

Supplemental Table 1A. Part I: Univariate Logistic Regression Results

	Sample Size	OR (95% CI)	p-value
Age			
	160	1.01 (0.97, 1.05)	0.6
Hispanic			
	160	0.32 (0.01, 10.05)	0.52
White			
	160	2.20 (0.25, 19.32)	0.48
Genetic Status	158		
GBA		0.31 (0.05, 1.83)	0.2
LRRK2		0.63 (0.11, 3.71)	0.61
GBA	160	0.69 (0.21, 2.24)	0.54
LRRK2	160	1.51 (0.47, 4.88)	0.49
PRKN	160	5.00 (0.88, 28.29)	0.069
None		0.41 (0.10, 1.74)	0.23
Other		-reference-	
Medications			
Levodopa	160	1.66 (0.74, 3.70)	0.22
<i>Entacapone</i>	159	17.14 (0.55, 533.12)	0.11
Carbidopa, Levodopa, and Entacapone (Stalevo)	158	2.56 (0.78, 8.40)	0.12
Pramipexole	158	1.42 (0.55, 3.66)	0.47
Ropinirole	158	4.68 (1.30, 16.85)	0.018
Rotigotine	158	1.19 (0.21, 6.72)	0.84
Rasagiline	158	0.71 (0.29, 1.70)	0.44
Selegiline (oral, sublingual)	159	1.16 (0.10, 13.10)	0.9
Amantadine (liquid, infusion)	158	0.47 (0.13, 1.73)	0.26
Current Comorbidities			
Arrhythmia/Atrial Fibrillation	160	1.00 (0.25, 4.04)	0.99

Arthritis	160	1.96 (0.97, 3.94)	0.059
B12 deficiency	160	1.95 (0.68, 5.60)	0.21
Cancer	160	1.17 (0.21, 6.64)	0.86
Depression	160	6.17 (2.89, 13.19)	<0.001
Diabetes Mellitus (adult onset)	160	2.42 (0.47, 12.45)	0.29
Hearing Loss	160	1.94 (0.91, 4.12)	0.087
Hyper cholesterolemia (High Cholesterol)	160	1.50 (0.72, 3.13)	0.28
Hypertension (High Blood Pressure)	160	0.82 (0.34, 1.99)	0.66
Loss of smell	160	0.84 (0.42, 1.68)	0.63
Lung disease (including emphysema)	160	2.05 (0.60, 7.09)	0.25
Other	160	2.11 (1.06, 4.21)	0.034
Peripheral neuropathy	160	0.69 (0.21, 2.24)	0.54
PTSD	160	5.19 (1.24, 21.71)	0.024
Recreational drug use	160	1.18 (0.28, 4.92)	0.82
Renal insufficiency (kidney disease)	160	2.39 (0.33, 17.49)	0.39
Thyroid disease (not cancer, including Grave's disease)	160	1.53 (0.68, 3.46)	0.3
Still Menstruating Variable			
	160	1.07 (0.35, 3.26)	0.91
Diagnosis of PMS Variable			
	160	1.86 (0.61, 5.68)	0.28
Currently Perimenopausal Variable			
	156	0.96 (0.24, 3.89)	0.96
Hormone Levels Checked for Perimenopausal Variable			
	10	15.40 (0.41, 584.08)	0.14
Have Experienced Menopause Variable			
	157	1.21 (0.44, 3.28)	0.71
Menses and PD Medication			
Medication felt less effective	160	10.09 (1.10, 92.81)	0.041

