

eTable 1. Comparison of patient and informant ratings of Functional Activities Questionnaire items

Item	Rater	Rating n/%				Cramer's V (95%-CI)	p-value
		0	1	2	3		
Item 1: Writing checks, paying bills, balancing checkbook	Patient	70/94.6	2/2.7	1/1.4	1/1.4	0.09 (0, 0.20)	0.75
	Informant	82/91.1	6/6.7	1/1.1	1/1.1		
Item 2: Assembling tax records, business affairs, or papers	Patient	62/83.8	4/5.4	6/8.1	2/2.7	0.17 (0, 0.30)	0.17
	Informant	72/80	13/14.4	4/4.4	1/1.1		
Item 3: Shopping alone for clothes, household necessities, or groceries	Patient	69/93.2	5/6.8	0/0	0/0	0.16 (0, 0.28)	0.40
	Informant	77/85.6	9/10	2/2.2	2/2.2		
Item 4: Playing a game of skill, working on a hobby	Patient	61/82.4	10/13.5	2/2.7	1/1.4	0.12 (0, 0.24)	0.52
	Informant	70/77.8	15/16.7	5/5.6	0/0		
Item 5: Heating water, making a cup of coffee, turning off stove after use	Patient	71/95.9	3/4.1	0/0	0/0	0.07 (0, 0.20)	1.00
	Informant	86/95.6	3/3.3	1/1.1	0/0		
Item 6: Preparing a balanced meal	Patient	58/78.4	11/14.9	3/4.1	2/2.7	0.08 (0, 0.19)	0.77
	Informant	70/77.8	11/12.2	7/7.8	2/2.2		
Item 7: Keeping track of current events	Patient	69/93.2	3/1	2/2.7	0/0	0.06 (0, 0.18)	0.82
	Informant	82/91.1	6/6.7	2/2.2	0/0		
Item 8: Paying attention to, understanding, discussing TV, book, magazine	Patient	67/90.5	4/5.4	2/2.7	1/1.4	0.13 (0, 0.25)	0.41
	Informant	77/85.6	10/11.1	3/3.3	0/0		
Item 9: Remembering appointments, family occasions, holidays, medications	Patient	63/85.1	8/10.8	3/4.1	0/0	0.10 (0, 0.23)	0.47
	Informant	70/77.8	13/14.4	7/7.8	0/0		
Item 10: Traveling out of neighbourhood, driving, arranging to take buses	Patient	65/87.8	4/5.4	4/5.4	1/1.4	0.10 (0, 0.21)	0.69
	Informant	79/87.8	7/7.9	2/2.2	2/2.2		

Exact Fisher Test was applied. Effect size is expressed as Cramer's V. 95%-CIs were calculated using R-package "rstatix" (Version 0.7.0). Scoring system is coded as follows: 0=Normal or never did the activity but could do now; 1=Has difficulty but does by self or never did the activity and would have difficulty now; 2=Requires assistance; 3=Dependent. CI=confidence interval.

eTable 2. Comparison of Functional Activities Questionnaire scores according to patient versus informant ratings

	Rater		<i>r</i> (95%-CI)	<i>p</i> -value
	Patient	Informant		
FAQ total score	0/2	2/3	0.07 (0.00, 0.22)	0.35
FAQ cognition score	0/0.1	0/0.1	0.11 (0.01, 0.25)	0.16
FAQ motor score	0/0.1	0/0.1	0.05 (0.00, 0.22)	0.54
FAQ _Q score	1/0	1/0	0.02 (0.00, 0.17)	0.83

Two-tailed Mann-Whitney-*U* tests were applied. Values are presented as *median/interquartile range (IQR=Q3-Q1)*. Effect size is expressed as *r* (Formula: $\frac{Z}{\sqrt{N}}$). 95%-CIs were calculated using R-package “rstatix” (Version 0.7.0). CI=confidence interval, FAQ=Functional Activities Questionnaire, FAQ_Q=Functional Activities Questionnaire Quotient.

