Reliability and validity of the Turkish version of the 39-item Parkinson Disease Questionnaire

Tuba Kayapinar BILGE[1, 2] ID, Elif Elcin DERELI[3] ID, Ozgur OZTOP-CAKMAK[4] ID, Fatos Sibel ERTAN[4] ID, Emine Eda KAYAPINAR AYLAK[5] ID, Ozden Ozyemisci TASKIRAN[2] ID

[1]Department of Physiotherapy and Rehabilitation, Faculty of Health Sciences, Halic University, Istanbul, Turkey
[2]Department of Physical Medicine and Rehabilitation, Koç University School of Medicine, Istanbul, Turkey
[3]Department of Physiotherapy and Rehabilitation, Faculty of Health Sciences, Bilgi University, Istanbul, Turkey
[4]Department of Neurology, Koç University School of Medicine, Istanbul, Turkey
[5]Department of Psychiatry, Gülhane Training and Research Hospital, Ankara, Turkey

Correspondent:
Tuba Kayapinar BILGE, PT, MSc, Faculty of Health Sciences, Physiotherapy and Rehabilitation Department, Halic University; 34445 Kocamustafapaşa, Milli Müdafaa St. No:5, 34098 Fatih/İstanbul, Turkey.
Phone: +905373754896
E-mail:
tkayapinar@kuh.ku.edu.tr
https://www.orcid.org/0000-0003-0298-7227

Background and purpose – This study aims to investigate the validity and reliability of the Turkish Version of the 39-item Parkinson Disease Questionnaire.
Methods – A total of 100 patients with Parkinson's disease who were admitted to the outpatient neurology clinic in Koc University and Istanbul University were enrolled. 39-item Parkinson Disease Questionnaire, Parkinson Disease Quality of Life Questionnaire, Unified Parkinson's Disease Rating Scale, Hoehn-Yahr Scale, and Short Form Health Survey-36 were administered to all participants. 39-item Parkinson Disease Questionnaire was repeated 2 weeks later.
Results – The internal consistency coefficient of the 39-item Parkinson Disease Questionnaire was 0.957. Test-retest correlation ranged between r = 0.693-0.979. Reliability of Turkish version of the 39-item Parkinson Disease Questionnaire was found to be very high with the exclusion of one item (30th item). The scale was found to be consistent over time and correlated positively with Hoehn-Yahr Scale, and negatively with Unified Parkinson's Disease Rating Scale, Parkinson Disease Quality of Life Questionnaire, and Short Form Health Survey-36.
Conclusion – Turkish version of the 39-item Parkinson Disease Questionnaire, with the

Háttér és cél – A tanulmány célja a 39 tételes Parkinson-kór-kérdőív török nyelvű változata megbízhatóságának és validitásának elemzése volt.
Módszerek – Összesen 100 Parkinson-kóros beteget vontunk be, akiket a Koc Egyetem és az Isztambuli Egyetem neurológiai ambulanciájára vettek fel. Minden résztvevő kitöltötte a 39 tételes Parkinson-kór kérdőívet, a Parkinson-kór életminőségi kérdőívet, az Egyesített Parkinson-kór pontozó skálát, a Hoehn–Yahr-skálát és a 36 tételes Egészségfelmérés rövid formáját. A 39 tételes Parkinson-kór kérdőív kitöltését 2 héttel később megismételték.
Eredmények – A 39 tételes Parkinson-kór kérdőív belső konzisztencia-együtthatója 0,957 volt. A teszt-reteszt korreláció r = 0,693 és 0,979 között mozgott. A 39 tételes Parkinson-kór kérdőív török nyelvű változatának megbízhatósága nagyon magasnak bizonyult, egy tétel (a 30. tétel) kivételével. A skála időben konzisztensnek bizonyult, és pozitívan korrelált a Hoehn–Yahr-skálával, míg negatívan korrelált az Egyesített Parkinson-kór pontozóskálával, a Parkinson-kór életminőségi kérdőívvel és a 36 tételes Egészségfelmérés rövid formájával.
Következtetés – A 39 tételes Parkinson-kór kérdőív török változata a 30. tétel kizárásával

exclusion of the 30th item can be used reliably in assessing the quality of life of Parkinson's patients.