More off/irregular frequency periods	160	5.00 (0.88, 28.29)	0.069
Hormone Replacement Therapy Variable			
	152	1.48 (0.69, 3.15)	0.31
Birth Control Variable			
	110	0.68 (0.07, 6.74)	0.74
Experience of Breast Feeding			
	159		
Yes		1.62 (0.64, 4.12)	0.31
No		1.60 (0.47, 5.47)	0.45
N/A		-reference-	
PD Onset			
	157		
While I was still having regular periods		-reference-	
While I was going through perimenopause		1.58 (0.42, 5.94)	0.5
One year or more after my last menstrual period		1.00 (0.40, 2.50)	0.99
History of Surgeries			
Total hysterectomy (removal of uterus, cervix, ovaries, Fallopian tubes, and surrounding structures)	160	1.58 (0.66, 3.79)	0.31
Oophorectomy (surgical removal of one/unilateral or both/bilateral ovaries)	160	1.86 (0.61, 5.68)	0.28
Mastectomy	160	0.46 (0.05, 4.00)	0.48
Partial hysterectomy (just uterus)	160	1.51 (0.47, 4.88)	0.49
Types of Hormone Replacement Therapy			
Estrogen	160	1.74 (0.62, 4.89)	0.29
Progesterone/Progestin	160	1.58 (0.26, 9.77)	0.62
Estrogen and progesterone combination	160	1.00 (0.36, 2.78)	0.99
Types of Birth Control			
Pill	160	1.66 (0.76, 3.62)	0.2
Ring	160	0.57 (0.06, 5.28)	0.62
Hormonal IUD	160	0.76 (0.20, 2.95)	0.7
Copper IUD	160	1.46 (0.50, 4.27)	0.49

Tubal ligation	160	4.33 (1.64, 11.45)	0.003
Pregnancy Experiences			
<i>In vitro fertilization</i>	160	0.25 (0.01, 6.63)	0.41
C-section	160	0.55 (0.21, 1.46)	0.23
Vaginal birth	160	3.48 (1.49, 8.13)	0.004
Having children prior to PD diagnosis	160	3.44 (1.25, 9.47)	0.017
No children	160	0.35 (0.11, 1.08)	0.068
Difficulties in Pregnancy Experiences			
Conceiving (fertility)	160	1.76 (0.70, 4.44)	0.23
Childbirth	160	3.03 (1.19, 7.73)	0.02
Pregnancy (reaching full birth)	160	1.40 (0.55, 3.60)	0.48
Pregnancy-related Aliments			
Eclampsia or pre-eclampsia	160	0.57 (0.12, 2.77)	0.48
<i>Diabetes during pregnancy</i>	160	28.47 (1.17, 692.41)	0.04
<i>Viral infection</i>	160	7.02 (0.08, 647.52)	0.4
Bacterial infection	160	5.00 (0.88, 28.29)	0.069
Depression/anxiety during pregnancy	160	22.20 (2.69, 183.12)	0.004
Postpartum Depression	160	6.36 (2.07, 19.52)	0.001
Flair up migraines	160	3.02 (0.96, 9.51)	0.06
Hormone-related Disorders			
Polycystic Ovarian Syndrome	160	3.30 (0.71, 15.37)	0.13
Hypothyroidism	160	1.12 (0.45, 2.80)	0.81
Hyperthyroidism	160	0.57 (0.12, 2.77)	0.48
Diabetes Type II	160	0.93 (0.17, 4.97)	0.93
Migraines (no aura)	160	2.12 (0.82, 5.51)	0.12

Variables in italics: use Firth method

Dummy variables for each response option

Reference was used to for univariate modeling and for the outcome of moderate/severe phenotype