eTable 3. Baseline characterization of the follow-up cohort with study groups stratified according to either cognitive instrumental activities of daily living status or cognitive diagnosis

	Follow-up Cohort	FAQ _{Q≤1}	FAQ _{Q>1}	p-value	PD-CN	PD-MCI	p-value
N/%	164/100	127/78.7	37/21.3		106/64.6	58/35.4	
Demographics							
Male sex, n/%	102/62.2	77 /60.6	25 /67.6#	0.57	65 /61.3	37/63.8	0.89*
Age yr.	65.10/12.7	65.5/12.9	65.1/9.5	0.42	65.8/14.3	64.5/8.9	0.43
Education yr.	13/4	13/4	12/4	0.04	13/4	12/3	0.03
Age at Onset yr.	60.2/13.4	59.6/13.5	60.4/11.9	0.31	60.3/14.7	59.8/10.9	0.65
Disease duration yr.	3.7/5.3	3.8/5.5	3.3/4.8	0.56	3.3/4.9	4.7/5.3	0.03
Levodopa equivalent daily dose	450/437	425/412	507/454	0.16	395/382	583/566	0.002
Motor and Non-motor scales							
MDS-UPDRS-III	24/14	24/15	23/13	0.81	23/15	25/12	0.004
Hoehn & Yahr, n/%				0.50			0.05#
1	20/12.2	13/10.1	7/20.0		14/13.2	6/10.4	
2	108/65.9	86/67.7	22/59.5		75/70.8	33/56.9	
3	35/21.3	27/21.3	8/21.6		17/16.0	18/31.0	
4	1/0.6	1/0.8	0/0		0/0	1/1.7	
	6/7	5/7	9/13				
Beck Depression Inventory-II	6/7	5/7	9/13	<0.001	6/7	6/9	0.55
Non-Motor Symptoms Questionnaire	7/7	6/5	11/6	<0.001	7/6	8/7	0.11

Unless otherwise indicated, values are reported as *median/interquartile range (IQR=Q3-Q1)*. Boldface denotes statistically significant values. *Chi-square test. #Exact Fisher Test. FAQ_{Q>1}=cognitive instrumental activities of daily living impairment, FAQ_{Q≤1}=motor instrumental activities of daily living impairment, PD-CN=Parkinson's Disease Cognitively Normal, PD-MCI=Parkinson's Disease with Mild Cognitive Impairment, MDS-UPDRS-III=Movement Disorder Society Unified Parkinson's Disease Rating Scale part III, yr.=years.

eTable 4. Baseline profile of patients included or excluded for follow-up visit

	Total Baseline Cohort	Follow-up Cohort	Drop-outs/ Excluded	r/Cramer's V (95%-CI)	p-value
N/%	268/100	164/61.2	104/38.8		
Lost to follow-up	-	-	86/32.1		
Demographics					
Male sex, n/%	168/62.7	102/62.2	66/63.5	0.01 (0, 0.12)	0.94*
Age yr.	66.2/13.4	65.1/12.7	68.9/13	0.15 (0.02, 0.28)	0.01
Education yr.	13/4	13/4	13/3.3	0.06 (0, 0.18)	0.33
Age at Onset	60.9/14.9	60.2/13.4	63.2/14.7	0.09 (0, 0.21)	0.12
Disease duration yr.	4.1/5.7	3.7/5.3	5/5.7	0.12 (0.01, 0.24)	0.05
Levodopa equivalent daily dose	511/515	450/437	617.5/557.5	0.18 (0.05, 0.21)	0.004
Motor and Non-motor scales					
MDS-UPDRS-III	25/16	24/14	27/16	0.13 (0.03, 0.25)	0.04
Hoehn & Yahr, n/%				0.25 (0.10, 0.35)	<0.001#
1	35/13.1	20/12.2	15/14.5		
2	152/56.7	108/65.9	44/42.3		
3	78/29.1	35/21.3	43/41.3		
4	3/1.1	1/0.6	2/1.9		
Beck Depression Inventory-II	7/8	6/7	9/8.3	0.15 (0.03, 0.27)	0.02
Non-Motor Symptoms Questionnaire	7/6	7/7	8/6	0.10 (0.01, 0.21)	0.12
IADL					
FAQ total score	1/3	0/2	1/3.3	0.14 (0.02, 0.26)	0.02
FAQ cognition score	0/0.07	0/0.07	0/0.13	0.11 (0.01, 0.23)	0.08
FAQ motor score	0/0.10	0/0.10	0.02/0.10	0.13 (0.02, 0.25)	0.04
FAQ _Q score	1/0.01	1/0	1/0.06	0.05 (0, 0.17)	0.37
Cognitive IADL impairment (FAQ _{Q>1}), n/%	64/23.9	37/22.6	27/26.0	0.04 (0, 0.16)	0.62*
Cognition					
PD-MCI, n/% [1]	108/40.3	58/34.8	51/49	0.15 (0.02, 0.27)	0.02*
Montreal Cognitive Assessment	26/5	26/4	25/5	0.14 (0.02, 0.25)	0.03