Keywords: quality of life, Parkinson's disease, reliability and validity, psychometrics, patient reported outcome measures, test-retest reliability

megbízhatóan használható a Parkinson-kóros betegek életminőségének felmérésére.

Kulcsszavak: életminőség, Parkinson-kór, megbízhatóság és validitás, pszichometria, betegek által jelentett kimenetek mérése, teszt-reteszt megbízhatóság

Parkinson's disease (PD) is the second most common neurodegenerative disease characterized clinically by tremor, bradykinesia, rigidity and gait disorders. Along with cardinal motor symptoms, non-motor symptoms such as cognitive impairment, sleep disorders, depression or autonomic dysfunction may affect quality of life in patients with PD. Current management of the disease is based on alleviating the symptoms and improving the quality of life[1]. There are several questionnaires to evaluate disease related quality of life in patients with chronic diseases. Comprehensive evaluations are possible with disease specific quality of life questionnaires. The Parkinson's Disease Questionnaire with 39 items (PDQ-39) was developed by *Peto* et al in 1995[2]. The PDQ-39 has been translated and validated in many languages and cultural settings[3–8]. The PDQ-39 is recommended by the Movement Disorders Society as a specific questionnaire for PD with evidence of its reliability, validity and reproducibility[9]. The PDQ-39 is able to examine the patients in terms of physical, functional, emotional and social aspects. It is one of the most commonly used assessment tool to evaluate disease related quality of life in patients with PD worldwide. The validity and reliability of the Turkish version of the PDQ-8 and the short version of PDQ-39, were recently made by *Kahraman* et al[10]. PDQ-8 can be easily used during outpatient clinical settings. However, detailed clinical evaluations of the patients or clinical trials may demand the original version of PDQ with 39 items.

The aim of this study is to analyse the validity and reliability of the Turkish version of PDQ-39 (see the Appendix online besides the article: https://elitmed.hu/kiadvanyaink/ideggyogyaszati-szemle/2023/3-4) in patients with PD.

Method

Study design and participants

The permission for the validity and reliability study of the Turkish version of PDQ-39 was obtained from *Crispin Jenkinson*, the developer of the PDQ-39. The license was received to use the validated Turkish version of PDQ-39.

One hundred patients, diagnosed with PD according to the UK Parkinson's Disease Society Brain Bank Criteria[11] were recruited from the outpatient clinics of Neurology at the Koç University and the Istanbul University. Patients with dementia, hearing or vision loss and who were illiterate were excluded. Each patient gave informed consent and ethical committee approval was obtained from the Haliç University Ethical Committee (11.02.2016/No.06).

The Hoehn & Yahr (H&Y) scale was used for clinical staging. The H&Y scale is a clinical rating scale commonly used in patients with PD, ranging from 1 to 5 with higher scores indicating more severe functional disability[12].

The disease severity was assessed by the Unified Parkinson's Disease Rating Scale (UPDRS). It includes 42 items with four subscales, and higher scores show more severe disease[13].

Table 1. *Reliability analysis after confirmatory factor analysis*

	Factors	Number of items	Cronbach's alpha
F1	Mobility	10	0.942
F2	Activities of daily living	6	0.917
F3	Emotional well-being	6	0.941
F4	Stigmatization	4	0.869
F5	Social support	3	0.745
F6	Cognition	3	0.789
F7	Communication	3	0.819
F8	Bodily discomfort	3	0.816
	PDQ-39 summary index		0.957