Supplemental Table 1B. Part II: Univariate Logistic Regression Results

	Sample Size	OR (95% CI)	p-value
Age	302	1.02 (0.98, 1.05)	0.33
Hispanic	300	0.72 (0.09, 6.11)	0.76
White	299	6.62 (0.35, 125.61)	0.21
Genetic Status	299		
GBA		1.07 (0.26, 4.31)	0.93
LRRK2		0.50 (0.10, 2.58)	0.41
GBA	302	1.39 (0.56, 3.41)	0.48
LRRK2	302	0.61 (0.17, 2.11)	0.43
PRKN	302	1.68 (0.43, 6.56)	0.45
None		0.80 (0.25, 2.54)	0.7
Other		-reference-	
Medications			
Levodopa	302	2.20 (1.03, 4.73)	0.043
Entacapone	300	1.77 (0.33, 9.37)	0.5
Carbidopa, Levodopa, and Entacapone (Stalevo)	299	1.96 (0.72, 5.36)	0.19
Pramipexole	299	1.30 (0.53, 3.20)	0.56
Ropinirole	299	2.72 (1.13, 6.52)	0.025
Rotigotine	299	3.31 (1.01, 10.83)	0.048
Rasagiline	299	0.52 (0.23, 1.16)	0.11
Selegiline (oral, sublingual)	300	0.30 (0.04, 2.32)	0.25
Amantadine (liquid, infusion)	299	2.09 (0.99, 4.43)	0.053
Current Comorbidities			
Arrhythmia/Atrial Fibrillation	302	1.24 (0.44, 3.50)	0.68
Arthritis	302	1.06 (0.59, 1.89)	0.85

B12 deficiency	302	1.00 (0.36, 2.76)	0.99
Cancer	302	1.62 (0.56, 4.71)	0.37
Depression	302	2.94 (1.61, 5.38)	<0.001
Diabetes Mellitus (adult onset)	302	0.87 (0.19, 4.10)	0.86
Hearing Loss	302	1.76 (0.95, 3.27)	0.074
Hyper cholesterolemia (High Cholesterol)	302	0.63 (0.32, 1.27)	0.2
Hypertension (High Blood Pressure)	302	1.27 (0.65, 2.47)	0.48
Loss of smell	302	1.93 (1.08, 3.47)	0.027
Lung disease (including emphysema)	302	1.51 (0.53, 4.34)	0.44
Other	302	0.97 (0.53, 1.79)	0.93
Peripheral neuropathy	302	2.93 (1.38, 6.23)	0.005
PTSD	302	1.50 (0.47, 4.84)	0.5
Recreational drug use	302	0.66 (0.15, 3.03)	0.6
Renal insufficiency (kidney disease)	302	3.43 (0.74, 15.76)	0.11
Thyroid disease (not cancer, including Grave's disease)	302	1.25 (0.62, 2.50)	0.53
Still Menstruating Variable			
	301	0.17 (0.02, 1.26)	0.083
Diagnosis of PMS Variable			
	301	1.20 (0.49, 2.93)	0.68
Currently Perimenopausal Variable			
	294	0.53 (0.12, 2.36)	0.4
Hormone Levels Checked for Perimenopausal Variable			
	18	1.29 (0.07, 24.38)	0.87
Have Experienced Menopause Variable			
	298	9.09 (1.22, 67.83)	0.031
Menses and PD Medication			
Medication felt less effective	302	4.65 (1.13, 19.21)	0.034
More off/irregular frequency periods	302	3.08 (0.84, 11.29)	0.09

Hormone Replacement Therapy Variable

288 1.36 (0.73, 2.55) 0.33

Birth Control Variable

202 0.55 (0.07, 4.50) 0.57

Experience of Breast Feeding

296

Yes

0.86 (0.40, 1.84)

0.7

No

1.26 (0.49, 3.23)

0.63

N/A

-reference-

PD Onset

296

While I was still having regular periods

-reference-

While I was going through perimenopause

0.90 (0.30, 2.72)

0.85

One year or more after my last menstrual period

0.59 (0.29, 1.22)

0.16

History of Surgeries

Total hysterectomy (removal of uterus, cervix, ovaries, Fallopian tubes, and surrounding structures)

302

1.59 (0.77, 3.30)

0.21

Oophorectomy (surgical removal of one/unilateral or both/bilateral ovaries)

302

0.58 (0.17, 2.00)

0.38

Mastectomy

302

5.93 (1.54, 22.85)

0.01

Partial hysterectomy (just uterus)

302

0.58 (0.19, 1.71)

0.32

Types of Hormone Replacement Therapy

Estrogen

302

1.25 (0.54, 2.90)

0.61

Progesterone/Progestin

302

1.10 (0.23, 5.34)

