

Supplementary Material

Cross-Cultural Differences in Stigma Associated with Parkinson's Disease: A Systematic Review

Supplementary Table 1. Details of the included studies.

Author (y)	Country	Patient (n)	Age (Mean ± SD)	Stigma scale	Disease duration (y) (mean ± SD)	UPDRS-III score (mean ± SD)	H&Y stage (median (min-max))	Stigma scores (mean ± SD) (min-max) ^a	Non-significant factor(s)	Significant factor(s)
Bansal et al., 2022 [1]	India	94 (37 f)	61.50 ± 10.53	PDQ-39	4.19 ± 3.38	NR	2.40 ± 0.81 ^b	High Scopa-AUT: 36.33 ± NR, Low Scopa-AUT: 20.29 ± NR (0-100)	NR	Autonomic dysfunction [+]
Cano-de-la-Cuerda et al., 2014 [2]	Spain	36 (7 f)	62 ± 11	PDQ-39	4.6 ± 1.2	22 ± 8	2 (1-3)	NR	Rigidity (trunk extensor 30°/s, 45°/s, 60°/s, flexor 45°/s, 60°/s)	Rigidity (trunk flexor at 30°/s) [+]
Chapuis et al., 2005 [3]	France	143 (70 f)	67.1 ± 9.2	PDQ-39	9.1 ± 5.4	11.5 ± 8.68	2.0 ± 0.7 ^b	36.9 ± 24.8 (0-100)	Dyskinesias (peak-dose and off type), sex	Motor fluctuations (early-morning akinesia, nocturnal akinesia, end-of-dose fluctuations, paradoxical fluctuations, unpredictable offs) and dyskinesia (diphasic, morning dystonias, and AIMS) [+], age [-], disease duration (and duration of dopamine therapy) [+], levodopa dosage [+]
Chircop et al., 2018 [4]	Malta	26 (10 f)	60.2 ± 9.3	PDQ-39	8.8 ± 2.7	Off: 45.9 ± 14.3, On: 19.5 ± 12.2	NR	38.8 ± 27.6 (0-100)	NR	DBS [-]
Cibulcik et al., 2016 [5]	Slovakia	40 (18 f)	69.5 ± 7.9	PDQ-39	8.3 ± 4.3	40.4 ± 14.9	3 (2-4)	34.3 ± 24.5 (0-100)	NR	Rasagiline treatment [-]
Dafsari et al., 2018 [6]	Multinational (UK, Germany)	120 (46 f)	62.1 ± 8.3	PDQ-8	10.8 ± 4.5	Off: ≤ 59 y: 44.9 ± 12.9, 60-69 y: 43.8 ± 17.9, ≥ 70 y: 49.0 ± 14.3; On: ≤ 59 y: 21.9 ± 10.0, 60-69 y: 22.4 ± 10.5, ≥ 70 y: 23.5 ± 9.2	2.5 (2.0-3.0) ^c	NR	NR	DBS-STN [-] (for age groups ≤59, 60 to 69, and ≥70 y)
Derost et al., 2007 [7]	France	87 (25 f)	Y: 57.4 ± 4.9, O: 68.8 ± 2.8	PDQ-39	Y: 11.5 ± 0.6, O: 12.4 ± 0.7	Y off: 31.8 ± 1.7, Y on: 6.6 ± 0.6; O off: 34.5 ± 2.1, O on: 10.8 ± 1.3	Y off: 2.5 ± 0.1, Y on: 1.8 ± 0.1; O off: 2.7 ± 0.2, O on: 1.8 ± 0.1 ^b	NR	NR	DBS-STN improved stigma in young patients as compared to old patients [-]
Deuschl et al., 2006 [8]	Multinational (Germany, Austria)	156 (56 f)	DBS: 60.5 ± 7.4, MT: 60.8 ± 7.8	PDQ-39	DBS: 13.0 ± 5.8, MT: 13.8 ± 5.6	DBS: 48.0 ± 12.3, MT: 46.8 ± 12.1	DBS: 4 (2-5), MT: 4 (1.5-5)	DBS: 33.5 ± 23.0, MT: 30.5 ± 22.9 (0-100)	NR	DBS-STN (as compared with medication) [-]
Dong et al., 2014 [9]	China	128 (NR)	NR	PDQ-39	NR	NR	NR	48 ± 46 (0-100)	NR	Non-motor symptoms (not specified) [+]