Table 2. *Factor analyses of each item in PDQ-39 scale*

PDQ-39 Item no	Scale score if item deleted	Variance if item deleted	Item total correlation	Cronbach's alpha if item deleted
1	46.990	789.687	0.732	0.953
2	46.630	789.266	0.722	0.953
3	46.780	793.628	0.706	0.953
4	46.620	785.531	0.711	0.953
5	47.360	786.172	0.771	0.953
6	47.780	800.658	0.687	0.953
7	47.050	779.826	0.808	0.952
8	47.130	785.124	0.714	0.953
9	47.200	785.899	0.736	0.953
10	47.010	784.374	0.753	0.953
11	47.480	791.545	0.767	0.953
12	47.430	789.884	0.792	0.953
13	46.950	790.210	0.753	0.953
14	46.590	793.254	0.641	0.954
15	47.300	800.354	0.626	0.954
16	47.090	809.012	0.593	0.954
17	47.310	813.489	0.538	0.954
18	47.450	810.189	0.630	0.954
19	47.530	808.312	0.621	0.954
20	47.340	815.095	0.565	0.954
21	47.410	807.214	0.673	0.954
22	47.320	795.755	0.725	0.953
23	47.970	819.141	0.488	0.955
24	47.630	807.973	0.618	0.954
25	47.990	816.818	0.571	0.954
26	47.920	815.004	0.628	0.954
27	48.070	830.692	0.376	0.955
28	48.110	822.159	0.453	0.955
29	48.040	825.918	0.371	0.955
30	*47.610*	*847.998*	*0.007*	*0.957*
31	47.630	827.589	0.309	0.956
32	47.350	824.533	0.371	0.955
33	47.320	828.038	0.304	0.956
34	47.700	813.949	0.528	0.954
35	47.790	817.178	0.558	0.954

Outcome measures

The PDQ-39 is a self-assessment tool composed of 39 items in 8 domains. Domains include mobility (10 items), activity of daily living (6 items), emotional well-being (6 items), stigmatization (4 items), social support (3 items), cognition (4 items), communication (3 items), and bodily discomfort (3 items) **(Table 1)**. Each item is scored by using 5 level Likert-scale (0= never, 1= occasionally, 2= sometimes, 3= often, 4= always or cannot do at all or not applicable). Each domain is scored as a percentage of the sum of the item scores in the related domain. Domain scores range between 0 and 100. Overall score is defined as PDQ-39 Summary Index (PDQ-39 SI). PDQ-39 SI is the sum of eight domain scores divided by 8 and ranges between 0 and 100 [2]; higher scores indicate worse quality of life. (See the Supplement for the Turkish language version of PDQ-39 on the homepage of Clinical Neuroscience next to the online version of this article: https://elitmed.hu/kiadvanyaink/ideggyogyaszati-szemle/2023/3-4.) The global functioning and well-being of the patients were evaluated with the short form questionnaire (SF-36) and Parkinson's Disease Quality of life Questionnaire (PDQLQ). The SF-36 questionnaire consists of 8 domains including physical functioning, role limitations due to physical functioning, bodily pain, general health, vitality, social functioning, role limitations due to emotional functioning, and mental health. Higher scores representing better health condition[14]. The PDQLQ includes 37 items with 4 subscales. Item scores range from 1 to 5 with higher scores reflecting better health related quality of life[15]. All questionnaires were fulfilled on the same day when the patients were 'on'. To evaluate test-retest reliability, PDQ-39 was repeated two weeks later in 20 patients.

Statistical analyses

Statistical Package for Social Sciences (SPSS) for Windows 22.0 and AMOS 21 programs were used to analyse the data. Cronbach's alpha internal consistency coefficient was used for reliability analysis (Cronbach's alpha coefficient $0.00 \leq \alpha \leq 0.40$; unreliable, $0.40 \leq \alpha \leq 0.60$; low, 0.60

Continuation of Table 2

PDQ-39 Item no	Scale score if item deleted	Variance if item deleted	Item total correlation	Cronbach's alpha if item deleted
36	48.150	820.109	0.656	0.954
37	47.130	825.407	0.342	0.955
38	46.920	824.882	0.325	0.956
39	47.240	826.204	0.318	0.956

$\leq \alpha \leq 0.80$; fairly and $0.80 \leq \alpha \leq 1.00$; highly reliable)[16]. The test-retest reliability, item total correlation and correlation analysis of the parallel (equivalent) form reliability were performed.

To assess validity, exploratory factor analysis (EFA) was performed after showing the applicability of factor analysis by preliminary assumption tests, the KMO (Kaiser-Meyer-Olkin) and the Barlett tests.