0.9

Estrogen and progesterone combination

302

1.98 (0.92, 4.29)

0.082

Types of Birth Control

Pill

302

0.89 (0.48, 1.64)

0.7

Ring

302

1.48 (0.29, 7.54)

0.64

Hormonal IUD

302

1.27 (0.40, 4.03)

0.68

Copper IUD

302

0.73 (0.27, 1.99)

0.54

Tubal ligation

302

1.11 (0.46, 2.69)

0.81

Pregnancy Experiences

<i>In vitro fertilization</i>	302	0.33 (0.01, 7.42)	0.48
C-section	302	1.01 (0.49, 2.09)	0.98
Vaginal birth	302	1.13 (0.62, 2.07)	0.69
Having children prior to PD diagnosis	302	0.96 (0.50, 1.85)	0.91
No children	302	0.93 (0.45, 1.94)	0.86
Difficulties in Pregnancy Experiences			
Conceiving (fertility)	302	0.89 (0.37, 2.13)	0.79
Childbirth	302	1.16 (0.48, 2.81)	0.74
Pregnancy (reaching full birth)	302	1.06 (0.41, 2.72)	0.9
Pregnancy-related Aliments			
Eclampsia or pre-eclampsia	302	0.30 (0.04, 2.34)	0.25
Diabetes during pregnancy	302	0.73 (0.09, 6.16)	0.77
Viral infection	302	2.24 (0.40, 12.55)	0.36
Bacterial infection	302	2.63 (0.74, 9.30)	0.13
Depression/anxiety during pregnancy	302	5.78 (1.70, 19.69)	0.005
Postpartum Depression	302	2.11 (0.87, 5.14)	0.1
Flair up migraines	302	2.56 (0.97, 6.75)	0.057
Hormone-related Disorders			
Polycystic Ovarian Syndrome	302	1.91 (0.65, 5.67)	0.24
Hypothyroidism	302	1.00 (0.47, 2.13)	0.99
Hyperthyroidism	302	0.81 (0.23, 2.89)	0.75
Diabetes Type II	302	0.66 (0.15, 3.03)	0.6
Migraines (no aura)	302	1.69 (0.77, 3.73)	0.19

Variables in italics: use Firth method

Dummy variables for each response option

Reference was used to for univariate modeling and for the outcome of moderate/severe phenotype

Supplemental Table 1C. Part III: Univariate Logistic Regression Results

	Sample Size	OR (95% CI)	p-value
Age			
	141	1.01 (0.96, 1.06)	0.72
Hispanic			
	141	0.58 (0.02, 18.20)	0.76
White			
	141	0.70 (0.07, 7.03)	0.76
Genetic Status	139		
GBA		1.20 (0.17, 8.66)	0.86
LRRK2		2.50 (0.34, 18.33)	0.37
GBA	141	1.81 (0.52, 6.28)	0.35
LRRK2	141	4.09 (1.15, 14.60)	0.03
PRKN	141	2.20 (0.38, 12.69)	0.38
None		0.53 (0.10, 2.88)	0.47
Other		-reference-	
Medications			
Levodopa	141	0.68 (0.28, 1.69)	0.41
Entacapone	140	2.13 (0.19, 24.45)	0.54
Carbidopa, Levodopa, and Entacapone (Stalevo)	139	1.04 (0.21, 5.20)	0.96
Pramipexole	139	1.59 (0.52, 4.88)	0.42
Ropinirole	139	0.44 (0.05, 3.63)	0.45
Rotigotine	139	6.87 (1.09, 43.41)	0.04
Rasagiline	139	0.83 (0.29, 2.43)	0.74
<i>Selegiline (oral, sublingual)</i>	140	0.57 (0.02, 18.04)	0.75
Amantadine (liquid, infusion)	139	1.77 (0.51, 6.16)	0.37
Current Comorbidities			
Arrythmia/Atrial Fibrillation	141	0.51 (0.06, 4.26)	0.53
Arthritis	141	0.54 (0.23, 1.26)	0.15