Author (y)	Country	Patient (n)	Age (Mean ± SD)	Stigma scale	Disease duration (y) (mean ± SD)	UPDRS-III score (mean ± SD)	H&Y stage (median (min-max))	Stigma scores (mean ± SD) (min-max) ^a	Non-significant factor(s)	Significant factor(s)
Drapier et al., 2005 [10]	France	27 (8 f)	60.8 ± 9.3	PDQ-39	14.6 ± 4.6	Off: no sti: 48.4 ± 14.3, sti: 23.2 ± 14.0	Off: no sti: 3.75 ± 0.6, sti: 1.75 ± 0.9 ^b	41.8 ± 26.9 (0-100)	NR	DBS-STN [-]
Dubayova et al., 2009 [11]	Slovakia	153 (74 f)	67.9 ± 9.3	PDQ-39	7.5 ± 5.8	36.9 ± 20.62	NR	54.1 ± 26.0 (0-100)	Extraversion, sex, disease duration	Neuroticism (bf) [+], age (f) [-], UPDRS total (b) [+]
Dubayova et al., 2009 [12]	Slovakia	153 (74 f)	67.9 ± 9.3	PDQ-39	7.5 ± 5.8	NR	NR	NR	Disease duration	Type D personality (bm) [+], UPDRS total (f) [+], age (f) [-], Negative affectivity (m) [+], social inhibition (f) [+]
Eccles et al., 2022 [13]	UK	130 (74 f)	64.68 ± 9.42	SSCI	5.21 ± 4.86	NR	NR	31.20 ± 11.38 (13–65)	Disease duration	Age [-], ADL [-], self compassion [-], depression [+], anxiety and stress [+]
Fereshtehnejad et al., 2014 [14]	Iran	150 (47 f)	60.8 ± 10.8	PDQ-39	6.8 ± 5.3	15.3 ± 8.8	2.0 (1.5) ^c	21.6 ± 25.1 (0-100)	Nutritional status	NR
Fereshtehnejad et al., 2015 [15]	Iran	PwP: 108 (31 f), C: 424 (116 f)	PwP: 60.9 ± 10.7, C: 60.4 ± 10.1	PDQ-39	PwP: 6.5 ± 5.0, PwP+RLS: 6.7 ± 3.9	PwP: 16.4 ± 9.7, PwP+RLS: 16.4 ± 7.0	PwP: 2.0 (2.0), PwP+RLS: 2.0 (1.0) ^c	NR	NR	RLS [+]
Fung et al., 2009 [16]	Multinational (Australia, the Philippines, Taiwan, and Thailand)	184 (77 f)	63.9 ± 9.87	PDQ-8	3.7 ± 3.08	15.1 ± 9.36	NR	NR	NR	Levodopa/carbidopa/entacapone treatment [-] (compared to levodopa/carbidopa group)
Gray et al., 2002 [17]	UK	97 (39 f)	65 (43–83) ^d	PDQ-39	NR	NR	NR	45 ± 29 (0-100)	Pallidotomy (Unilateral and bilateral)	Thalatomy (unilateral) [-]
Hariz et al., 2013 [18]	Multinational (UK, Sweden)	49 (18 f)	F: 57.6 ± 6.6, m: 57.7 ± 7.8	PDQ-39	f: 12.1 ± 5.3, m: 12.7 ± 6.2	Off: f: 51.2 ± 10.5, m: 49.4 ± 16.5; On: f: 16.2 ± 10.2, m: 13.9 ± 7.1	NR	f: 34.7 ± 26.6, m: 21.4 ± 19.2 (0-100)	Sex	DBS-STN (f) [-]
Hashim et al., 2014 [19]	Malaysia	76 (42 F)	H+: 65.1 ± 9.98, H-: 67.5 ± 7.34	PDQ-39	5.16 ± 4.2	50.62 ± 13.62	H+: 3 (2-5), H-: 2.5 (1-5)	6.14 ± 4.64 (0-16)	NR	Helicobacter Pylori eradication [-]
Hechtner et al., 2014 [20]	Multinational (France, Germany, Italy, Spain, UK)	817 (378 f)	66.5 ± 9.7	PDQ-39	3.3 (1.1-7.2) ^c	NR	2.1 ± 1.0 ^b	24.5 ± 24.4 (0-100)	On-off fluctuations, peak dose dyskinesias, off-dystonias (All); Country (Italy, Spain, UK (When compared to Germany))	Biphasic dyskinesias [+](All); Country (France (When compared to Germany)) [+]
Hou et al., 2021[21]	China	276 (135 f)	62.5 ± 8.5	SSCI	9.9 ± 4.9	23.9 ± 11.2	3 (1–4)	29.4 ± 9.5 (13-65)	NR	UPDRS-III (bmf) [+], depression (bmf) [+], disease duration (bm) [+]
Hristova et al., 2009 [22]	Bulgaria	866 (412 f)	73.76 ± 0.25	PDQ-39	6.68 ± 0.91	NR	3 (1-5)	47.88 ± 1.08 (0-100)	Sex	Living in rural area [+]
Irons et al., 2021 [23]	Multinational (Australia, UK, South Korea)	Aus: 56 (30 f), SK: 20 (17 f), UK: 19 (5 f)	Aus: 71.2 (51–94), SK: 66.5 (46–83), UK: 71.4 (50–84) ^d	PDQ-39	Aus: 7.4 (0–25), SK: 4.05 (1–10), UK: 8.7 (1–30) ^d	NR	NR	20.00 ± 24.72 (0-100)	NR	Group singing [-]
Islam et al., 2022 [24]	US	196 (113 f, 81 m, 2 NR)	64.8 ± 8.7	PDQ-39	5.2 ± 4.7	NR	NR	19.1 ± 21.1 (0-100)	Comorbidities	Depression [+], anxiety [+]

