

Factors Associated with Self-Rated Health in People with Late-Stage Parkinson's and Cognitive Impairment, *Quality of Life Research*. Jennifer S. Pigott, Megan Armstrong, Nathan Davies, Daniel Davis, Bastiaan R. Bloem, Stefan Lorenzl, Wassilios G. Meissner, Per Odin, Joaquim J. Ferreira, Richard Dodel, Anette Schrag. Correspondence: Prof Anette Schrag, Queen Square Institute of Neurology, University College London, London, UK, a.schrag@ucl.ac.uk

Online Resource 2: Univariate Analyses

Univariate Analyses (Simple Linear Regression) with EQ-5D-3L as outcome (both Index and EQ-VAS)

(i) Demographic Variables

Variable	Simple Linear Regression, Outcome: EQ-5D Index			Simple Linear Regression, Outcome: EQ-VAS		
	N (missing)	β	p	N (missing)	β	p
Age (years) – mean (sd) range	273 (0)	-0.01	0.08	249 (0)	0.17	0.32
Gender – n (%) Female Male	273 (0)	(reference) 0.09	0.03	249 (0)	(reference) 1.35	0.59
Marital Status – n (%) Single Married Divorced Widowed Living Apart from Spouse Living in Stable Partnership without Marriage	272 (1)	(reference) 0.13 -0.04 0.03 0.14 0.49	0.13 0.75 0.79 0.37 0.15	249 (0)	(reference) -0.07 1.14 6.21 -1.19 27.14	0.99 0.89 0.28 0.90 0.18

(ii) Clinical Variables

Variable	Simple Linear Regression, Outcome: EQ-5D Index			Simple Linear Regression, Outcome: EQ-VAS		
	N (missing)	β	p	N (missing)	β	p
Disease duration (years) – median (IQR)	268 (5)	-0.00004	0.99	246 (3)	0.32	0.04
UPDRS Part-I – mean (sd)	271 (2)	-0.04	<0.001	247 (2)	-2.13	<0.001
UPDRS Part-II – mean (sd)	264 (9)	-0.02	<0.001	243 (6)	-0.72	<0.001
UPDRS Part-III – mean (sd)	255 (18)	-0.01	<0.001	233 (16)	-0.39	<0.001
UPDRS Part-IV – median (IQR)	267 (6)	-0.001	0.82	243 (6)	-0.26	0.48
Schwab & England – median (IQR)	273 (0)	0.01	<0.001	249 (0)	0.44	<0.001
MMSE – median (IQR)	253 (20)	0.01	0.004	234 (15)	0.63	0.01
NMSS Total – mean (sd)	228 (45)	-0.003	<0.001	208 (41)	-0.08	0.003
NMSS Domain Scores:						
Cardiovascular – median (IQR)	257 (16)	-0.003	0.43	236 (13)	0.10	0.68
Sleep & Fatigue – median (IQR)	254 (19)	-0.01	0.001	233 (16)	-0.33	0.008
Mood & Cognition – median (IQR)	258 (15)	-0.01	<0.001	237 (12)	-0.30	<0.001

Perception – median (IQR)	255 (18)	-0.01	0.01	234 (15)	-0.21	0.15
Attention & Memory – median (IQR)	255 (18)	-0.01	0.001	235 (14)	-0.38	0.001
Gastrointestinal – median (IQR)	258 (15)	-0.01	0.002	237 (12)	-0.29	0.06
Urinary – median (IQR)	254 (19)	-0.01	0.001	235 (14)	-0.03	0.73
Sexual Function – median (IQR)	242 (31)	-0.01	0.001	221 (28)	-0.11	0.39
Miscellaneous – median (IQR)	254 (19)	-0.01	<0.001	233 (16)	-0.36	0.004
NMSS Individual Question Scores:						
1. Does the patient experience light-headedness, dizziness, weakness on standing from sitting or lying position?	258 (15)	-0.01	0.26	237 (12)	0.03	0.94
2. Does the patient fall because of fainting or blacking out?	259 (14)	-0.0008	0.92	238 (11)	0.37	0.45
3. Does the patient doze off or fall asleep unintentionally during daytime activities?	260 (13)	-0.02	0.003	239 (10)	-0.88	0.005
4. Does fatigue (tiredness) or lack of energy (not slowness) limit the patient's daytime activities?	259 (14)	-0.02	<0.001	238 (11)	-0.67	0.02
5. Does the patient have difficulties falling or staying asleep?	260 (13)	-0.0006	0.90	239 (10)	-0.50	0.08
6. Does the patient experience an urge to move the legs or restlessness in legs that improves with movement when he/she is sitting or lying down inactive?	255 (18)	-0.003	0.65	234 (15)	0.03	0.94
7. Has the patient lost interest in his/her surroundings?	260 (13)	-0.03	<0.001	239 (10)	-0.79	0.005
8. Has the patient lost interest in doing things or lack motivation to start new activities?	260 (13)	-0.03	<0.001	239 (10)	-0.75	0.006
9. Does the patient feel nervous, worried or frightened for no apparent reason?	259 (14)	-0.01	0.02	238 (11)	-0.87	0.01
10. Does the patient seem sad or depressed or has he/she reported such feelings?	260 (13)	-0.03	<0.001	239 (10)	-1.27	<0.001
11. Does the patient have flat moods without the normal "highs" and "lows"?	259 (14)	-0.02	<0.001	238 (11)	-0.95	0.005
12. Does the patient have difficulty in experiencing	259 (14)	-0.02	<0.001	238 (11)	-0.64	0.03