B12 deficiency	141	4.64 (1.51, 14.23)	0.007
Cancer	141	1.06 (0.11, 9.87)	0.96
Depression	141	1.40 (0.57, 3.45)	0.46
Diabetes Mellitus (adult onset)	141	2.20 (0.38, 12.69)	0.38
Hearing Loss	141	0.84 (0.31, 2.28)	0.73
Hyper cholesterolemia (High Cholesterol)	141	0.90 (0.35, 2.33)	0.82
Hypertension (High Blood Pressure)	141	1.27 (0.45, 3.52)	0.65
Loss of smell	141	1.65 (0.71, 3.84)	0.24
Lung disease (including emphysema)	141	2.25 (0.53, 9.64)	0.27
Other	141	0.41 (0.15, 1.09)	0.073
Peripheral neuropathy	141	0.75 (0.16, 3.60)	0.72
PTSD	141	2.73 (0.61, 12.19)	0.19
Recreational drug use	141	0.59 (0.07, 4.99)	0.63
<i>Renal insufficiency (kidney disease)</i>	141	0.58 (0.02, 18.20)	0.76
Thyroid disease (not cancer, including Grave's disease)	141	0.65 (0.21, 2.07)	0.47
Still Menstruating Variable			
	141	1.06 (0.28, 4.06)	0.93
Diagnosis of PMS Variable			
	141	1.46 (0.37, 5.80)	0.59
Currently Perimenopausal Variable			
	137	0.18 (0.01, 3.69)	0.27
Hormone Levels Checked for Perimenopausal Variable			
Have Experienced Menopause Variable			
	138	0.70 (0.23, 2.12)	0.53
Menses and PD Medication			
Medication felt less effective	141	2.15 (0.19, 24.66)	0.54
More off/irregular frequency periods	141	1.06 (0.11, 9.87)	0.96
Hormone Replacement Therapy Variable			

	133	1.97 (0.81, 4.79)	0.13
Birth Control Variable			
	100	0.41 (0.02, 11.28)	0.6
Experience of Breast Feeding			
	140		
Yes		3.33 (0.73, 15.28)	0.12
No		4.81 (0.82, 28.27)	0.082
N/A		-reference-	
PD Onset			
	138		
While I was still having regular periods		-reference-	
While I was going through perimenopause		3.43 (0.79, 14.85)	0.1
One year or more after my last menstrual period		0.76 (0.25, 2.33)	0.63
History of Surgeries			
Total hysterectomy (removal of uterus, cervix, ovaries, Fallopian tubes, and surrounding structures)	141	3.30 (1.25, 8.68)	0.016
Oophorectomy (surgical removal of one/unilateral or both/bilateral ovaries)	141	0.36 (0.04, 2.92)	0.34
Mastectomy	141	1.06 (0.11, 9.87)	0.96
Partial hysterectomy (just uterus)	141	0.15 (0.01, 2.91)	0.21
Types of Hormone Replacement Therapy			
Estrogen	141	2.13 (0.67, 6.74)	0.2
Progesterone/Progestin	141	0.36 (0.02, 8.87)	0.53
Estrogen and progesterone combination	141	2.43 (0.82, 7.20)	0.11
Types of Birth Control			
Pill	141	1.11 (0.43, 2.89)	0.82
Ring	141	1.42 (0.14, 14.24)	0.76
Hormonal IUD	141	1.66 (0.41, 6.71)	0.48
Copper IUD	141	0.68 (0.14, 3.24)	0.63
Tubal ligation	141	0.97 (0.26, 3.68)	0.97
Pregnancy Experiences			
In vitro fertilization	141	0.45 (0.02, 12.03)	0.63

