Reliability and validity study of a Turkish version of the fatigue severity scale in Parkinson's disease patients

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The aim of this study was to assess the validity and reliability of the Turkish version of the Fatigue Severity Scale (FSS) in Parkinson's disease (PD) patients for use in clinical settings. A consecutive 106 patients with PD were included in the study. The Turkish version of FSS was analyzed for reliability (internal consistency and reproducibility) and validity (convergent and discriminant). The Turkish version of FSS yielded an acceptable internal consistency (Cronbach's $\alpha = 0.960$ and corrected item-total correlations: 0.761–0.891), and it was established as reproducible (test–retest intraclass correlations for items: 0.887–0.936). The FSS total score was correlated significantly with PD-related variables. Between-group differences on both items and the total score of FSS by modified Hoehn and Yahr staging were found to be statistically significant. The present study has shown that the Turkish version of the FSS is a valid and reliable tool for the assessment of fatigue in PD patients. ***International Journal of Rehabilitation Research*** **40:185–190**

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Introduction

Fatigue is a frequent, nonmotor symptom that has a major impact on the performance of daily living activities in patients with Parkinson's disease (PD). The prevalence of fatigue in PD ranges from 34% (Stocchi *et al.*, 2014) to 56% (Alves *et al.*, 2004) in different studies and it tends to increase with disease progression (Barone *et al.*, 2009). The prevalence of fatigue as a most frequent nonmotor symptom was found to be 58.1% in the study with the largest sample size evaluating the nonmotor symptoms of PD (Barone *et al.*, 2009). However, fatigue was ranked 23rd among 24 most troublesome nonmotor symptoms in early PD (up to 6 years of disease duration), whereas it was ranked 12th in advanced PD (more than 6 years of disease duration) (Politis *et al.*, 2010), meaning that patients do not frequently report it as a major complaint. Thus, fatigue is common, but is often ignored or neglected by patients.

Fatigue is often categorized into physical and mental (subcategorized into emotional and intellectual aspects) components and it is associated with worse physical and mental health. Fatigue is also a significant contributor toward poor quality of life in PD (Havlikova *et al.*, 2008a, 2008b). It is a major problem that affects participation in treatment, especially participation in an inpatient or an outpatient rehabilitation program.

Fatigue is not evaluated in Unified Parkinson's Disease Rating Scale (UPDRS) (Martínez-Martín *et al.*, 1994) or the Nonmotor Symptoms Questionnaire (Chaudhuri *et al.*, 2006), and it is evaluated by only one question in the Movement Disorder Society-sponsored revision of the UPDRS (Goetz *et al.*, 2008) and in the Nonmotor Symptoms Scale (Chaudhuri *et al.*, 2007; Martínez-Martín *et al.*, 2009). Therefore, a common nonmotor symptom such as fatigue should be evaluated in more detail in clinical settings.

A number of fatigue rating scales such as the Fatigue Severity Scale (FSS), the Fatigue Assessment Inventory, the Functional Assessment of Chronic Illness Therapy-Fatigue Scale, the Multidimensional Fatigue Inventory, the Fatigue Impact Scale, the Parkinson Fatigue Scale, the Fatigue Severity Inventory, the Fatigue Impact Scale for Daily Use, the Visual Analog Fatigue Scale, and the Clinical Global Impression Scale have been used to measure levels of fatigue symptoms in PD patients (Friedman *et al.*, 2010). The FSS is one of the most frequently used self-rating scale for fatigue, and it is a strongly recommended scale as defined by Movement Disorder Society for rating screening and severity of fatigue in PD patients (Friedman *et al.*, 2010). It has been translated into and validated in various languages including Swedish, Brazilian-Portuguese, and Persian. However, the validity and reliability of the Turkish version of FSS were not assessed in PD patients.

The aim of this study was to assess the validity and reliability of the Turkish version of the FSS in PD patients for use in clinical settings.

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Materials and methods

Patients

Patients were consecutively recruited from the Ministry of Health, Diskapi Yildirim Beyazit Training and Research Hospital, Movement Disorders Outpatient Clinic, Ankara, between January and October 2015. All patients were diagnosed according to the UK PD Society Brain Bank Criteria (Gelb *et al.*, 1999). Inclusion criteria were (a) 40 years of age or older, (b) literate in Turkish, (c) Mini-Mental State Examination scores (Folstein *et al.*, 1975) of at least 24, and (d) no previous history of deep brain stimulation surgery, dementia, and other neurodegenerative or neurological disorders.