Author (y)	Country	Patient (n)	Age (Mean ± SD)	Stigma scale	Disease duration (y) (mean ± SD)	UPDRS-III score (mean ± SD)	H&Y stage (median (min-max))	Stigma scores (mean ± SD) (min-max) ^a	Non-significant factor(s)	Significant factor(s)
Klepac et al., 2007[25]	Croatia	111 (58 f)	66 ± 11	PDQ-39	5 (3–11) ^c	25 ± 13	NR	31 (13–50) ^c (0-100)	NR	Living in rural area [+]
Lee et al., 2019 [26]	South Korea	42 (25 f)	Int: 62.73 ± 8.50, Com: 62.20 ± 5.27	PDQ-39	Int: 7.72 ± 3.84, Com: 10.02 ± 6.27	NR	Int: 1.59 ± 0.67, Com: 1.95 ± 0.85 ^b	Int: 10.02 ± 6.27, Com: 22.50 ± 19.60 (0-100)	NR	Exercise program [-]
Lezcano et al., 2016 [27]	Spain	69 (27 f)	61.3 ± 7.4	PDQ-39	13.2 ± 5.7	40.4 ± 11.1	NR	34.9 ± 28.7 (0-100)	NR	DBS-STN (1-y and 5-y follow-up) [-]
Li et al., 2016 [28]	China	120 (60 T)	T: 66.6 ± 1.2, C: 67.3 ± 1.2	PDQ-39	T: 5.2 ± 0.4, C: 5.1 ± 0.5	NR	T: 2.5 ± 0.1, C: 2.3 ± 0.1 ^b	T: 28.07 ± 3.60, C: 29.21 ± 3.82 (0-100)	NR	Medication (Bushen Huoxue Granule treatment) [-]
Lin et al., 2022 [29]	China	224 (103 f)	W/o stigma: 60.4 (14.9), w/ stigma: 56.5 (17.4) ^c	PDQ-39	W/o stigma: 1.2 (1.4), w/ stigma: 1.6 (1.2) ^c	W/o stigma: 21.0 (11.2), w/ stigma: 22.0 (17.0) ^c	W/o stigma: 2.0 (0.5), w/ stigma: 2.0 (0.5) ^c	NR	Disease duration, disease stage, sex, education, levodopa dosage, being married, being unemployed, fluctuation and dyskinesia, frontal and cognitive assessment, antidepressant, age, age of onset, non-motor symptoms (not specified), anxiety, UPDRS II-III	Depression [+]
Lyons et al., 2005 [30]	US	59 (15 f)	59.5 ± 9.8	PDQ-39	11.9 ± 5.0	On: 22.9 ± 8.5, Off: 41.3 ± 9.8	NR	34.1 ± 21.8 (0-100)	NR	DBS-STN [-], UPDRS Part I [+] (at 12 months)
Ma et al., 2016 [31]	US	73 (29 f)	65.72 ± 10.10	SSCI PDQ-39	8.34 ± 7.41	NR	2 (1-4)	2.06 ± 0.74 (1-5)	PDQ-39 stigma: Sex, depression; SSCI felt stigma: Sex	PDQ-39 stigma: Disease stage [-], UPDRS II [+]; SSCI stigma: Disease stage [+], depression [+], UPDRS II [+], mobility [-], ADL [-], emotional well-being [-], social support [-], cognition (problems) [+], communication [-], bodily discomfort [-], QoL [-] (PDQ-39SI)
Martínez-Martín et al., 1997[32]	Spain	50 (NR)	NR	PDQ-39	NR	NR	NR	NR	NR	UPDRS [+], ISAPD [+]
Mehdizadeh et al., 2016 [33]	Iran	139 (39 f)	60.2 ± 12.27	PDQ-39	6.7 ± 5.53	NR	2.8 ± 1.49 ^b	On: high FoF: 37.41 ± 28.29, low FoF: 18.14 ± 19.39; Off: high FoF: 10.66 ± 14.53, low FoF: 32.76 ± 26.34 (0-100)	NR	FoF [+]
Meng et al., 2022 [34]	China	162 (92 f)	m: 60.41 ± 9.23 f: 59.60 ± 7.24	PDQ-39	m: 6.56 ± 3.91, f: 6.38 ± 3.92	m: 33.86 ± 13.32, f: 32.70 ± 13.08	m: 2.5 (1-3), f: 2 (1-3)	m: 22.77 ± 19.91, f: 31.52 ± 25.29 (0-100)	NR	Sex (f) [+]
Moore et al., 2007 [35]	Israel	118 (52 f)	65.8 ± 10.2	PDQ-39	8.5 ± 5.8	NR	Off: 2.7 ± 0.8 ^b	53.7 ± 26.6 (0-100)	FoG	NR
Moreira et al., 2017 [36]	Brazil	100 (50 f)	MIG 60-65: n=11, 66-70: n=16, 71-75: n=10, 76-80:	PDQ-39	MIG: 3.4 ± 2.2, MOG: 8.1 ± 4.7	NR	MIG (n=50): 1-2, MOG (n=50): 3	MIG: 2.7 ± 3.1, MOG: 3.9 ± 3.8 (0-16)	NR	QoL [-], disease stage [+]