C-section	141	1.34 (0.48, 3.75)	0.57
Vaginal birth	141	1.04 (0.43, 2.53)	0.93
Having children prior to PD diagnosis	141	1.30 (0.45, 3.77)	0.63
No children	141	0.59 (0.16, 2.14)	0.42
Difficulties in Pregnancy Experiences			
Conceiving (fertility)	141	0.63 (0.17, 2.29)	0.48
Childbirth	141	0.46 (0.10, 2.11)	0.31
Pregnancy (reaching full birth)	141	1.50 (0.49, 4.56)	0.47
Pregnancy-related Aliments			
Eclampsia or pre-eclampsia	141	3.79 (0.94, 15.22)	0.06
Diabetes during pregnancy	141	1.42 (0.14, 14.24)	0.76
Bacterial infection	141	9.04 (0.79, 103.63)	0.077
Depression/anxiety during pregnancy	141	0.69 (0.08, 6.00)	0.74
<i>Postpartum Depression</i>	141	0.13 (0.01, 2.41)	0.17
Flair up migraines	141	0.93 (0.19, 4.59)	0.93
Hormone-related Disorders			
Polycystic Ovarian Syndrome	141	0.84 (0.09, 7.49)	0.87
Hypothyroidism	141	0.63 (0.17, 2.29)	0.48
<i>Hyperthyroidism</i>	141	0.20 (0.01, 4.17)	0.3
Diabetes Type II	141	2.20 (0.38, 12.69)	0.38
Migraines (no aura)	141	2.68 (0.89, 8.04)	0.079

Variables in italics: use Firth method

Dummy variables for each response option

Reference was used to for univariate modeling and for the outcome of moderate/severe phenotype

Supplemental Table 1D. Part IV: Univariate Logistic Regression Results

	Sample Size	OR (95% CI)	p-value
Age			
	139	1.01 (0.97, 1.05)	0.64
Hispanic			
	139	0.31 (0.01, 9.58)	0.5
White			
	139	2.31 (0.26, 20.37)	0.45
Genetic Status	138		
GBA		2.63 (0.40, 17.46)	0.32
LRRK2		3.00 (0.40, 22.71)	0.29
GBA	139	2.14 (0.72, 6.34)	0.17
LRRK2	139	2.39 (0.66, 8.75)	0.19
PRKN	139	1.12 (0.20, 6.37)	0.9
None		1.15 (0.22, 6.00)	0.87
Other		-reference-	
Medications			
Levodopa	139	1.42 (0.52, 3.88)	0.49
Entacapone	138	1.11 (0.10, 12.55)	0.93
Carbidopa, Levodopa, and Entacapone (Stalevo)	137	2.38 (0.72, 7.86)	0.16
Pramipexole	137	1.11 (0.41, 2.99)	0.83
Ropinirole	137	1.93 (0.56, 6.71)	0.3

Rotigotine	137	4.72 (0.83, 26.83)	0.08
Rasagiline	137	0.82 (0.34, 1.95)	0.65
Selegiline (oral, sublingual)	138	1.11 (0.10, 12.55)	0.93
Amantadine (liquid, infusion)	137	2.46 (0.85, 7.06)	0.095

Current Comorbidities

Arrhythmia/Atrial Fibrillation	139	0.89 (0.17, 4.77)	0.89
Arthritis	139	0.93 (0.45, 1.92)	0.85
B12 deficiency	139	2.91 (0.98, 8.62)	0.054
Cancer	139	0.43 (0.05, 3.83)	0.45
Depression	139	2.42 (1.12, 5.23)	0.024
Diabetes Mellitus (adult onset)	139	0.43 (0.05, 3.83)	0.45
Hearing Loss	139	1.02 (0.43, 2.39)	0.96
Hyper cholesterolemia (High Cholesterol)	139	0.79 (0.35, 1.79)	0.58
Hypertension (High Blood Pressure)	139	0.87 (0.35, 2.16)	0.76
Loss of smell	139	2.21 (1.07, 4.61)	0.033
Lung disease (including emphysema)	139	1.97 (0.57, 6.86)	0.28
Other	139	1.25 (0.59, 2.62)	0.56
Peripheral neuropathy	139	1.02 (0.33, 3.13)	0.98
PTSD	139	4.08 (0.93, 17.92)	0.063
Recreational drug use	139	0.62 (0.12, 3.12)	0.56