The study protocol was approved by the local ethics committee and it was carried out in accordance with the Declaration of Helsinki. Each participant was informed about the purpose of the study before participation and the completion of the questionnaires was voluntary. All participants provided written consent.

Data collection

We collected demographic data including age, sex, level of education, marital status, and comorbidities (E.A.O.). Disease characteristics (disease duration, levodopa daily dosage, levodopa equivalent daily dosage) were also recorded (B.G.K.).

Instruments

The modified Hoehn and Yahr (H&Y) staging was used to evaluate disease severity (Goetz *et al.*, 2004). The scale consists of five stages. A higher stage indicates a greater level of PD-related functional disability and impairment. The Schwab and England activities of daily living (ADL) scale used to provide a single estimate of the patient's ability to function, and its score ranges from 0% (completely dependent, bedridden) to 100% (completely independent) (McRae *et al.*, 2000). The UPDRS was used to assess impairment and disability in PD (Movement Disorder Society Task Force on Rating Scales for Parkinson's Disease, 2003). It consists of 42 items and includes four parts. Part I covers mentation, behavior, and mood (four interview items, 0–16 points); part II rates activities of daily living (13 interview items, 0–52 points); part III is a clinician rating of the motor manifestations of PD (14 examination items, 0–72 points); and part IV covers complications of therapy (11 items in three subgroups). A higher score indicates worsening impairment and disability.

Symptoms of anxiety and depression were assessed using the Hospital Anxiety and Depression Scale (HADS). It consists of 14 items and includes two subscales. Scores range from 0 to 21 for each subscale, with higher scores reflecting greater anxiety and depression (Zigmond and Snaith, 1983). The HADS is an acceptable, consistent, valid, precise, and potentially responsive scale for use in PD (Rodriguez-Blazquez *et al.*, 2009).

The 36-Item Short Form Health Survey (SF-36) was used to measure health status. The scale consists of 36 items into eight subscales and two composite domains (physical and mental health). The time frame of the SF-36 is 4 weeks. Two composite domains (physical and mental component) were used in the present study, and domains scores (Physical component score (PCS) and Mental component score (MCS)) range from 0 to 100. The higher scores represent better health status (Ware *et al.*, 1992). Daytime sleepiness was evaluated using the Epworth Sleepiness Scale (ESS) and sleep quality was assessed using the Pittsburgh Sleep Quality Index (PSQI). The ESS (Johns, 1991) was used to measure the general level of daytime sleepiness in PD patients. It consists of eight items and each item is rated from 0 (would never doze) to 3 (high chance of dozing). The final score is the sum of the eight items, with a maximal total score of 24. It is recommended for rating daytime sleepiness to screen and to measure severity in PD (Högl *et al.*, 2010). The PSQI (Buysse *et al.*, 1989, 1991) is used to examine sleep habits and disturbances. It consists of 19 items that are combined to form seven subscores (subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction). Each of the items is scored from 0 to 3 (no difficulty to severe difficulty), yielding a maximum score of 21, with higher scores indicating more severe difficulties in the different areas. It is recommended for rating overall sleep problems to screen and to measure severity in PD (Högl *et al.*, 2010).

Finally, fatigue was assessed by the FSS. The FSS is a self-rated unidimensional generic fatigue rating scale. It consists of nine items and each item is rated on a seven-grade Likert scale (1, completely disagree to 7, completely agree). The total FSS score represents the mean score of each of the nine items, yielding a score range between 1 and 7. Higher scores indicate a higher level of fatigue (Herlofson *et al.*, 2002). The scale was translated previously into Turkish, and the validity and reliability of the scale were established in patients with multiple sclerosis (Armutlu *et al.*, 2007) and fibromyalgia (Gencay-Can and Can, 2012). The FSS was repeated 10–14 days following the first assessment.

Statistical analysis

All analyses were carried out using IBM SPSS statistical software, version 22.0 (SPSS Inc., Chicago, Illinois, USA). Descriptive data were expressed as mean (SD) for continuous variables and as frequency (%) for nominal variables.

The FSS was analyzed for reliability (internal consistency and test–retest) and validity (convergent and known-group).