Results

The mean ± standard deviation age of the patients was 62.4 ± 13.6 years. More than half of the participants (62%) were men. Most patients (65%) were under stage 3 H&Y.

Reliability

The Cronbach's alpha coefficient was 0.955. The item total correlation values are given in **Table 2**. The total correlation values were above 0.3 for all the items except for item 30. The Cronbach's alpha coefficient was recalculated by extracting the item 30; reliability analysis and item analysis was found to be 0.957 **(Table 1)**.

Test-retest reliability was performed in 20 patients. Correlation coefficient ranged from 0.693 to 0.979 **(Table 3)**. The mean ± SD age of patients who fulfilled the PDQ-39 for the second time was 64.1 ± 13.5 years. Half of the patients (50%) were men and 55% of the patients were under stage 3 H&Y.

Validity

The KMO test showed that the sample size was sufficient for factor analysis (0.881). Bartlett's test of sphericity also indicated that factor analysis was useful with our data (p<0.001).

In the scale, item 30 was excluded from the assessment as it adversely affected internal consistency. The overall reliability of 38 items in the scale was found to be very high as Cronbach's alpha coefficient was 0.957.

The factor structure of the scale is shown in **Table 4**. The PDQ-39 scores were significantly correlated positively with the H&Y and the UPDRS scores, and negatively with the PDQLQ and the SF-36 scores **(Table 5)**.

Discussion

Our study showed that the Turkish version of PDQ-39 has high reliability and validity. The Cronbach's alpha in our study was 0.957 similar to those of Hong-Kong (0.54-0.90), Greece (0.71-0.94), England (0.66-0.95) and China (0.58-0.96)[4, 7, 17, 18]. Our results indicate a satisfactory reliability.

The item 30 in the cognition domain "Due to having Parkinson's disease, how often during the last month have you unexpectedly fallen asleep during the day?" was excluded because it adversely affected internal consistency, which is similar to other studies[3, 6, 19]. Falling asleep unexpectedly during the day may not have an impact on the quality of life in the patients with PD who may have a more sedentary life.

In our study for test-retest analysis, the correlation coefficient revealed that the total scale was highly reliable (r=0.979) over time, similar to other studies[20]. However the strength of correlations in social support (r=0.733) and cognition (r=0.693) domains was not as excellent as in the other domains. This finding is similar to other studies with Cronbach's alpha ranging between 0.60 and 0.82 including the original survey (Cronbach's alpha: 0.749)[7].

Items in the "mobility" and "activities of daily living" domains were united in our study. So with that difference from the original scale consisting of 8 domains, the Turkish version appeared as a combination of seven domains. The first domain of the Turkish version was named as

Table 3. *Test-retest correlation coefficient of PDQ-39 Scale (n=20)*

Domains	r	p
Mobility	0.972	<0.01
Activities of daily living	0.951	<0.01
Emotional well-being	0.953	<0.01
Stigmatization	0.894	<0.01
Social Support	0.733	<0.01
Cognition	0.693	0.001
Communication	0.960	<0.01
Bodily discomfort	0.933	<0.01
Total	0.979	<0.01

Table 4. *Factor Structure of PDQ-39 Scale*

Domain	Item	Factor load	Explained variance	Cronbach's alpha
Factor 1' (Eigen-value=15.195)	11	0.858	24.297	0.958
	12	0.846		
	8	0.792		
	7	0.778		
	10	0.772		
	6	0.771		
	5	0.744		
	2	0.717		
	9	0.663		
	3	0.650		
	13	0.644		
	4	0.639		
	1	0.596		
	15	0.589		
	14	0.542		
Factor 2' (Eigen-value=3.006)	18	0.884	14.554	0.941
	19	0.880		
	20	0.876		
	17	0.806		
	21	0.746		
	22	0.674		
Factor 3' (Eigenval-ue=2.498)	25	0.752	11.504	0.877
	23	0.708		
	24	0.683		
	26	0.664		
	16	0.638		
	36	0.511		
Factor 4' (Eigenvalue= 1.892)	29	0.807	6.656	0.745
	28	0.760		
	27	0.580		
Factor 5' (Eigen-value=1.449)	32	0.775	5.938	0.679
	31	0.678		
Factor 6' (Eigen-value=1.530)	34	0.799	6.162	0.892
	35	0.778		
Factor 7' (Eigen-value=1.120)	38	0.852	5.029	0.679
	37	0.780		

Factor 1' Mobility and activities of Daily Living, Factor 2': Emotional Well Being, Factor 3': Stigmatization, Factor 4': Social Support, Factor 5': Cognition, Factor 6': Communication, Factor 7': Bodily Discomfort

"mobility and ADL" domain and included 15 items, different from the original scale.