Unless otherwise indicated, values are presented as *median/interquartile range (IQR=Q3-Q1)*. Missing values are reported in brackets []. Boldface denotes statistically significant values. Two-tailed Mann-Whitney-*U* tests were applied for continuous variables. *Chi² test. #Exact Fisher Test. Effect sizes are expressed as *r* (Formula: $\frac{z}{\sqrt{N}}$) for Mann-Whitney-*U*-Test or as Cramer's *V* for Exact Fisher Test. 95%-CIs were calculated using R-package "rstatix" (Version 0.7.0). CI=confidence interval, FAQ=Functional Activities Questionnaire, FAQ_Q=Functional Activities Questionnaire Quotient, IADL=instrumental Activities of Daily Living, PD-MCI=Parkinson's Disease with mild cognitive impairment, MDS-UPDRS-III=Movement Disorder Society Unified Parkinson's Disease Rating Scale part III, yr.=years.

eTable 5. Characterization of patients according to cognitive status at time of follow-up

	Total Cohort	PD-CN	PD-MCI	PDD	<i>p</i> -value
<i>N</i> / <i>%</i>	164/100	93/56.7	54/32.9	17/10.4	
Demographics					
Male Sex, <i>n</i> / <i>%</i>	102/62.2	61/65.6	30/55.6	11/64.7	0.47*
Years of Age yr.	68.9/12.8	67.8/14.1	68.6/11.9	73.4/8.7	0.03
Education yr.	13/4	13/4	12/2	12/4	0.004
Age at Onset yr.	60.2/13.4	60.3/14.5	58.8/12.8	62.9/7.8	0.18
Disease duration yr.	7.6/5.2	7.2/4.6	8.3/6.9	8.5/3.9	0.06
Levodopa equivalent daily dose	700/446	700/452	702/468	557/421	0.62
Motor and Non-motor scales					
MDS-UPDRS-III [20]	27/13	23/11	30/10	49/9	0.001
Hoehn & Yahr: <i>n</i> / <i>%</i>					0.001#
1	9/6.2	7/8.0	2/4.3	0/0	
2	91/62.8	65/73.9	22/47.8	4/36.4	
3	39/26.9	15/17.1	19/41.3	5/45.4	
4	4/2.7	1/1.0	2/4.4	1/9.1	
5	2/1.4	0/0	1/2.2	1/9.1	
Beck Depression Inventory-II [8]	9/9	8/8	10/10	12/7	0.01
Non-Motor Symptoms Questionnaire [10]	9/6	8/7	10/7	11/5	0.015
IADL					
FAQ total score [3]	1/5	0/2	3/6	19/15	0.001
FAQ cognition score [3]	0/0.2	0/0.1	0.1/0.2	0.6/0.4	0.001
FAQ motor score [3]	0/0.1	0/0.0	0/0.2	0.6/0.6	0.001
Cognition					0.001
Montreal Cognitive Assessment [11]	26/5	27/4	24/6	17.5/6	0.001
Attention [15]	0.10/1.00	0.25/0.70	-0.40/1.23	-1.10/0.25	0.001
-Digit-Symbol Test (WIE) [13]	-0.20/1.40	0/0.60	-0.60/1.00	-1.02/0.20	0.001