Author (y)	Country	Patient (n)	Age (Mean ± SD)	Stigma scale	Disease duration (y) (mean ± SD)	UPDRS-III score (mean ± SD)	H&Y stage (median (min-max))	Stigma scores (mean ± SD) (min-max) ^a	Non-significant factor(s)	Significant factor(s)
			n=13, MOG: 60-65: n=13 66-70: n=6, 71-75: n=17, 76-80: n=12							
Oguru et al., 2010 [37]	Japan	150 (80 f)	69.7 ± 8.6	PDQ-39	6.3 ± 4.4	29.2 ± 16.2	2.9 ± 0.9 ^b	25.1 ± 25.2 (0-100)	NR	Apathy [+], depression [+]
Ongun, 2018 [38]	Turkey	96 (40 f)	63.68 ± 6.41	PDQ-39	9,04 ± 3,62	18,29 ± 7,04	NR	28,33 ± 4,44 (0-100)	NR	Nutritional status [-]
Ory Magne et al., 2014 [39]	France	103 (45 f)	66.8 ± 8.9	PDQ-39	12.6 ± 6.3	NR	≤ 2: n= 45, 3: n= 51, 4: n=7	35.0 ± 23.8 (0-100)	NR	Rehabilitation program [-]
Ou et al., 2015 [40]	China	518 (273 D)	61.94 ± 10.66	PDQ-39	4.73 ± 4.10	29.49 ± 13.61	2.0 ± 1.0 ^b	3.49 ± 4.30 (0-16)	NR	Drooling [+]
Pahwa et al., 2007 [41]	Multinational (Belgium, the Czech Republic, France, Hungary, Italy, Poland, Spain, US)	393 (145 f)	R: 66.3 ± 9.2, P: 66.0 ± 9.7	PDQ-39	R: 8.6 ± 4.8, P: 8.6 ± 5.2	R: 29.8 ± 12.9, P: 30.7 ± 14.4	R: 2.7 ± 0.5, P: 2.7 ± 0.6 ^b	R: 31.2 ± 23.9, P: 30.3 ± 24.2 (0-100)	NR	Treatment (Ropinirole) [-]
Rajiah et al., 2017 [42]	Malaysia	122 (53 f)	58.1 ± 5.2	PDQ-39	10.6 ± 8.4	NR	2.25 (1-5)	15 ± 7.5 (0-100)	Emotional well-being, UPDRS total, QoL, gait	Caregivers' burden [+], hallucinations and psychosis [+], saliva and drooling [+], dyskinesia [+]
Reginold et al., 2013 [43]	Multinational (US, and Canada)	137 (46 f)	MCI absent: 70.66 ± 5.25, MCI present: 71.61 ± 5.47	PDQ-39	MCI absent: 4.74 ± 3.91, MCI present: 6.16 ± 5.65	MCI absent: 26.02 ± 11.54, MCI present: 28.18 ± 10.49	NR	MCI absent: 29.43 ± 6.56, MCI present: 30.64 ± 10.55 (0-100)	NR	Cognitive impairment (mild) and cognitive decline [+]
Salazar et al., 2019 [44]	US	362 (157 f)	67.0 ± 8.7	PDQ-39	6.1 ± 4.7	32.2 ± 14.6	2 (1-4)	14.9 ± 17.6 (0-100)	UPDRS II-III, TD subtype, PIGD subtype, disease stage, sex, disease duration	Age (bm) [-], depression (bmf) [+]
Schrag et al., 2003 [45]	UK	141 (83 f)	Y.o.: 53.7 ± 9.4, O.o.: 66.5 ± 7.0	PDQ-39	Y.o.: 12.4 ± 8.6, O.o.: 8.8 ± 5.6	NR	Y.o.: 2.3 ± 1.0, O.o.: 2.2 ± 1.2 ^b	Y.o.: 35.2 ± 21.9, O.o.: 21.7 ± 20.8 (0-100)	NR	Age of onset [-]
Silva et al., 2020 [46]	Brazil	54 (20 f)	58.2 ± 7.4	PDQ-39	14.1 ± 6.2	27.1 ± 14	3 (2/3) ^c	47.62 ± 31.3 (0-100)	Depression, UPDRS III, disease duration, age, comorbidities, mobility, emotional well-being	ADL [-]
Sobstyl et al., 2003 [47]	Poland	91 (NR)	NR	PDQ-39	NR	NR	NR	NR	NR	Thalamotomy [-], pallidotomy [-]
Song et al., 2014 [48]	China	693 (307 f)	61.5 ± 11.4	PDQ-39	4.4 ± 4.2	30.2 ± 13.4	2.5 (1.0) ^c	21.9 ± 26.7 (0-100)	NR	Non-motor symptoms (not specified) [+]
Suzukamo et al., 2006 [49]	Japan	183 (106 f)	65.8 ± NR	PDQ-39	NR	NR	2 (0-4) (28 results unknown)	23.5 ± 22.1 (0-100)	NR	Psychological adjustment [-]
Tkaczynska et al., 2020 [50]	Germany	189 (96 f)	64.7 ± 7.9	PDQ-39	5.1 ± 3.8	24.5 ± 10.9	2 (1-4)	Total PwP: 14.7 ± 18.5, PwP no-UU: 16.3 ± 20.6, PwP UU: 13.6 ± 17.1 (0-100)	NR	UU [-]