pleasure from their usual activities or report that they lack pleasure?						
13. Does the patient indicate that he/she sees things that are not there?	260 (13)	-0.01	0.01	239 (10)	-0.55	0.08
14. Does the patient have beliefs that you know are not true?	260 (13)	-0.02	<0.001	239 (10)	-0.95	0.005
15. Does the patient experience double vision?	255 (18)	-0.0009	0.87	234 (15)	0.13	0.71
16. Does the patient have problems sustaining concentration during activities?	260 (13)	-0.02	<0.001	239 (10)	-0.76	0.01
17. Does the patient forget things that he/she has been told a short time ago or events that happened in the last few days?	259 (14)	-0.01	0.003	238 (11)	-0.96	0.001
18. Does the patient forget to do things?	255 (18)	-0.01	0.07	235 (14)	-0.75	0.005
19. Does the patient dribble saliva during the day?	260 (13)	-0.003	0.53	239 (10)	-0.04	0.90
20. Does the patient having difficulty swallowing?	260 (13)	-0.02	<0.001	239 (10)	-0.87	0.009
21. Does the patient suffer from constipation?	258 (15)	-0.01	0.05	237 (12)	-0.35	0.23
22. Does the patient have difficulty holding urine? (urgency)	257 (16)	-0.02	<0.001	236 (13)	-0.17	0.52
23. Does the patient have to void within 2 hours of last voiding? (frequency)	257 (16)	-0.01	<0.001	236 (13)	-0.07	0.78
24. Does the patient have to get up regularly at night to pass urine? (Nocturia)	254 (19)	-0.01	0.17	235 (14)	0.01	0.96
25. Does the patient have altered interest in sex?	247 (26)	-0.01	<0.001	226 (23)	-0.36	0.13
26. Does the patient have problems having sex?	242 (31)	-0.02	<0.001	221 (28)	-0.05	0.83
27. Does the patient suffer from pain not explained by other known conditions?	259 (14)	-0.02	<0.001	238 (11)	-1.13	<0.001
28. Does the patient report a change in ability to taste or smell?	257 (16)	0.0007	0.86	236 (13)	-0.09	0.74
29. Does the patient report a recent change in weight (not related to dieting)?	257 (16)	-0.02	0.007	236 (13)	-0.51	0.15
30. Does the patient experience excessive sweating?	259 (14)	-0.01	0.35	238 (11)	-0.50	0.12

(iii) Healthcare Utilisation Variables

	Simple Linear Regression, Outcome: EQ-5D Index			Simple Linear Regression, Outcome: EQ-VAS		
Variable	N (missing)	β	p	N (missing)	β	p
Impatient Hospital admission – n (%)	204 (69)			182 (67)		
No		(reference)			(reference)	
Yes		-0.03	<0.001		-4.41	0.16
Primary Care Physician for PD in last 3months? – n (%)	198 (75)			178 (71)		
No		(reference)			(reference)	
Yes		0.03	0.57		-1.20	0.68
Neurologist/geriatrician for PD in last 3months? – n (%)	199 (74)			179 (70)		
No		(reference)			(reference)	
Yes		0.01	0.58		-3.04	0.29
PD Nurse for PD in last 3months? – n (%)	211 (62)			189 (60)		
No		(reference)			(reference)	
Yes		0.20	0.004		8.12	0.05
Therapy^a for PD in last 3months? – n (%)	205 (68)		0.80			
No		(reference)		183 (66)	(reference)	
Yes		-0.01			-0.66	0.84
Medication (LEDD) – median (IQR)	268 (5)	0.00002	0.57	245 (4)	0.004	0.10
Dementia Medication^b – n (%)	269 (4)			248 (1)		
No		(reference)			(reference)	
Yes		0.04	0.36		-0.44	0.86

(iv) Social Care Variables

	Simple Linear Regression, Outcome: EQ-5D Index			Simple Linear Regression, Outcome: EQ-VAS		
Variable	N (missing)	β	p	N (missing)	β	p
Care Setting – n (%)	234 (40)			211 (38)		
Nursing Home		(reference)			(reference)	
Own Home with Carer		0.15	0.002		-1.54	0.60
Own Home without Carer		0.15	0.02		4.52	0.23
Carer Relationship – n (%)	213 (60)			191 (58)		
No participating informal carer		(reference)			(reference)	
Spouse or Life Partner		0.08	0.16		-3.65	0.31
Daughter or Son		-0.03	0.66		-2.33	0.59
Other informal carer		-0.17	0.16		5.76	0.42
Zarit Burden Score – median (IQR)	197 (76)	-0.001	0.44	182 (67)	-0.11	0.23
Informal care^c (	120 (66)	0.0001	0.37	105 (64)	-0.002	0.82
Professional care^c (hours per week) – median (IQR)	131 (55)	-0.0006	0.64	118 (51)	-0.05	0.47

Abbreviations: sd, standard deviation; UPDRS, Unified Parkinson's Disease Rating Scale; NMSS, Non-Motor Symptom Scale; MMSE, Mini-Mental State Examination; LEDD, Levodopa Equivalent Daily Dose. UPDRS parts: Mentation, Behaviour and Mood (Part-I), Activities of Daily Living (Part-II), Motor Examination (Part-III), and Complications of Therapy (Part-IV).

^aIncludes: Physiotherapy, occupational therapy, speech training, counselling, nursing and massage.

^bDonepezil, rivastigmine or memantine

^cApplied only to participants living in own home