Internal consistency was assessed using Cronbach's α and corrected item-total correlation coefficient. An alpha coefficient of 0.70 or above is considered satisfactory and 0.90 or above is suggested for clinical application (Bland and Altman, 1997). Corrected item-total correlations were calculated using

Spearman rank correlation coefficients. Correlation coefficients above 0.3 were considered acceptable (Bowling, 2014). Test–retest reliability was assessed using intraclass correlation coefficients (ICC), and an ICC of more than 0.6 was considered satisfactory (Streiner *et al.*, 2014).

Convergent validity was investigated by determining the correlations between demographic variables, PD-related variables, or the scores of rating scales and the total score of FSS using Spearman's rank correlation coefficients. Correlation coefficients were rated as follows: 0.81–1.00 as excellent, 0.61–0.80 as very good, 0.41–0.60 as good, 0.21–0.40 as fair, and 0–0.20 as poor (Feise and Michael Menke, 2001). Finally, known-group validity was evaluated by comparing the FSS scores of patients grouped by stage of H&Y.

Results

Patient characteristics

A total of 128 PD patients agreed to participate in the study. Thirteen patients with Mini-Mental State Examination scores lower than 24 and nine patients with atypical parkinsonian syndromes were excluded. Finally, a total 106 patients (43 men and 63 women) were included the study. The mean age of the patients was 65.0 (SD: 9.0) years, ranging between 42 and 83 years. The mean H&Y stage was 2.49 (SD: 1.11), the mean disease duration was 77.3 (SD: 61.7) months, and the mean daily levodopa dose was 387.7 (SD: 261.7) mg. Sociodemographic and disease characteristics of PD patients are shown in Table 1.

Table 1 Sociodemographic characteristics of the Parkinson's disease patients ($n = 106$)

Characteristics	*n* (%)
Age (years) [mean (SD)]	65.0 (9.0)
Sex	
Female	43 (40.6)
Male	63 (59.4)
Job	
Working/active	2 (1.9)
Working/passive	1 (0.9)
Retired/active	43 (40.6)
Retired/passive	25 (23.6)
Housewife	35 (33.0)
Education	
Primary	32 (30.2)
Secondary	37 (34.9)
High school	23 (21.7)
University	14 (13.2)
Marital status	
Single	3 (2.8)
Married	78 (73.6)
Divorced	1 (0.9)
Widow	24 (22.6)
Comorbidities	
Cardiac	42 (39.6)
Pulmonary	8 (7.5)
DM	23 (21.7)
Thyroid	8 (7.5)
Rheumatologic	2 (1.9)
Psychiatric	13 (12.3)
Mini-mental state examination [mean (SD)]	27.2 (1.9)
Hoehn and Yahr	
1	26 (24.5)
2	27 (25.5)
3	28 (26.4)
4	25 (23.6)
Disease duration (month) [mean (SD)]	77.3 (61.7)
Daily levodopa dose (mg/day) [mean (SD)]	387.7 (261.7)
UPDRS [mean (SD)]	
Part I	2.79 (1.94)
Part II	13.29 (7.33)
Part III	19.36 (9.50)
Part IV	3.81 (3.00)
Schwab and England ADL scale [mean (SD)]	77.7 (12.5)
Hospital anxiety and depression scale [mean (SD)]	
Anxiety	7.9 (3.8)
Depression	8.6 (4.1)
36-Item Short Form Health Survey [mean (SD)]	
Physical component score	32.2 (9.8)
Mental component score	42.8 (8.6)
Epworth sleepless scale [mean (SD)]	7.6 (4.1)
Pittsburgh sleep quality index [mean (SD)]	7.5 (3.9)

ADL, activities of daily living; DM, Diabetes mellitus; UPDRS, Unified Parkinson's Disease Rating Scale.

Characteristics of the fatigue severity scale

There were no 'floor' and 'ceiling' effects for the total score. The mean of the total FSS score was 4.12 (SD: 1.33). The lowest score was found for item 9 'Fatigue interferes with my work, family, or social life' and the highest score was found for item 8 'Fatigue is among my three most disabling symptoms'. The coefficients of variation of items ranged between 33.9 (item 2) and 40.4% (item 5) (Table 2).