Renal insufficiency (kidney disease)	139	2.29 (0.31, 16.84)	0.41
Thyroid disease (not cancer, including Grave's disease)	139	0.95 (0.39, 2.28)	0.9
Still Menstruating Variable			
	139	0.18 (0.02, 1.47)	0.11
Diagnosis of PMS Variable			
	139	2.43 (0.74, 8.03)	0.14
Currently Perimenopausal Variable			
	136	0.62 (0.12, 3.13)	0.56
Hormone Levels Checked for Perimenopausal Variable			
	9	0.75 (0.03, 17.51)	0.86
Have Experienced Menopause Variable			
	136	1.52 (0.47, 4.99)	0.49
Menses and PD Medication			
Medication felt less effective	139	9.74 (1.06, 89.96)	0.045
More off/irregular frequency periods	139	4.82 (0.85, 27.41)	0.076
Hormone Replacement Therapy Variable			
	132	0.57 (0.24, 1.35)	0.2
Birth Control Variable			
	96	0.69 (0.07, 6.90)	0.75
Experience of Breast Feeding			
Yes	138	1.36 (0.49, 3.78)	0.55
No		2.59 (0.73, 9.25)	0.14
N/A		-reference-	

PD Onset	136		
While I was still having regular periods		-reference-	
While I was going through perimenopause		1.94 (0.50, 7.64)	0.34
One year or more after my last menstrual period		0.63 (0.25, 1.60)	0.33
History of Surgeries			
Total hysterectomy (removal of uterus, cervix, ovaries, Fallopian tubes, and surrounding structures)	139	0.97 (0.37, 2.57)	0.95
Oophorectomy (surgical removal of one/unilateral or both/bilateral ovaries)	139	2.43 (0.74, 8.03)	0.14
Mastectomy	139	3.52 (0.57, 21.91)	0.18
Partial hysterectomy (just uterus)	139	0.99 (0.29, 3.42)	0.99
Types of Hormone Replacement Therapy			
Estrogen	139	1.02 (0.33, 3.13)	0.98
<i>Progesterone/Progestin</i>	139	0.19 (0.01, 4.66)	0.31
Estrogen and progesterone combination	139	0.84 (0.28, 2.53)	0.76
Types of Birth Control			
Pill	139	1.17 (0.53, 2.60)	0.69
<i>Ring</i>	139	0.24 (0.01, 6.32)	0.39
Hormonal IUD	139	0.83 (0.21, 3.27)	0.78
Copper IUD	139	2.47 (0.81, 7.55)	0.11
Tubal ligation	139	1.77 (0.65, 4.76)	0.26
Pregnancy Experiences			
In vitro fertilization	139	1.12 (0.10, 12.68)	0.93
C-section	139	0.66 (0.24, 1.78)	0.41

Vaginal birth	139	1.35 (0.62, 2.98)	0.45
Having children prior to PD diagnosis	139	2.17 (0.82, 5.76)	0.12
No children	139	0.75 (0.27, 2.07)	0.58
Difficulties in Pregnancy Experiences			
Conceiving (fertility)	139	1.04 (0.37, 2.94)	0.95
Childbirth	139	1.04 (0.37, 2.94)	0.95
Pregnancy (reaching full birth)	139	1.60 (0.60, 4.25)	0.35
Pregnancy-related Aliments			
Eclampsia or pre-eclampsia	139	3.18 (0.68, 14.87)	0.14
Diabetes during pregnancy	139	9.74 (1.06, 89.96)	0.045
<i>Viral infection</i>	139	6.72 (0.07, 620.49)	0.41
Bacterial infection	139	12.49 (1.41, 110.45)	0.023
Depression/anxiety during pregnancy	139	1.73 (0.37, 8.07)	0.49
Postpartum Depression	139	0.58 (0.15, 2.19)	0.42
Flair up migraines	139	5.03 (1.19, 21.16)	0.028
Hormone-related Disorders			
Polycystic Ovarian Syndrome	139	1.73 (0.37, 8.07)	0.49
Hypothyroidism	139	0.90 (0.34, 2.37)	0.84
Hyperthyroidism	139	1.13 (0.27, 4.72)	0.87
<i>Diabetes Type II</i>	139	0.16 (0.01, 3.65)	0.25
Migraines (no aura)	139	0.84 (0.28, 2.53)	0.76