-Letter-Number-Sequencing (WIE) [13]	0/1.40	0.40/1.05	-0.20/1.40	-1.00/0.50	0.001
Executive Functions [12]	-0.03/1.32	0.27/0.83	-0.90/1.18	-1.55/1.32	0.001
-Semantic Fluency (CERAD-PLUS) [5]	-0.30/1.50	0.20/1.10	-1.05/1.10	-2.00/1.60	0.001
-Phonemic Fluency (CERAD-PLUS) [5]	0.10/1.40	0.40/1.10	-0.50/1.38	-1.30/1.65	0.001
-Trail Making Test Part B (CERAD-PLUS) [12]	-0.40/1.90	0.10/1.60	-1.50/ 1.75	-2.30/0.53	0.001
Memory [7]	-0.30/1.68	0.23/0.93	-1.30/0.97	-2.52/1.47	0.001
-Word List Learning (CERAD-PLUS) [5]	-0.20/1.95	0.40/1.40	-1.50/1.68	-2.90/2.58	0.001
-Word List Recall (CERAD-PLUS) [5]	-0.20/ 1.70	0.40/1.20	-0.90/1.25	-1.85/1.40	0.001
-Constructional Praxis Recall (CERAD-PLUS) [5]	-0.70/1.60	-0.10/1.50	-1.30/1.55	-2.60/1.05	0.001
Visuospatial Abilities [15]	-0.60/1.50	-0.15/1.06	-1.25/1.23	-1.63/0.83	0.001
-Constructional Praxis (CERAD-PLUS) [5]	-0.80/2.40	0.30/1.70	-1.55/1.48	-2.35/1.43	0.001
-Fragmented Words (LPS 50+) [15]	-0.60/1.20	-0.35/1.03	-1.20/1.25	-1.00/1.63	0.001
Language [10]	0.30/1.00	0.45/0.70	-0.30/1.05	-0.48/0.90	0.001
-Boston Naming Test (CERAD-PLUS) [5]	0.60/1.50	0.80/0.70	-0.15/1.68	-0.75/0.80	0.001
-Similarities (WIE) [10]	0/1.40	0.40/1.00	-0.20/1.00	-0.20/0.55	0.001

Unless otherwise indicated, values are presented as *median/interquartile range (IQR=Q3-Q1)*. Boldface denotes statistically significant values. Missing values are reported in brackets []. If not otherwise indicated, the Jonckheere-Terpstra test was performed. *Chi-square test. #Exact Fisher Test. CERAD-PLUS=Consortium to Establish a Registry for Alzheimer's Disease, FAQ=Functional Activities Questionnaire, IADL=instrumental Activities of Daily Living, LPS 50+=Leistungsprüfsystem 50+, PD-CN=Parkinson's Disease Cognitively Normal, PDD=Parkinson's Disease Dementia, PD-MCI=Parkinson's Disease with Mild Cognitive Impairment, MDS-UPDRS-III=Movement Disorder Society Unified Parkinson's Disease Rating Scale part III, WIE= Wechsler Intelligenztest für Erwachsene, yr.=years.

eTable 6. Results of Cox proportional hazard models investigating the probability of progressing to Parkinson's disease dementia according to different baseline predictors, using uncensored (n=164) and censored (n=260) cohort data