Author (y)	Country	Patient (n)	Age (Mean ± SD)	Stigma scale	Disease duration (y) (mean ± SD)	UPDRS-III score (mean ± SD)	H&Y stage (median (min-max))	Stigma scores (mean ± SD) (min-max) ^a	Non-significant factor(s)	Significant factor(s)
Tomic et al., 2017 [51]	Croatia	40 (13 f)	67.2 ± NR	PDQ-39	5 ± NR	17.7 (2-63) ^d	0-2.5 (92.5% of the patients)	NR	Autonomic dysfunction, age, sex	UPDRS III [+], disease duration [+]
Tran et al., 2021 [52]	Vietnam	89 (42 f)	42.15 ± 5.84	PDQ-39	6.68 ± 4.48	36.00 ± 13.68	2.63 ± 0.62 ^b	38.19 ± 28.44 (0-100)	Age of onset, disease duration, sex, disease stage, levodopa dosage, UPDRS I-II-IV, sleep/fatigue, perceptual problems/hallucinations, attention/ memory, gastrointestinal symptoms, urinary symptoms, sexual function, miscellaneous symptoms	Cardiovascular symptoms [+], mood [-], total non motor symptoms (not specified) [+], UPDRS III [+], total UPDRS [+]
Valálik et al., 2001 [53]	Hungary	45 (19 f)	64.2 ± 8.0	PDQ-39	6.2 ± 3.5	NR	2.3 ± 0.5 ^b	NR	NR	Thalamotomy [-]
Wu et al., 2014 [54]	China	649 (284 f)	61.7 ± 11.8	PDQ-39	4.8 ± 4.2	32.9 ± 16.1	2.5 ± NR ^b	21.8 ± 26.8 (0-100)	Education, living in rural area, MMSE (cognitive problems), levodopa dosage	Age onset [-], sex (f) [+], being married [-], comorbidity [-], neuropsychiatric problems [+], UPDRS III-IV [+], age [-], disease duration [+], disease stage [+], non-motor symptoms (not specified (NMSS)) [+]
Zahodne et al., 2009 [55]	US	42 (12 f)	STN: 61.3 ± 9.0, GPi: 61.3 ± 5.5	PDQ-39	STN: 13.6 ± 3.9, GPi: 12.4 ± 3.6	On: STN: 21.5 ± 7.3, GPi: 22.3 ± 8.3; Off: STN: 43.8 ± 10.6, GPi: 41.8 ± 10.0	NR	STN: 23.5 ± 20.6; GPi: 38.7 ± 19.1 (0-100)	NR	DBS [-]
Zhao et al., 2008 [56]	Singapore	183 (57 f)	61.0 ± 9.8	PDQ-8	4.6 ± 3.8	22.0 ± 11.0	2.3 ± 0.7 ^b	NR	Sex, age, ethnicity (Chinese), education, disease stage, UPDRS III	Disease duration [+], survey language (Chinese) [+]
Zhu et al., 2021 [57]	US	95 (32 f)	67.81 ± 8.39	PDQ-8	<2: n=11, 2-5: n=31, 5-10: n=29, >11: n=24	NR	2 (1-4)	NR	NR	Demoralization [+]
Our Study	Turkey	232 (101 f)	61.5 ± 11.7	PDQ-39	4.0 (0-30) ^c	36.8 ± 17.2	2.0 (0-5)	3.0 (6) ^c	Education, family history, comorbidities, disease severity, MMSE, depression, anxiety,	Age (mf) [-], waist circumference (f) [+], disease duration (f) [+], UPDRS-IV (mf) [+], tremor dominant subtype (m) [+], LEDD (f) [-], UPDRS-II (f) [+]

