program. The techniques of descriptive statistics (numbers, percentages, mean values, standard deviation), CVI, item-total score correlations, the Cronbach's alpha coefficient, test-retest correlation, and exploratory factor analysis were used in data analysis. Test-retest correlations were examined using Pearson correlation analyses and the appropriateness of data for factor analysis was examined using the Kaiser-Meyer-Olkin (KMO) and Bartlett's tests.

## RESULTS

The mean age of the patients included in the study was 71.08±1.01, 53.7% were male, and their mean disease duration was 52.06±43.34 months. The disease severity mean score of the patients as determined by HY staging was 2.38±1.13, indicating mild loss of function.

### The Psychometric Properties of the SCOPA Sleep Scale

#### Construct validity

The construct validity of the scale was evaluated using exploratory factor analysis (EFA). In order to determine whether the data at hand was appropriate for factor analysis, KMO and Bartlett's tests were applied before EFA. In this context, the results of the Bartlett's test are expected to be significant for EFA and the KMO is expected to be at least 0.50 with a value between 0.80 and 0.90 considered very good (17, 25). In our study, the KMO coefficient was found to be 0.872 and the  $\chi^2$  value of the Bartlett's test was calculated to be 824.678 ( $p>0.05$ ), showing that the data was appropriate for factor analysis.

In the EFA analyses, scale items exhibited a distribution similar to the original scale and showed a two factor structure with an eigenvalue of 1.

**Table 1.** SCOPA Sleep Scale factor analysis

Subdimension	Item number	Factor load	Eigenvalue	Explained variance (%)
Nighttime sleep	1	0.829	2.085	18.951
	2	0.847		
	3	0.901		
	4	0.816		
	5	0.870		
Daytime sleepiness	1	0.896	5.803	52.754
	2	0.860		
	3	0.743		
	4	0.771		
	5	0.794		
	6	0.885		

Both factors explained 71.70% of the total variance, factor 1 being 18.95% and factor 2 being 52.75%. The factor loads of the items varied between 0.743 and 0.901 (Table 1).

### Criterion validity

Among the patients included in our study, the SCOPA Sleep Scale nighttime sleep sub-dimension mean score was calculated to be  $5.06 \pm 3.69$  and the daytime sleepiness sub-dimension mean score was calculated to be  $5.92 \pm 3.28$ . Positive strong correlations between the nighttime sleep sub-dimension scores and PSQI scores ( $r=0.728$ ,  $p<0.001$ ), and daytime sleepiness sub-dimension scores and ESS scores ( $r=0.881$ ,  $p<0.001$ ) were found (Table 2).

**Table 2.** SCOPA Sleep Scale criterion validity

	Mean±SD	PSQI	ESS
SCOPA Sleep Scale Nighttime sleep	$5.06 \pm 3.69$	$r=0.728$ , $p<0.001$	
Daytime sleepiness	$5.92 \pm 3.28$		$r=0.881$ , $p<0.001$
PSQI	$7.80 \pm 3.12$		
ESS	$9.69 \pm 4.72$		

PSQI=Pittsburg Sleep Quality Index; ESS=Epworth Sleepiness Scale; r=Pearson's correlation coefficient, SD= standard deviation

### Reliability

The Cronbach's alpha coefficient was used to determine the internal consistency of the SCOPA Sleep Scale and this value was found to be 0.907 for the nighttime sleep sub-dimension and 0.906 for the daytime sleepiness sub-dimension.

When the scale was reapplied to the same patients fifteen days later to examine the time consistency of the scale, a correlation of 0.948 was obtained in the nighttime sleep sub-dimension of the scale and a correlation of 0.956 was obtained in the daytime sleepiness sub-dimension of the scale ( $p<0.001$ ), (Table 3).

The item-total score correlations of the SCOPA Sleep Scale varied between 0.732 and 0.870 (Table 4).