Variables in italics: use Firth method

Dummy variables for each response option

Reference was used to for univariate modeling and for the outcome of moderate/severe phenotype

Supplemental Table 2: List of Comorbidities

Variable	Label	Type	Length	Codes	Format name
SUBJCAP		Char	8		
COMORBID	Have you ever been diagnosed with or treated for any of these conditions?	Char	12	1 = a) Hypertension (High Blood Pressure)	COMORBID
				2 = b) Diabetes Mellitus (childhood onset)	COMORBID
				3 = c) Diabetes Mellitus (adult onset)	COMORBID
				4 = d) Myocardial Infarction (Heart Attack)	COMORBID
				5 = e) Congestive Heart Failure	COMORBID
				6 = f) Arrythmia/Atrial Fibrillation	COMORBID
				7 = g) Hyper cholesterolemia (High Cholesterol)	COMORBID
				8 = h) Hearing Loss	COMORBID
				9 = i) Loss of smell	COMORBID
				10 = j) Lung disease (including emphysema)	COMORBID
				11 = k) Thyroid disease (not cancer; including Grave's disease)	COMORBID
				12 = l) Liver	COMORBID
				13 = m) Renal insufficiency (kidney disease)	COMORBID
				14 = n) Peptic ulcer disease	COMORBID
				15 = o) Peripheral vascular disease	COMORBID
				16 = p) Stroke, mini stroke, CVA (cerebrovascular accident) or TIA (transient ischemic attack)	COMORBID
				17 = q) Seizure, fit , convulsion or unexplained loss of consciousness	COMORBID
				18 = r) Arthritis	COMORBID
				19 = s) Hip Fracture	COMORBID
				20 = t) Gout	COMORBID
				21 = u) Recreational drug use	COMORBID
				22 = v) Gaucher disease	COMORBID
				23 = w) Multiple sclerosis	COMORBID
				24 = x) Alzheimer's disease	COMORBID
				25 = y) ALS	COMORBID
				26 = z) PTSD	COMORBID
				27 = aa) Depression	COMORBID
				28 = bb) Normal pressure hydrocephalus	COMORBID
				29 = cc) Peripheral neuropathy	COMORBID
				30 = dd) Crohn's disease/ulcerative colitis	COMORBID
				31 = ee) B12 deficiency	COMORBID
				32 = ff) Cancer, if yes please specify:	COMORBID

Supplemental Table 2: List of Comorbidities

Variable	Label	Type	Length	Codes	Format name
				33 = gg) Other, if yes please specify:	COMORBID
CURRENT	Current Diagnosis	Num	8	0 = No	YN
				1 = Yes	YN
LIFETIME	Lifetime Diagnosis	Num	8	0 = No	YN
				1 = Yes	YN
CANCERNM	Cancer, specify	Char	51		
OTHERNM	Other Medical Problems	Char	40		
C_BRAIN	Did you ever have a brain surgery?	Num	8	0 = No	YNUNK
				1 = Yes	YNUNK
				9 = Unknown	YNUNK

Supplemental Table 3. Frequency of UPDRS Scores, by Severity Groups Parts I-IV

	Part I	Part II	Part III	Part IV
UPDRS Moderate/Severe Threshold	>21	>29	>58	>12
Mild n (%)	112 (70.0)	246 (81.46)	114 (80.85)	96 (69.06)
Moderate/Severe n (%)	48 (30.0)	56 (18.54)	27 (19.15)	40 (30.94)