^aMin-Max scores that can be obtained from the scale; ^bMean ± standard deviation; ^cMedian (IQR); Mean (Min-Max); ^dMean (range). ADL, Activities of daily living; AIMS, Abnormal Involuntary Movement Scale; Aus, Australia; bf, associated with stigma in total sample and females; bm, associated with stigma in total sample and males; bmf, associated with stigma in total sample and in both males and females; C, control; Com, comparison group; D, drooling; DBS, deep brain stimulation; DBS-STN, DBS of the subthalamic nucleus; f, in females; FoF, fear of falling; FoG, freeing of gait; GPi, DBS of globus pallidus; H+, H.pylori positive; H-, H.pylori negative; H&Y, Hoehn and Yahr Scale; INT, intervention group; ISAPD, Intermediate Scale for Assessment of PD; IQR, interquartile range; LEDD, L-dopa equivalent daily dose; m, males; mf, associated with stigma in males and females; MCI, mild cognitive impairment; MIG, group with mild PD; MMSE, Mini-mental state examination; MOG, group with moderate PD; MT, medical treatment; NMSS, Non-motor symptoms scale; no sti, off stimulation; NR, not reported; O, old patients; O.o, older-onset group; P, placebo; PDQ-8, Parkinson's Disease Questionnaire-8; PDQ-39, Parkinson's Disease Questionnaire-39; PIGD, Postural instability and gait disorder; PwP, patient with Parkinson's disease; PwP no-UU, PD patients with no urinary urgency; PwP UU, PD patients with urinary urgency; QoL, quality of life; R, Ropinirole; RL, Restless legs syndrome; SCOPA-AUT, Scales for Outcome in Parkinson's Disease-Autonomic Questionnaire; SD, standard deviation; SK, South Korea; SSCI, Stigma Scale for Chronic Illness; sti, on stimulation; T, treatment; TD, tremor dominant; UPDRS, Unified Parkinson's disease rating scale; W/, with; W/o, without; Y, young patients; Y.o., young-onset group.

