

Online resources for “Evolution of impulsive compulsive behaviors and cognition in Parkinson’s disease”, *Journal of Neurology*, Aleksander H. Erga^{a*}; Guido Alves^{a,b,c}; Ole Bjørn Tysnes^{d,e}; Kenn Freddy Pedersen^{a,b}

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Online resource 1

Title Flow chart of patients with PD and controls in the Norwegian ParkWest study

Footnotes: PD=Parkinson’s disease; PwP=People with Parkinson’s disease; QUIP= Questionnaire of Impulsive and Compulsive behaviors in Parkinson’s disease.

Initial assessment of ICBs in ParkWest

People with PD
(N=124)

Controls
(N=156)

Withdrew (N=2)
Died (N=7)

Dementia (N=9)

Missing QUIP
(N=1)

Withdrew (N=8)
Died (N=6)

Dementia (N=4)

Missing QUIP
(N=2)

Two year follow up

PwP
(N=105)

Controls
(N=136)

Withdrew (N=1)
Died (N=7)

Dementia (N=16)

Missing QUIP
(N=0)

Withdrew (N=1)
Died (N=5)

Dementia (N=1)

Missing QUIP
(N=3)

Four year follow up

PwP
(N=82)

Controls
(N=126)

Online Resource 2. Frequencies of individual ICBs in PwP over four year follow up

ICB type	Baseline (N=124)	2-year follow up (N=105)	4-year follow up (N=82)
Gambling	2 (1.6)	4 (3.8)	2 (2.4)
Hypersexuality	7 (5.6)	6 (5.7)	4 (4.9)
Compulsive shopping	14 (11.3)	11 (10.5)	2 (2.4)
Compulsive eating	6 (4.8)	8 (7.6)	4 (4.9)
Hobbyism	13 (10.5)	15 (14.3)	8 (9.8)
Punding	12 (9.7)	11 (10.5)	6 (7.3)
Walkabout	5 (4.0)	3 (2.9)	1 (1.2)
DDS	3 (2.4)	6 (5.7)	2 (2.4)

Abbreviations: ICBs=Impulsive and compulsive behaviors; PwP=Patients with Parkinson's disease.

All number are N (%).

Online Resource 3. Evolution of ICB symptoms in PD patients over 2 and 4 years of follow-up

Characteristics	4-year follow up (N=82)				2-year follow up (N=23)		
	No. (%)	Baseline	2 years	4 years	No (%)	Baseline	2 years
Never ICBs	39 (47.6)	0	0	0	13 (56.5)	0	0
Non-persistent ICBs	7 (8.5)	x	x	0	2 (8.7)	x	0
	3 (3.7)	x	0	x			
	11 (13.4)	x	0	0			
	7 (8.5)	0	x	0			
Persistent ICBs	4 (4.9)	0	x	x	4 (17.4)	x	x
	6 (7.3)	x	x	x			
Uncategorized ICBs	5 (6.1)	0	0	x	4 (17.4)	0	x

Online Resource 4. Results from mixed linear regression models for 4 cognitive domains.

In mixed linear regression models, change in MMSE scores was associated with male gender (B=-1.13, 95 % CI -1.81 – -0.43; P=0.002), higher age (B=-0.09, 95 % CI -0.13 – -0.06; P<0.001) and DA use (1.51, 95 % CI 0.9 – 2.1, P<0.001), but not ICB status. Change in POMP scores for the executive domain was associated with male gender (B=-9.71, 95 % CI -12.72 – -6.70; P<0.001), higher age (B=-0.85, 95 % CI -1.02 – -0.66; P<0.001), follow-up time (B=-2.04, 95 % CI -3.65 – -0.43, P=0.013) and DA use (B=6.21, 95 % CI 3.2 – 9.3, P<0.001), but not ICB status. Change in POMP scores for the attention domain was associated with male gender (B=-12.5, 95 % CI -15.48 – -9.61; P<0.001), higher age (B=-0.65, 95 % CI -0.82 – -0.48; P<0.001) and DA use (5.94, 95 % CI 3.0 – 8.9, P<0.001), but not ICB status. Change in POMP scores for the visuospatial domain was associated with high age (B=-0.54, 95 % CI -0.75 – -0.34; P<0.001), but not ICB status. Lastly, change in POMP scores for the verbal memory domain was associated with male gender (B=-9.71, 95 % CI -12.72 – -6.70; P<0.001), high age (B=-1.10, 95 % CI -1.35 – -0.84; P<0.001), follow-up time (B=-2.56, 95 % CI -5.09 – -0.04, P=0.046), PD duration (B=2.18, 95 % CI 0.87 – 3.49, P=0.001) and DA use (B=8.40, 95 % CI 3.8 – 13.0, P<0.001), but not ICB status.