**Table 3.** SCOPA Sleep Scale internal consistency and test-retest reliability analysis

Subdimension	Internal consistency	test-retest	
	$\alpha$	r	p
Nighttime sleep	0.907	0.948	<0.001
Daytime sleepiness	0.906	0.956	<0.001

$\alpha$ =Cronbach Alpha Value; r= Pearson's correlation coefficient

**Table 4.** SCOPA Sleep Scale item-total score correlation (n=105)

Subdimension	Number	Item	Item-total correlation
Nighttime sleep	1	In the past month, have you had trouble falling asleep when you went to bed at night?	0.761
	2	In the past month, to what extent do you feel that you have woken too often?	0.823
	3	In the past month, to what extent do you feel that you have been lying awake for too long at night?	0.864
	4	In the past month, to what extent do you feel that you have woken up too early in the morning?	0.813
	5	In the past month, to what extent do you feel you have had too little sleep at night?	0.832
Daytime sleepiness	1	How often in the past month have you fallen asleep unexpectedly either during the day or in the evening?	0.841
	2	How often in the past month have you fallen asleep while sitting peacefully?	0.770
	3	How often in the past month have you fallen asleep while watching TV or reading?	0.732
	4	How often in the past month have you fallen asleep while talking to sometimes?	0.777
	5	In the past month, have you had trouble staying awake during the day or in the evening?	0.828
	6	In the past month, have you experienced falling asleep during the day as a problem?	0.870

r=Pearson's correlation coefficient

## DISCUSSION

Psychometric properties of Turkish version of the scale are generally in compliance with the results of adaptation studies performed in Sweden, Netherlands, Thailand, Spain, and Germany (13,14,15,16).

### Validity Analyses

The items in the scale were grouped under a two factor structure in the Turkish adaptation just as they grouped under two factors in the original scale and other versions. All items showed a distribution to sub dimensions in compliance with the original scale (13,14,15,16).

Criterion validity can be evaluated through comparison with an equivalent scale measuring the same condition in the same time interval. In our study, to determine the criterion validity of the SCOPA Sleep Scale, PSQI for the night sleep sub-dimension of the scale and ESS for the daytime sleepiness sub-dimension of the scale were used.

In our study, positive strong correlations between the nighttime sleep sub-dimension scores ( $5.06 \pm 3.69$ ) and PSQI scores ( $r=0.728$ ,  $p<0.01$ ), and daytime sleepiness sub-dimension scores ( $5.92 \pm 3.28$ ) and ESS scores ( $r=0.881$ ,  $p<0.01$ ) were found. In the original version of the scale and Thai and German versions, mean SCOPA nighttime sleep sub-dimension scores were found to be respectively 4.9, 4.6, and 5.1, and mean daytime sleepiness sub-dimension scores were found to be respectively 5.2, 4.7, and 5.4 (13,14,16). In the German adaptation study, the correlation coefficient between the nighttime sleep sub-dimension and PSQI was found to be 0.79, while the correlation coefficient between the daytime sleepiness sub-dimension and ESS was found to be 0.68 (16). These correlation coefficients were found to be respectively 0.63 and 0.59 in the Thailand version (14), with a slightly lower correlation. Our findings indicate that the criterion validity results were more satisfying in the Turkish version of the scale compared to other adaptations.

### Reliability Analyses

Although a Cronbach's alpha coefficient of 0.50 is considered sufficient for reliability, a highly reliable scale is expected to have a Cronbach's alpha coefficient greater than 0.80 (17). In our study, The Cronbach's alpha coefficient was found to be 0.907 for the nighttime sleep sub-dimension and 0.906 for the daytime sleepiness sub-dimension. In the original scale and other language adaptations, the Cronbach's alpha coefficient of the nighttime sleep was reported to vary between 0.80 and 0.88 while the alpha coefficient of the daytime sleepiness sub-dimension was reported to vary between 0.74 and 0.91 (13,14,15,16). The internal consistency of the Turkish form of the scale was very high in both sub-dimensions. In the nighttime sleep sub-dimension of the scale, the best internal consistency result among other language adaptations was achieved in the Turkish version of the scale.

In order to determine the time invariance of the SCOPA Sleep Scale the test-retest method was used, and the scale was found to provide results of high consistency in different times. Through the test-retest method, a correlation of 0.948 was obtained in the nighttime sleep sub-dimension of the scale and a correlation of 0.956 was obtained in the daytime sleepiness sub-dimension of the scale ( $p<0.01$ ). In the original study for the construction of the scale, the scale was applied to the same patient group with an interval of two weeks as in our study, and a correlation of 0.94 was obtained for the nighttime sleep sub-dimension of the scale and a correlation of 0.89 was obtained for the daytime sleepiness (13). In the German adaptation study, the patients were reevaluated with long intervals such as 3 to 11 weeks, and the correlation coefficients were found to be 0.901 for the nighttime sleep sub-dimension and 0.844 for the daytime sleepiness sub-dimension. However, in a progressive disease such as PD, these intervals can be considered too long, and the researchers performing the adaptation have stressed this as a limitation of their study (16).