Supplementary Table 2. Risk of bias assessment of the included studies.

First author & year	Study design	Main objective included	Potential bias in patient selection	Is exclusion of dementia mentioned?	Were potential confounders taken into account?
Bansal et al., 2022 [1]	CS	QoL	No	Yes	Yes
Cano-de-la-Cuerda et al., 2014 [2]	CS	QoL	Patients with problems in walking and a history of psychiatric problems were excluded	Yes	No
Chapuis et al., 2005 [3]	CS	QoL	Patients with surgery of the basal ganglia were excluded	Yes	Yes
Chircop et al., 2018 [4]	Int	QoL	Patients eligible for DBS were included	Yes	NA
Cibulcik et al., 2016 [5]	Int	Other	Patients with freezing of gait were included. More severe motor disorders, psychiatric illnesses, and symptomatic orthostatic hypotension were excluded.	No	NA
Dafsari et al., 2018 [6]	Int	QoL	Patients eligible for DBS were included	Yes	NA
Derost et al., 2007 [7]	Int	QoL	Patients eligible for DBS with no postural instability during the best “on” were included	Yes	NA
Deuschl et al., 2006 [8]	Int	QoL	Patients eligible for DBS were included	Yes	NA
Dong et al., 2014 [9]	CS	QoL	Article in Chinese, evaluated only per abstract	Article in Chinese, evaluated only per abstract	Article in Chinese, evaluated only per abstract
Drapier et al., 2005 [10]	Int	QoL	Patients eligible for DBS were included	Yes	NA
Dubayova et al., 2009 [11]	CS	QoL	patients older than 85 years were excluded	Yes	Yes
Dubayova et al., 2009 [12]	CS	QoL	patients older than 85 years were excluded	Yes	Yes
Eccles et al., 2022 [13]	CS	Stigma	No	No	Yes
Fereshtehnejad et al., 2014 [14]	CS	QoL	Patients with mild to moderate motor disability were included	Yes	Yes
Fereshtehnejad et al., 2015 [15]	CS	QoL	No	Yes	Yes
Fung et al., 2009 [16]	Int	QoL	Patients with modified H&Y stage of 1.0 to 2.5, and 0-3 hours of nondisabling off-time, no previous or current use of COMT inhibitors, no history of dyskinesia were included	No	NA
Gray et al., 2002 [17]	Int	QoL	Patients eligible for surgery were included	No	NA
Hariz et al., 2013 [18]	Int	QoL	Patients with advanced PD eligible for surgery were included	No	NA