Item 16: "Due to having Parkinson's disease, how often during the last month have you held a drink without spilling it?" appeared in the stigma domain rather than the ADL domain in the original scale. In our study, stigmatization domain included also item 36: "Due to having Parkinson's disease, how often during the last month have you felt ignored by other people?" which is in the communication domain in the original scale. Stigmatization domain of Turkish version consisted of 6 items whereas the original scale consisted of 4 items.

The correlations between PDQ-39 and general health status (SF-36), disease specific quality of life score (PDQLQ), and severity and staging of the disease (UPDRS, HY) showed acceptable convergent validity. Strength of correlation of mobility and ADL domains of PDQ-39 was the highest among all domains in the analysis with domains of other scales.

The correlation coefficients between mobility and ADL domains and total UPDRS score were higher in our study ($r=0.796$ and $r=0.737$) compared to Greek ($r=0.26$ and $r=0.51$) and Spanish ($r=0.63$ and $r=0.66$) versions of PDQ-39[3, 4]. Correlation between the mobility domain of PDQ-39 and the motor part of UPDRS was higher in our study ($r=0.696$) than that of Chinese ($r=0.43$). Correlation between the ADL domain of PDQ-39 and the ADL part of UPDRS was higher in our study ($r=0.736$) than that of Chinese ($r=0.65$)[7].

The high correlation between PDQ-39 summary index and all domains of SF-36 ($r=-0.803 – r=-0.900$) and PDQLQ ($r=-0.807 – r=-0.881$) suggested that PDQ-39 is a valid scale to measure quality of life. These coefficients were higher than that of Chinese and Persian versions[7, 8]. Social support and cognition domains of PDQ-39 had lower correlations (<0.50) with SF-36 and PDQLQ than the other PDQ-39 domains, which is similar to Chinese version[7].

Conclusion

Limitation of this study is that the study was conducted only in patients who were able to come to the outpatient clinics. Se-

Table 5. *The Correlation of PDQ-39 score with the H&Y, UPDRS, PDQLQ and SF-36 Scores*

		PDQ-39								
		Total	Mobility	ADL	Emotional well-being	Stigmatization	Social Support	Cognition	Communication	Bodily discomfort
H&Y	r	0.814	0.858	0.707	0.488	0.495	0.372	0.379	0.518	0.350
	p	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
UPDRS										
Total	r	0.847	0.796	0.737	0.558	0.522	0.393	0.486	0.606	0.484
	p	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Mental	r	0.698	0.610	0.586	0.589	0.431	0.336	0.517	0.473	0.244
	p	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001
ADL	r	0.825	0.797	0.736	0.519	0.479	0.352	0.431	0.565	0.514
	p	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001
Motor	r	0.752	0.696	0.650	0.471	0.473	0.389	0.440	0.563	0.459
	p	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
PDQLQ										
Total	r	-0.892	-0.885	-0.774	-0.572	-0.538	-0.400	-0.470	-0.547	-0.497
	p	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Symptoms	r	-0.881	-0.892	-0.773	-0.540	-0.534	-0.365	-0.458	-0.543	-0.482
	p	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Systemic symptoms	r	-0.807	-0.809	-0.672	-0.514	-0.486	-0.442	-0.384	-0.467	-0.496
	p	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Emotional function	r	-0.814	-0.769	-0.697	-0.565	-0.544	-0.350	-0.470	-0.508	-0.443
	p	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Social function	r	-0.851	-0.852	-0.756	-0.530	-0.483	-0.400	-0.431	-0.548	-0.447
	p	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
SF-36										
Physical function	r	-0.900	-0.865	-0.772	-0.629	-0.589	-0.423	-0.437	-0.571	-0.492
	p	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Role Physical	r	-0.881	-0.858	-0.785	-0.588	-0.574	-0.391	-0.430	-0.584	-0.412
	p	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Role Emotional	r	-0.860	-0.812	-0.789	-0.593	-0.594	-0.453	-0.371	-0.565	-0.360
	p	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Vitality	r	-0.863	-0.816	-0.739	-0.662	-0.546	-0.332	-0.443	-0.528	-0.475
	p	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001
Mental Health	r	-0.803	-0.719	-0.654	-0.743	-0.535	-0.391	-0.389	-0.491	-0.340
	p	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Continuation of Table 5