In our study, item-total score correlations varied between 0.761 and 0.864 in the nighttime sleep sub-dimension and between 0.732 and 0.870 in the daytime sleepiness sub-dimension. Item-total score correlations being positive and larger than 0.50 show that the items measure similar behaviors well (26). In previous studies, item-total score correlations were found to vary between 0.48 and 0.85 in the nighttime sleep sub-dimension and 0.47 and 0.88 in the daytime sleepiness sub-dimension (13,15). According to item-total score correlation coefficients, the reliability level of the Turkish version of the scale can be stated to be high.

In conclusion, the Turkish version of the SCOPA Sleep Scale can be said to be a valid and reliable tool to evaluate the sleep quality of individuals with Parkinson's disease in studies or clinical routine.

### Limitations of the Study

Since the cognitive conditions and verbal communication abilities of patients may become disrupted in the advanced stages of PD, the limited number of individuals with advanced PD included in our study forms a limitation for our study. This limitation was also pronounced in the other language adaptations of the scale (13,14,15).

**Ethics Committee Approval:** Ethics committee approval was received for this study from the ethics committee of Namik Kemal University Faculty of Medicine (Number: 2016-127/11/08).

**Informed Consent:** Written informed consent form was obtained from all patients.

**Peer-review:** Externally peer-reviewed.

**Author Contributions:** Concept - NSK, ZT, SÖ, NT, AÜ; Design - NSK, ZT, SÖ, NT, AÜ; Supervision - NSK, ZT, SÖ, NT, AÜ; Resource - (-); Data Collection and/ or Processing - NSK, ZT; Analysis and /or Interpretation - NSK, ZT, SÖ, NT, AÜ; Literature Search - NSK, ZT; Writing - NSK, ZT; Critical Review - NSK, ZT, SÖ, NT, AÜ.

**Conflict of Interest:** The authors declared that there is no conflict of interest.

**Financial Disclosure:** The authors received no financial support for this study.

## REFERENCES

1. Tysnes OB, Storstein A. Epidemiology of Parkinson's disease. *J Neural Transm* 2017; 124: 901–905. [Crossref]
2. Nicoletti A, Mostile G, Stocchi F, Abbruzzese G, Ceravolo R, Cortelli P, et al. Factors influencing psychological well-being in patients with Parkinson's disease. *PLoS One* 2017; 15:12(12):e0189682. [Crossref]
3. Hinnel C, Hurt CS, Landau S, Brown RG, Samuel M, PROMS-PD Study Group. Non motor versus motor symptoms: how much do they matter to health status in Parkinson's disease? *Mov Disord*. 2012;27(2):236–241. [Crossref]
4. Hurt CS, Rixon L, Chaudhuri KR, Moss-Morris R, Samuel M, Brown RG. Barriers to reporting non-motor symptoms to health-care providers in people with Parkinson's. *Parkinsonism Relat Disord* 2019;64:220–225. [Crossref]
5. Rolinski M, Szewczyk-Krolikowski K, Tomlinson PR, Nithi K, Talbot K, Ben-Shlomo Y, et al. REM sleep behaviour disorder is associated with worse quality of life and other non-motor features in early Parkinson's disease. *J Neurol Neurosurg Psychiatry*. 2014;85(5):560–566. [Crossref]
6. Chahine LM, Amara AW, Videnovic A. A systematic review of the literature on disorders of sleep and wakefulness in Parkinson's disease from 2005 to 2015. *Sleep Med Rev*. 2017;35:33–50. [Crossref]
7. Menza M, Dobkin RD, Marin H, Bienfait K. Sleep disturbances in Parkinson's disease. *Mov Disord*. 2010; 25 Suppl 1(Suppl 1):117–122. [Crossref]
8. Selvaraj VK, Keshavamurthy B. Sleep dysfunction in Parkinson's disease. *J Clin Diagn Res*. 2016;10(2):OC09–12. [Crossref]
9. Lin YY, Chen RS, Lu CS, Huang YZ, Weng YH, Yeh TH, et al. Sleep disturbances in Taiwanese patients with Parkinson's disease. *Brain Behav*. 2017;21;7(10):e00806. [Crossref]
10. Högl B, Arnulf I, Comella C, Ferreira J, Iranzo A, Tilley B, et al. Scales to assess sleep impairment in Parkinson's disease: critique and recommendations. *Mov Disord*. 2010; 15;25(16):2704–2716. [Crossref]
11. Zea-Sevilla MA, Martínez-Martín P. Rating scales and questionnaires for assessment of sleep disorders in Parkinson's disease: what they in form about? *J Neural Transm*. 2014; 121 (Suppl 1):33–40. [Crossref]