Predictor	HR	95%-CI	SE	z	p-value	C-index	AIC
Model 1: Cognitive IADL status							
Censored cohort							
-Cognitive IADL status	6.57	2.38, 18.17	0.52	3.63	<0.001	0.82	152.00
-Beck Depression Inventory-II	0.41	0.17, 0.99	0.45	-2.0	0.05		
-Non-Motor Symptoms Questionnaire	1.53	0.73, 3.21	0.38	1.13	0.26		
Uncensored cohort							
-Cognitive IADL status	11.00	3.53, 34.28	0.58	4.13	<0.001	0.80	128.05
-Education yr.	1.33	0.78, 2.28	0.27	1.05	0.29		
-Beck Depression Inventory-II	0.32	0.12, 0.84	0.49	-2.30	0.02		
-Non-Motor Symptoms Questionnaire	1.40	0.67, 2.90	0.38	0.89	0.38		
Model 2: Cognitive status							
Censored cohort							
-Cognitive status	5.34	1.70, 16.73	0.58	2.87	0.004	0.80	161.70
-Education yr.	1.07	0.67, 1.71	0.24	0.30	0.76		
-Disease duration yr.	0.96	0.49, 1.86	0.34	-0.13	0.90		
-Levodopa equivalent daily dose	0.96	0.49, 1.89	0.34	-0.12	0.91		
-MDS-UPDRS-III	0.46	0.25, 0.85	0.32	-2.47	0.01		
-Hoehn & Yahr	1.12	0.71, 1.76	0.23	0.47	0.64		
-Non-Motor Symptoms Questionnaire	1.63	0.74, 3.61	0.41	1.21	0.23		
Uncensored cohort							
Cognitive status	8.24	2.59, 26.25	0.59	3.57	<0.001	0.87	133.19
-Education yr.	1.15	0.67, 2.00	0.28	0.49	0.62		
-Disease duration yr.	1.21	0.64, 2.27	0.32	0.58	0.56		
-Levodopa equivalent daily dose	1.05	0.58, 1.90	0.30	0.16	0.87		
-MDS-UPDRS-III	0.56	0.33, 0.95	0.30	-2.14	0.03		
Model 3: Cognitive IADL status and cognitive status							
Censored cohort							
-Cognitive IADL status and cognitive status	12.01	4.47, 32.22	0.50	4.94	<0.001	0.89	142.98
-Beck Depression Inventory-II	0.39	0.16, 0.96	0.49	-2.04	0.04		
-Non-Motor Symptoms Questionnaire	1.74	0.84, 3.58	0.37	1.50	0.14		
Uncensored cohort							
-Cognitive IADL status and cognitive status	22.75	7.41, 69.83	0.57	5.46	<0.001	0.82	113.56

For analyses using the censored cohort (N=260) data, dropouts were classified as PD-CN, and n=8 patients were removed due to missing data. Covariates were included based on between-group-characterizations for each cohort. Continuous predictors were standardized. AIC= Akaike Information Criterion, CI=confidence interval, HR=Hazard ratio, IADL=instrumental Activities of Daily Living, MDS-UPDRS-III=Movement Disorder Society Unified Parkinson's Disease Rating Scale part III, SE= standard error, yr.=years.

eTable 7. Results of generalized linear mixed models investigating instrumental activities of daily living function over time