| | | PDQ-39 | | | | | | | | |
		Total	Mobility	ADL	Emo-tional well-being	Stig-mati-zation	Social Support	Cognition	Commu-nication	Bodily dis-comfort
Social functioning	r	-0.904	-0.852	-0.807	-0.647	-0.607	-0.445	-0.430	-0.538	-0.451
	p	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Bodily Pain	r	-0.820	-0.770	-0.697	-0.575	-0.578	-0.408	-0.343	-0.539	-0.496
	p	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
General Health	r	-0.855	-0.796	-0.736	-0.695	-0.564	-0.370	-0.374	-0.479	-0.479
	p	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

verely ill patients with high H&Y score may not be represented well enough. Further studies with larger number of patients may be conducted.

In conclusion, the 38-item-Turkish version of the PDQ-39 questionnaire is valid and reliable. This questionnaire can be used to measure the quality of life in Parkinson disease in Turkey. Overall the cognition and social support domains of PDQ-39 had lower internal consistency and lower correlation coefficients with the other scales, consistent with previous studies.

———

References

1. *Poewe W, Seppi K, Tanner CM, Halliday GM, Brundin P, Volkmann J, et al.* Parkinson disease. Nat Rev Dis Primers 2017;3:17013. https://doi.org/10.1038/nrdp.2017.13

2. *Peto V, Jenkinson C, Fitzpatrick R, Greenhall R.* The development and validation of a short measure of functioning and well being for individuals with Parkinson's disease. Qual Life Res 1995;4:241-8. https://doi.org/10.1007/BF02260863

3. *Martínez-Martín P, Payo BF, The Grupo Centro for Study of Movement Disorders.* Quality of life in Parkinson's disease: validation study of the PDQ-39 Spanish version. J Neurol 1998;245(S1):S34-S38. https://doi.org/10.1007/PL00007737

4. *Katsarou Z, Bostantjopoulou S, Peto V, Alevriadou A, Kiosseoglou, G.* Quality of life in Parkinson's disease: Greek translation and validation of the Parkinson's disease questionnaire (PDQ-39). Qual Life Res 2001;10:159-63. https://doi.org/10.1023/a:1016720400862

5. *Park HJ, Sohng KY, Kim S.* Validation of the Korean version of the 39-Item Parkinson's Disease Questionnaire (PDQ-39). Asian Nurs Res (Korean Soc Nurs Sci) 2014;8:67-74. https://doi.org/10.1016/j.anr.2014.02.004.

6. *Bushnell DM, Martin ML.* Quality of life and Parkinson's disease: translation and validation of the US Parkinson's Disease Questionnaire (PDQ-39). Qual Life Res 1999;8:345-50. https://doi.org/10.1023/a:1008979705027.

7. *Luo W, Gui XH, Wang B, Zhang WY, Ouyang ZY, Guo Y, et al.* Validity and reliability testing of the Chinese (mainland) version of the 39-item Parkinson's Disease Questionnaire (PDQ-39). J Zhejiang Univ Sci B. 2010;11:531-8. https://doi.org/10.1631/jzus.B0900380

8. *Nojomi M, Mostafavian Z, Shahidi GA, Jenkinson C.* Quality of life in patients with Parkinson's disease: Translation and psychometric evaluation of the Iranian version of PDQ-39. J Res Med Sci 2010;15:63-9. PMID: 21526061