12. The International Parkinson and Movement Disorder Society. MDS-Recommended Rating Scales <https://www.movementdisorders.org/MDS/Education/Rating-Scales/MDS-Recommended-Rating-Scales.htm>.
13. Marinus J, Visser M, vanHilten JJ, Lammers GJ, Stiggelbout AM. Assessment of sleep and sleepiness in Parkinson disease. *Sleep*, 2003;26(8), 1049–1054. [Crossref]
14. Setthawatcharawanich S, Limapichat K, Sathirapanya P, Phabphal K. Validation of the Thai SCOPA-Sleep Scale for Assessment of Sleep and Sleepiness in Patients with Parkinson's Disease. *Journal of the Medical Association of Thailand*. 2011; 94(2): 179–184. <https://thaiscience.info/Journals/Article/JMAT/10743562.pdf>
15. Hagell P, Westergren A, Janelidze S, Hansson O. The Swedish SCOPA-SLEEP for Assessment of Sleep Disorders in Parkinson's Disease and Healthy Controls. *Qual Life Res*. 2016;25(10):2571–2577. [Crossref]
16. Goebel S, Steinmann E, Leprow B, Mehdorn HM. Cross-cultural adaptation and psychometric properties of the SCOPA-Sleep-German version. *Neurol Sci*. 2018; 39(7):1225–1230. [Crossref]
17. Hair JF, Black WC, Babin BJ, Anderson RE. *Multivariate Data Analysis*. 7th Edition, Pearson, 2014; New York.
18. Goetz CG, Poewe W, Rascol O, Stebbins GT, Counsell C, Giladi N, et al. Movement Disorder Society Task Force on Rating Scales for Parkinson's Disease. Movement Disorder Society Task Force Report on the Hoehn and Yahr Staging Scale: Status and Recommendations. *Mov Disord*. 2004; 19(9): 1020–1028. [Crossref]
19. Buysse DJ, Reynolds CF, Monk TH, Berman SR, Kupfer DJ. The Pittsburgh Sleep Quality Index: A New Instrument for Psychiatric Practice and Research. *Psychiatry Res*. 1989;28(2):193–213. [Crossref]
20. Agargun MY, Kara H, Anlar O. Pittsburgh Uyku Kalitesi İndeksi'nin Geçerliliği ve Güvenirliliği. *Türk Psikiyatri Dergisi*. 1996;7: 107–115.
21. Johns MW. A new method for measuring daytime sleepiness: the Epworth Sleepiness Scale. *Sleep*. 1991;14(6):540–545. [Crossref]
22. Izci B, Ardic S, Firat H, Sahin A, Altinors M, Karacan I. Reliability and validity studies of the Turkish version of the Epworth Sleepiness Scale. *Sleep Breath*. 2008;12(2):161–168. [Crossref]
23. Gjersing L, Caplehorn JR, Clausen T. Cross cultural adaptation of research instruments: Language, setting, time and statistical considerations. *BMC Med Res Methodol*. 2010; 10:13. [Crossref]
24. Erefe İ. Veri Toplama Araçlarının Niteliği. *Hemşirelikte Araştırma, İlke, Süreç ve Yöntemleri*. Erefe İ. (Ed.). 4. Baskı. Ankara: Hemşirelikte Araştırma ve Geliştirme Derneği-HEMAR-GE. 2012; 1: 169–187.
25. Büyükoztürk Ş. *Veri Analizi El Kitabı*, 4. Baskı. Ankara: Pagem A Yayıncılık; 2004.
26. El Hajjar ST. Statistic analysis: Internal-consistency reliability and construct validity. *International Journal of Quantitative and Qualitative Research Methods*. 2018; 6(1): 27–38.

Copyright of Archives of Neuropsychiatry / Noropsikiatri Arsivi is the property of Turkish Association of Neuropsychiatry and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.