	B (95%-CI)	SE	z	p-value	R²_C	R²_M	AIC	Dispersion Parameter
Model 1: FAQ total score					0.97	0.43	1378.27	1.52
Intercept	-4.57 (-5.14, -4.00)	0.29	-15.69	<0.001				
Non-Motor Symptoms Questionnaire	0.44 (-0.02, 0.91)	0.24	1.86	0.062				
Beck Depression Inventory-II	-0.09 (-0.51, 0.33)	0.22	-0.42	0.673				
Education yr.	-0.27 (-0.59, 0.06)	0.17	-1.63	0.104				
Disease duration yr.	-0.21 (-0.64, 0.21)	0.22	-0.97	0.330				
MDS-UPDRS-III	0.33 (-0.02, 0.67)	0.18	1.85	0.064				
Levodopa equivalent daily dose	0.29 (-0.13, 0.70)	0.21	1.35	0.176				
Visit	0.77 (0.38, 1.16)	0.20	3.86	<0.001				
cognitive IADL status	2.01 (0.85, 3.16)	0.59	3.41	<0.001				
cognitive status	0.72 (-0.19, 1.64)	0.47	1.55	0.121				
visit * cognitive IADL status	-1.05 (-1.70, -0.40)	0.33	-3.18	0.001				
visit * cognitive status	-0.21 (-0.78, 0.36)	0.29	-0.71	0.478				
cognitive IADL status * cognitive status	-0.53 (-2.08, 1.02)	0.79	-0.67	0.502				
visit * cognitive IADL status * cognitive status	1.43 (0.57, 2.30)	0.44	3.25	0.001				
Model 2: FAQ cognition score					0.95	0.53	841.99	0.84
Intercept	-5.31 (-5.99, -4.62)	0.35	-15.23	<0.001				
Non-Motor Symptoms Questionnaire	0.38 (-0.02, 0.78)	0.20	1.84	0.065				
Beck Depression Inventory-II	-0.02 (-0.38, 0.34)	0.18	-0.09	0.930				
Education yr.	-0.29 (-0.58, -0.00)	0.15	-1.98	0.048				
Disease duration yr.	-0.08 (-0.45, 0.29)	0.19	-0.43	0.669				
MDS-UPDRS-III	0.07 (-0.24, 0.38)	0.16	0.43	0.669				
Levodopa equivalent daily dose	0.26 (-0.10, 0.61)	0.18	1.41	0.159				
visit	1.34 (0.75, 1.92)	0.30	4.47	<0.001				
cognitive IADL status	3.11 (2.05, 4.17)	0.54	5.74	<0.001				
cognitive status	0.99 (-0.04, 1.95)	0.49	2.04	0.042				
visit * cognitive IADL status	-1.84 (-2.65, -1.04)	0.41	-4.48	<0.001				
visit * cognitive status	-0.04 (-0.84, 0.76)	0.41	-0.10	0.924				
cognitive IADL status * cognitive status	-0.72 (-2.12, 0.68)	0.71	-1.01	0.314				
visit * cognitive IADL status * cognitive status	1.06 (0.00, 2.12)	0.54	1.96	0.049				
Model 3: FAQ motor score					0.96	0.35	1110.10	1.20
Intercept	-4.54 (-5.14, -3.93)	0.31	-14.70	<0.001				
Non-Motor Symptoms Questionnaire	0.51 (0.02, 0.99)	0.25	2.05	0.041				
Beck Depression Inventory-II	-0.07 (-0.51, 0.36)	0.22	-0.33	0.743				
Education yr.	-0.26 (-0.60, 0.08)	0.17	-1.53	0.127				
Disease duration yr.	-0.29 (-0.73, 0.16)	0.23	-1.26	0.207				
MDS-UPDRS-III	0.48 (0.12, 0.84)	0.19	2.60	0.009				
Levodopa equivalent daily dose	0.38 (-0.05, 0.80)	0.22	1.72	0.086				
visit	0.45 (0.05, 0.84)	0.20	2.21	0.027				
cognitive IADL status	1.22 (-0.01, 2.45)	0.63	1.94	0.052				
cognitive status	0.71 (-0.22, 1.65)	0.48	1.50	0.134				
visit * cognitive IADL status	-0.58 (-1.31, 0.15)	0.37	-1.57	0.117				
visit * cognitive status	-0.32 (-0.91, 0.27)	0.30	-1.07	0.286				
cognitive IADL status * cognitive status	-0.55 (-2.20, 1.09)	0.84	-0.66	0.508				
visit * cognitive IADL status * cognitive status	1.66 (0.68, 2.64)	0.50	3.32	<0.001				

Analyses were performed with 164 Baseline and 161 Follow-up observations. Continuous predictors were standardized. Categorical variables were defined as follows: Visit=baseline vs. follow-up, cognitive status=PD-CN vs. PD-MCI, cognitive IADL status=FAQ_{Q≤1} vs. FAQ_{Q>1}. AIC=Akaike Information Criterion,

CI=confidence interval, FAQ=Functional Activities Questionnaire, IADL=instrumental Activities of Daily Living, MDS-UPDRS-III=Movement Disorder Society Unified Parkinson's Disease Rating Scale part III, R^2_C =Theoretical conditional R-squared taking only variance of fixed effects into account, R^2_M =Theoretical marginal R-squared taking variance of fixed and random effects into account, SE = standard error, yr.=years.

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