9. *Martinez-Martin P, Jeukens-Visser M, Lyons KE, Rodriguez-Blazquez C, Selai C, Siderowf A, et al.* Health-related quality-of-life scales in Parkinson's disease: critique and recommendations. Mov Disord 2011;26:2371-80. https://doi.org/10.1002/mds.23834

10. *Kahraman T, Genç A, Soke F, Goz E, Colakoglu BD, Keskinoglu P.* Validity and Reliability of the Turkish Version of the 8-Item Parkinson's Disease Questionnaire. Noro Psikiyatr Ars 2018;55:337-40. https://doi.org/10.5152/npa.2017.19343

11. *Hughes AJ, Daniel SE, Kilford L, Lees AJ.* Accuracy of clinical diagnosis of idiopathic Parkinson's disease: a clinico-pathological study of 100 cases. J Neurol Neurosurg Psychiatry 1992;55:181-4. https://doi.org/10.1136/jnnp.55.3.181

12. *Hoehn MM, Yahr MD.* Parkinsonism: onset, progression, and mortality 1967;17:427-42. https://doi.org/10.1212/WNL.17.5.427.

13. *Fahn S, Elton RL, UPDRS program members.* Members of the UPDRS Development Committee: Unified Parkinson's Disease Rating Scale. Recent Developments in Parkinson's Disease 1987;2:153-63.

14. *Ware JE, Snow KK, Gandek B.* SF-36 Health Survey Manual and Interpretation Guide. Boston: Nimrod Press; 1993. p. 66-8.

15. *Dereli EE, Yaliman A, Colaka TK, Cakmak A, Ozdincler AR, Demirbas SB.* Turkish Version Study of "Parkinson's Disease Quality of Life Questionnaire" (PDQL). Noro Psikiyatri Arsivi 2015;52:128-32. https://doi.org/10.5152/npa.2015.7359

16. *Landis JR, Koch GG.* The measurement of observer agreement for categorical data. Biometrics 1977;33:159-74. PMID: 843571 https://doi.org/10.2307/2529310

17. *Jenkinson C, Fitzpatrick R, Peto V, Greenhall R, Hyman N.* The Parkinson's Disease Questionnaire (PDQ-39): development and validation of a Parkinson's disease summary index score. Age Ageing 1997;26:353-7.https://doi.org/10.1093/ageing/26.5.353

18. *Tsang KL, Chi I, Ho SL, Lou VW, Lee TM, Chu LW.* Translation and validation of the standard Chinese version of PDQ-39: a quality-of-life measure for patients with Parkinson's disease. Mov Disord 2002;17:1036-40. https://doi.org/10.1002/mds.10249.

19. *Marinus J, Ramaker C, van Hilten JJ, Stiggelbout AM.* Health related quality of life in Parkinson's disease: a systematic review of disease specific instruments. J Neurol Neurosurg Psychiatry 2002;72:241-8. https://doi.org/10.1136/jnnp.72.2.241

20. *Krikmann U, Taba P, Lai T, Asser T.* Validation of an Estonian version of the Parkinson's Disease Questionnaire (PDQ-39). Health Qual Life Outcomes 2008;6:23. https://doi.org/10.1186/1477-7525-6-23

With these photographs we commemorate the devastating effect of the earthquake, the destruction of many Turkish and Syrian cities, with their amazing history and people. The first photo is about Malatya New Mosque, a historical place built in 1843, and the other two from Hatay, the city, where most of the houses collapsed, and a desperate father is holding the hands of his daughter dead in her fifteen.

Betul Ozdilek

Ms. Ozdilek, a Turkish colleague of us, sent the commemoration and the photos to the Clinical Neuroscience at the request of the editors. We are mourning with them.