Internal consistency

Cronbach's α coefficient was 0.960. Corrected item-total correlations were moderate to strong and ranged from 0.761 'item 2, Exercise brings on my fatigue' to 0.891 'item 6, My fatigue prevents sustained physical functioning'. Internal consistency data are presented in Table 2.

Test–retest

Items of FSS have excellent test–retest reliability and intraclass correlation coefficients ranged from 0.887 item 9 'Fatigue interferes with my work, family, or social life' to 0.936 item 8 'Fatigue is among my three most disabling symptoms' (Table 3).

Convergent validity

The FSS total score was not correlated with the age, but it was correlated significantly with PD-related variables including H&Y ($r = 0.450$, $P < 0.001$), disease duration ($r = 0.301$, $P = 0.002$), daily levodopa dose ($r = 0.292$, $P = 0.002$), UPDRS part I ($r = 0.287$, $P = 0.003$), part II ($r = 0.428$, $P < 0.001$), part III ($r = 0.407$, $P < 0.001$), and part IV ($r = 0.410$, $P < 0.001$), and Schwab and England (S&E) ADL ($r = -0.520$, $P < 0.001$), and the scores of rating scales including HADS-A ($r = 0.332$, $P < 0.001$), HADS-D ($r = 0.364$, $P < 0.001$), SF-36 PCS ($r = -0.444$, $P < 0.001$), SF-36 MCS ($r = -0.239$, $P < 0.001$), ESS ($r = 0.430$, $P < 0.001$), and PSQI ($r = 0.434$, $P < 0.001$) using Spearman's ρ (Table 4).

Known-group validity

We hypothesized that higher items or total scores of the FSS would be associated with disease severity assessed

Table 2 Descriptive characteristics of the Fatigue Severity Scale

Items	Mean (SD)	Median (minimum–maximum)	Coefficient of variation	Corrected item-total correlation	Cronbach's α if item deleted
Item 1	4.08 (1.51)	4 (1–7)	37.0	0.838	0.955
Item 2	4.19 (1.42)	4 (1–7)	33.9	0.761	0.959
Item 3	4.03 (1.41)	4 (1–7)	35.0	0.797	0.957
Item 4	4.24 (1.47)	4 (1–7)	34.7	0.816	0.956
Item 5	4.18 (1.69)	5 (1–7)	40.4	0.883	0.953
Item 6	4.11 (1.61)	4 (1–7)	39.2	0.891	0.952
Item 7	4.16 (1.65)	4 (1–7)	39.7	0.857	0.954
Item 8	4.33 (1.54)	5 (1–7)	35.6	0.846	0.955
Item 9	3.77 (1.41)	4 (1–6)	37.4	0.818	0.956
Total score	4.12 (1.33)	4.2 (1.2–6.6)	32.3		

Cronbach's α: 0.960.

Table 3 Test–retest reliability of the Fatigue Severity Scale

Items	Test [median (IQR)]	Retest [median (IQR)]	ICC (95% CI)	*P* value
Item 1	4.0 (3.8–5.0)	4.0 (3.0–5.0)	0.924 (0.890–0.948)	< 0.001
Item 2	4.0 (3.0–5.0)	4.0 (3.0–5.0)	0.925 (0.892–0.948)	< 0.001
Item 3	4.0 (3.0–5.0)	4.0 (3.0–5.0)	0.902 (0.859–0.932)	< 0.001
Item 4	4.0 (3.0–5.0)	4.0 (3.0–5.0)	0.927 (0.894–0.949)	< 0.001
Item 5	5.0 (3.0–5.0)	5.0 (3.0–6.0)	0.917 (0.880–0.943)	< 0.001
Item 6	4.0 (3.0–5.0)	4.0 (3.0–5.0)	0.919 (0.881–0.944)	< 0.001
Item 7	4.0 (3.0–5.0)	4.0 (3.0–5.0)	0.893 (0.847–0.926)	< 0.001
Item 8	5.0 (4.0–6.0)	5.0 (3.8–6.0)	0.936 (0.907–0.956)	< 0.001
Item 9	4.0 (3.0–5.0)	4.0 (3.0–5.0)	0.887 (0.838–0.922)	< 0.001
Total score	4.2 (3.4–5.2)	4.2 (3.3–5.3)	0.951 (0.929–0.966)	< 0.001

CI, confidence interval; ICC, intraclass correlation coefficient; IQR, interquartile range.