Hashim et al., 2014 [19]	Int	QoL	Patients with no recent use of proton pump inhibitors, histamine antagonists or antibiotics were included	No	NA
Hechtner et al., 2014 [20]	CS	QoL	No	No	Yes
Hou et al., 2021[21]	CS	Stigma	No	Yes	Yes
Hristova et al., 2009 [22]	CS	QoL	No	No	No
Irons et al., 2021 [23]	Int	QoL	No	Yes	NA
Islam et al., 2022 [24]	CS	Stigma	Patients with access to a computer, and ≥ 8 years of education with no serious comorbidities were included	Yes	Yes
Klepac et al., 2007 [25]	CS	QoL	No	Yes	Yes
Lee et al., 2019 [26]	Int	QoL	Patients aged 50 years or older, and (c) ability to ambulate independently were included	Yes	Yes
Lezcano et al., 2016 [27]	Int	QoL	Patients who met the inclusion criteria of the Core Assessment Program for Surgical Interventional Therapies in PD with no GPi-DBS and surgery in other centers were included	Yes	NA
Li et al., 2016 [28]	Int	QoL	Patients with DBS were excluded	Yes	NA
Lin et al., 2022 [29]	Pros	Stigma	Patients with disease duration <3 years were included	No	Yes
Lyons et al., 2005 [30]	Int	QoL	Patients eligible for DBS were included	Yes	NA
Ma et al., 2016 [31]	CS	Stigma	No	Yes	Yes
Martínez-Martín et al., 1997[32]	CS	QoL	Article in Spanish, evaluated only per abstract	Article in Spanish, evaluated only per abstract	Article in Spanish, evaluated only per abstract
Mehdizadeh et al., 2016 [33]	CS	QoL	Patients with the ability to stand and walk independently, having no other neurological diseases, diabetes or addiction were included	Yes	Yes
Meng et al., 2022 [34]	CS	QoL	Patients with H&Y stage: I-III, no DBS or serious medical conditions were included	Yes	Yes
Moore et al., 2007 [35]	CS	QoL	Patients with disease duration >2 years were included	Yes	Yes
Moreira et al., 2017 [36]	CS	QoL	Patients with H&Y stage: I-III and aged 60-80 years were included	Yes	No
Oguru et al., 2010 [37]	CS	Other	No	Yes	Yes
Ongun, 2018 [38]	Pros	QoL	No	Yes	Yes

Ory Magne et al., 2014 [39]	Int	QoL	Patients with no orthopaedic or cardiovascular problems, severe depression or pronounced visual hallucination were included	Yes	NA
Ou et al., 2015[40]	CS	Other	No	No	Yes
Pahwa et al., 2007 [41]	Int	Other	Patients with modified Hoehn & Yahr stage of II to IV with motor complications and no dopamine agonist use within 4 weeks of screening were included	yes	NA
Rajiah et al., 2017 [42]	CS	QoL	PD patients who were taken care of by caregivers were included	No	Yes
Reginold et al., 2013 [43]	CS	QoL	Patients with Geriatric Depression Scale < 6 and minimum grade 8 years of education were included	Yes	Yes
Salazar et al., 2019 [44]	CS	Stigma	Patients with no previous surgery were included	Yes	Yes
Schrag et al., 2003 [45]	CS	QoL	No	No	No
Silva et al., 2020 [46]	CS	Stigma	Patients who were candidates for DBS were included	Yes	Yes
Sobstyl et al., 2003 [47]	Int	QoL	Patients eligible for surgery were included	Article in Polish, evaluated only per abstract	Article in Polish, evaluated only per abstract
Song et al., 2014 [48]	CS	QoL	No	No	Yes
Suzukamo et al., 2006 [49]	CS	QoL	No	Yes	Yes
Tkaczynska et al., 2020 [50]	CS	Other	No	Yes	Yes
Tomic et al., 2017 [51]	CS	QoL	Patients with no device aided therapies were included	No	No
Tran et al., 2021 [52]	CS	QoL	Patients with an age of onset of 21-40 were included	No	Yes
Valálík et al., 2001[53]	Int	Other	Patients with tremor-dominant PD undergoing thalamotomy were included	Yes	NA
Wu et al., 2014 [54]	CS	QoL	Patients only from Southwest China with no DBS were included	No	Yes
Zahodne et al., 2009 [55]	Int	QoL	Patients aged 30-75 years with DBS planning were included	Yes	Yes
Zhao et al., 2008 [56]	CS	QoL	No	Yes	Yes
Zhu et al., 2021 [57]	CS	QoL	Patients with no suicide risk were included	Yes	Yes

CS, cross-sectional; Int, interventional; Pros, prospective; QoL, quality of life.

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