New Mosque, Malatya

Appendix. *Turkish version of PDQ-39*

	Parkinson Hastalığı Yaşam Kalitesi Anketi (PDQ-39)					
	Parkinson hastalığından dolayı, <u>son bir ay boyunca</u> ne sıklıkla…	Hiç bir zaman	Arada sırada	Bazen	Sık sık	Her zaman
	Mobilite ve Günlük yaşam aktiviteleri					
1	Boş zamanlarınızda yapmak istediğiniz boş zaman faaliyetlerini yerine getirmekte güçlük çektiniz mi?					
2	Evinizin bakımını yapmakta zorluk çektiniz mi, örneğin ev için tamirat ve değişiklikler yapmak, ev işleri, yemek pişirme?					
3	Alışveriş torbalarını taşımakta zorluk çektiniz mi?					
4	Bir kilometrelik yol yürümekte sorunlar yaşadınız mı?					
5	Yüz metrelik yol yürümekte sorunlar yaşadınız mı?					
6	Evin içerisinde istediğiniz kadar kolay dolaşmakta sorunlar yaşadınız mı?					
7	Evinizin dışında, sokakta dolaşmakta zorluk çektiniz mi?					
8	Dışarıya çıktığınızda size eşlik edecek birine ihtiyaç duydunuz mu?					
9	Toplum içinde yere düşmekten korktunuz ya da endişelendiniz mi?					
10	İstediğinizden daha fazla eve bağlı kaldınız mı?					
11	Yıkanmakta zorluk çektiniz mi?					
12	Giyinmekte zorluk çektiniz mi?					
13	Düğmelerinizi iliklemekte veya ayakkabı bağlarınızı bağlamakta sorunlar yaşadınız mı?					
14	Okunaklı biçimde yazı yazmakta sorunlarınız oldu mu?					
15	Yiyeceklerinizi kesmede güçlük çektiniz mi?					
	Duygusal Esenlik hali					
17	Kendinizi depresyonda hissettiniz mi?					
18	Kendinizi başkalarından kopuk ve yalnız hissettiniz mi?					
19	Kendinizi gözü yaşlı ya da ağlamak istiyor gibi hissettiniz mi?					
20	Kendinizi kızgın veya buruk hissettiniz mi?					
21	Kendinizi kaygılı hissettiniz mi?					
22	Geleceğiniz için endişelendiniz mi?					
	Stigmatizasyon					
23	Parkinson hastalığınızı insanlardan saklamanız gerektiğini hissettiniz mi?					
24	Evinizin dışında, başkalarının bulunduğu yerlerde yemek yemek ya da içmekle ilgili durumlardan kaçındınız mı?					
25	Topluluk içindeyken Parkinson hastalığınız olduğu için utandınız mı?					
26	Diğer insanların size olan tepkileri hakkında endişelendiniz mi?					
16	İçecek bir şeyi dökmeden tutmakta güçlük çektiniz mi?					
36	İnsanların sizi görmezden geldiğini hissettiniz mi?					

	Sosyal Destek					
27	Yakın kişisel ilişkilerinizde (örn; aileniz ve/veya arkadaşlarınızla) sorunlarınız oldu mu?					
28	Eşinizden ya da birlikte olduğunuz kişiden ihtiyaç duyduğunuz konularda yeterince destek alamadınız mı? *Eğer bir eşiniz ya da birlikte olduğunuz birisi yoksa, lütfen bu kutuyu işaretleyin☐.*					
29	Ailenizden veya yakın arkadaşlarınızdan ihtiyaç duyduğunuz konularda yeterince destek alamadınız mı?					
	Biliş					
30						
31	Dikkatinizi toparlamakta problemler yaşadınız mı, örneğin okurken veya televizyon seyrederken?					
32	Hafızanızın kötü olduğunu hissettiniz mi?					
33						
	İletişim					
34	Konuşmakta zorluk çektiniz mi?					
35	İnsanlarla kolay bir şekilde iletişim kuramadığınızı hissettiniz mi?					
	Bedensel Rahatsızlık					
37	Ağrılı kas kramplarınız ya da spazmlarınız oldu mu?					
38	Eklem yerlerinizde veya vücudunuzda ağrı ve sızılarınız oldu mu?					
39						

* 30 Gün içerisinde istemeden, beklenmedik durumlarda uyuya kaldınız mı?
*33 Size sıkıntı veren rüyalar veya hayaller gördünüz mü?
*39 Vücudunuzda nahoş bir şekilde sıcaklık ya da soğukluk hissettiniz mi?