Table 4 Spearman correlations of the total score of the Fatigue Severity Scale with various Parkinson's disease-related variables

Variables	Spearman ρ	*P* value
Age	−0.007	0.939
MMSE	−0.125	0.201
Hoehn and Yahr	0.450	< 0.001
Disease duration	0.301	0.002
Daily levodopa dose	0.292	0.002
UPDRS part I	0.287	0.003
UPDRS part II	0.428	< 0.001
UPDRS part III	0.407	< 0.001
UPDRS part IV	0.410	< 0.001
UPDRS total	0.430	< 0.001
Schwab and England ADL	−0.520	< 0.001
HADS-A	0.332	< 0.001
HADS-D	0.364	< 0.001
SF-36 PCS	−0.444	< 0.001
SF-36 MCS	−0.239	0.014
ESS	0.430	< 0.001
PSQI	0.434	< 0.001

ADL, activities of daily living; ESS, Epworth Sleepiness Scale; HADS, Hospital Anxiety and Depression Scale; MCS, Mental component score; MMSE, Mini-Mental State Examination; PCS, Physical component score; PSQI, Pittsburgh Sleep Quality Index; SF-36, 36-Item Short Form Health Survey; UPDRS, Unified Parkinson's Disease Rating Scale.

by H&Y. Between-group differences on both items and the total score of FSS by H&Y staging were found to be statistically significant (Table 5).

Discussion

This is the first study to use the fatigue scale to assess fatigue and investigate the reliability and validity of this scale in Turkish-speaking PD patients. The present study has shown that the Turkish version of the FSS is a valid and reliable tool in PD patients. Our results are comparable with those reported in Swedish, English, Brazilian-Portuguese, and Persian versions.

In the present study, internal consistency assessed by Cronbach's α coefficient was excellent. Similar to our results, Cronbach's α coefficient ranges from 0.91 to 0.96 in other versions (Hagell *et al.*, 2006; Grace *et al.*, 2007; Valderramas *et al.*, 2012; Fereshtehnejad *et al.*, 2013). In addition, all corrected item-total correlations were statistically significant and were considered to be very good to excellent. Corrected item-total correlations were only assessed in the Persian version and ranged from 0.76 to 0.92. Our results are very similar to those reported in the Persian version.

Reproducibility or test–retest reliability was assessed over a 10-day to 14-day period, and the Turkish version of FSS was shown to be strongly reproducible in our study. Among previous studies, reproducibility was evaluated in only one study (Valderramas *et al.*, 2012). Valderramas *et al.* (2012) reported that the ICC between days 1 and 2 found the ICC values to be 0.91. Despite the time it took (~2 weeks), our reliability ratings have remained high. The results of both internal consistency and test–retest reliability have shown that the Turkish version of FSS is a reliable tool for assessing fatigue in PD patients.

In our study, when patients were divided into those with early (H&Y 1 and 2, $n = 53$) and advanced disease (H&Y 3 and 4, $n = 53$) according to H&Y staging, it was determined that both groups included the same number of

Table 5 Means (SD) and significance level of the Fatigue Severity Scale in all stages of the disease (known-group validity)

Items	H&Y I ($n=26$)	H&Y II ($n=27$)	H&Y III ($n=28$)	H&Y IV ($n=25$)	*P* value
Item 1	3.35 (1.90)	3.81 (1.42)	4.07 (1.18)	5.16 (0.80)	<0.001
Item 2	3.50 (1.63)	3.89 (1.15)	4.29 (0.98)	5.12 (1.42)	<0.001
Item 3	3.31 (1.74)	3.78 (1.45)	4.25 (0.70)	4.80 (1.19)	0.009
Item 4	3.42 (1.68)	4.04 (1.34)	4.29 (1.05)	5.24 (1.23)	<0.001
Item 5	3.15 (1.91)	3.59 (1.60)	4.57 (1.00)	5.44 (1.19)	<0.001
Item 6	3.31 (2.02)	3.81 (1.49)	4.18 (0.98)	5.20 (1.22)	<0.001
Item 7	3.15 (1.80)	3.81 (1.59)	4.29 (1.08)	5.44 (1.19)	<0.001
Item 8	3.65 (1.94)	3.96 (1.43)	4.39 (0.99)	5.36 (1.19)	<0.001
Item 9	2.85 (1.67)	3.70 (1.44)	4.04 (1.14)	4.52 (0.71)	0.002
Total score	3.30 (1.67)	3.82 (1.13)	4.26 (0.83)	5.14 (0.84)	<0.001

H&Y, Hoehn and Yahr.

patients. It is one of the strengths of our study that the number of patients is equal in the early and advanced period, and there is no accumulation on either stage. The mean total FSS score of our patients was 4.1. Similar results were reported by Herlofson and Larsen (2002). They assessed the severity of fatigue in 66 Norwegian PD patients and found the mean total score of the FSS and the mean H&Y stage to be 4.1 and 2.5, respectively. In their study, which is the first study in which patients with PD were assessed by a scale of fatigue, there was no relationship between pain, presence of self-reported nocturnal sleep disorders, duration of PD, and fatigue. Also, the patients with fatigue did have a more advanced disease, assessed by the UPDRS score and H&Y stage. However, as a limitation of their study, pain and nocturnal sleep disorders were evaluated on a dichotome scale (yes/no). In contrast, Valderramas *et al.* (2012) investigated the psychometric properties of the Brazilian-Portuguese version of the FSS in 30 PD patients and although 73% of the patients were in the early stage in their study, they reported a higher total FSS score (4.4) compared with our results. Also, there was a significant relationship between Back Depression Inventory, H&Y staging, or UPDRS and the total score of the FSS. A significant relationship was also reported between PDQ-39 overall or subscale scores and the total scores of the FSS. In another study investigating the psychometric characteristics of the Persian version of the FSS in 90 PD patients (Fereshtehnejad *et al.*, 2013), the mean total score of FSS was reported to be 4.4 and 70% of the patients (H&Y stage of ≤ 2) in early stages (the mean H&Y stage was 1.9). A significant relationship was also found between PD-related variables including disease duration, UPDRS scores, H&Y stage, or S&E ADL scale scores and the total score of FSS. In our study, we found similar results, but unlike the Persian version, we found that the daily levodopa dose was associated with a total FSS score. These results showed that FSS item or total scores were closely related to the progression of PD, analyzed by disease duration, daily levodopa dose, H&Y stage, total and subscale scores of UPDRS, and the S&E ADL scale score.

A significant relationship was also found between HADS-A, HADS-D, SF-36 PCS, or SF-36 MCS scores and a total score of FSS in our study. Our results were consistent with other studies (Valderramas *et al.*, 2012; Fereshtehnejad *et al.*, 2013).

There is a dilemma in the literature on the relationship between fatigue and sleep disorders in Parkinson's disease. Apart from the study by Herlofson and Larsen (2002), Havlikova *et al.* (2008c) also investigated the relationship between fatigue, which is assessed by Multidimensional Fatigue Inventory, and sleep disturbances assessed by the Epworth Sleepiness Scale and Pittsburgh Sleep Quality Index in 78 PD patients, and they reported that fatigue is not related to daytime sleepiness or night-time sleep dysfunction. In another study, Stocchi *et al.* (2014) assessed fatigue and fatigue-related factors using the Parkinson Fatigue Scale-16 in 394 PD patients (Stocchi *et al.*, 2014). They defined a mean Parkinson Fatigue Scale-16 score as 3.3 or higher as distressing fatigue and found that patients with distressing fatigue had longer disease duration. They also evaluated sleep disturbances with Parkinson's Disease Sleep Scale, and in contrast to the study by Havlikova *et al.* (2008c), the presence of distressing fatigue was associated with prevalence of sleep disorders (nocturnal sleep problems and daytime sleepiness). Sleep disorders were also found to be statistically significant in the logistic regression analysis of fatigue-related factors. In the present study, we found that sleep disturbances determined by ESS and PSQI were also affected by fatigue and were closely related to the total scores of FSS.

In the present study, in addition to the close relationship between the progress of PD and the FSS, each item and the total score of the FSS were increased by PD severity assessed by H&Y staging. These results confirm that fatigue is a more serious problem for patients with the progression of PD.

Conclusion

All in all, the Turkish version of the FSS is a valid and reliable tool in PD patients and clinicians should keep in mind that patients with advanced disease may be more susceptible to fatigue.

Acknowledgements

Conflicts of interest

There are no conflicts of interest.

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