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Parkinson's Disease

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July 2025

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1. **'I Knew Nothing About Parkinson's': Insights into Receiving a Diagnosis of Parkinson's Disease and the Impact of Self-Management, Self-Care, and Exercise Engagement, from People with Parkinson's and Family Members' Perspectives: Qualitative Study.**

Authors: Ahern, Leanne;Curtin, Catriona;Timmons, Suzanne;Lamb, Sarah E. and McCullagh, Ruth

Publication Date: May 25 ,2025

Journal: Geriatrics 10(3)

Abstract: This paper draws on stories of receiving the diagnosis of Parkinson's disease, which emerged from a broader narrative study exploring beliefs about exercise and challenges facing people with Parkinson's disease. BACKGROUND/OBJECTIVES: By interviewing people with Parkinson's disease (PwPD) and their family members, this paper aimed to gain insights into PwPD's experiences with diagnosis, its influence on exercise engagement, and access to services in Ireland. METHODS: This study employed a qualitative research design, using purposeful and maximum variation sampling. PwPD (varying in age, sex, geographical setting, and disease severity) were recruited from urban physiotherapy services. Semi-structured interviews with 12 PwPD and a group interview with four family members were conducted between November 2022 and January 2023. The interviews were recorded, transcribed, and analysed using thematic analysis. RESULTS: Four themes emerged: (1) firstly, there was disempowerment and emotional shock at diagnosis: PwPD expressed frustration with delays in diagnosis and with how language and empathy affected their ability to cope initially. (2) There

was a lack of signposting and services access: a strong need exists for clear information on services and resources to prevent social disengagement. (3) In terms of exercise education and self-management support, PwPD lacked early exercise education and guidance, relying on self-education. (4) With regard to the emotional burden on family caregivers, family members manage care logistics and face emotional burdens, which they try to conceal. CONCLUSIONS: The delivery of a Parkinson's diagnosis could be improved by recognising its psychosocial impact on PwPD and families. Providing clear information on services within weeks of diagnosis was considered crucial. Limited exercise education affected PwPD's ability to self-manage. Early physiotherapy access is strongly recommended to help delay functional decline and encourage an active lifestyle.

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2. **Body Mass Index Changes and Femur Fracture Risk in Parkinson's Disease: National Cohort Study.**

Authors: Ahn, Sung-Ho;Lee, Hye Sun and Lee, Jun-Hyuk

Publication Date: Jun ,2025

Journal: Journal of Cachexia, Sarcopenia and Muscle 16(3), pp. e13860

Abstract: BACKGROUND: Parkinson's disease (PD) increases fracture risk owing to postural instability and bone fragility, with femur fractures being the most frequent and clinically significant. Many patients with PD experience weight loss as the disease progresses, and low body mass index (BMI) is a well-established fracture risk factor. However, the relationship between longitudinal BMI changes and femur fracture risk in PD remains unclear. We investigated this association using nationwide cohort data. METHODS: This retrospective cohort study used data from the Korean National Health Insurance Service (2009-2014). Overall, 19 422 patients newly diagnosed with PD who underwent three consecutive biennial health screenings were included in the analysis. Based on BMI measurements collected over a median exposure period of 4.01 years (2009-2014), changes were identified using Gaussian finite mixture modelling, classifying participants into two groups: stable BMI (n = 16 839) and decreasing BMI (n = 2583). The primary outcome was new-onset femur fracture, defined as hospitalization with the International Classification of Diseases (Tenth Revision) code S72, identified between 2015 and 2022. Multivariable Cox proportional hazard regression analysis was used to estimate hazard ratios (HRs) and 95% confidence intervals (CIs) for new-onset femur fracture in the decreasing BMI group compared to the stable group. RESULTS: The mean age of participants was 65.6 +/- 8.8 years, 57.0% were women, and the average baseline BMI was 24.2 +/- 3.0 kg/m2. Compared with the stable group, the decreasing BMI group was older, had a higher baseline BMI, and a lower proportion of current drinkers and regular exercisers. The proportion of women and the prevalence of obesity, hypertension, type 2 diabetes, dyslipidaemia and osteoporosis were also higher in the decreasing group. During a median follow-up of 8.46 years, 1156 femur fractures occurred. The incidence rate was higher in the decreasing BMI group than in the stable group (10.50 vs. 7.58 per 1000 person-years). In the unadjusted analysis, the decreasing BMI group exhibited a significantly increased risk of femur fractures (HR 1.41, 95% CI: 1.21-1.65, p . Compared with the stable group, the decreasing BMI group was older, had a higher baseline BMI, and a lower proportion of current drinkers and regular exercisers. The proportion of women and the prevalence of obesity, hypertension, type 2 diabetes, dyslipidaemia and osteoporosis were also higher in the

decreasing group. During a median follow-up of 8.46 years, 1156 femur fractures occurred. The incidence rate was higher in the decreasing BMI group than in the stable group (10.50 vs. 7.58 per 1000 person-years). In the unadjusted analysis, the decreasing BMI group exhibited a significantly increased risk of femur fractures (HR 1.41, 95% CI: 1.21-1.65, p CONCLUSIONS: Patients with PD who experience a decline in BMI over time have a higher risk of femur fracture than those with a stable BMI. Monitoring longitudinal changes in BMI among patients with PD may serve as a practical tool for the early identification of fracture risk and the implementation of preventive strategies. Copyright © 2025 The Author(s). Journal of Cachexia, Sarcopenia and Muscle published by Wiley Periodicals LLC.

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3. **Penetrance of Parkinson's disease in GBA1 carriers depends on variant severity and polygenic background.**

Authors: Hassanin, Emadeldin;Landoulsi, Zied;Pachchek, Sinthuja;Krawitz, Peter;Maj, Carlo;Kruger, Rejko;May, Patrick and Bobbili, Dheeraj Reddy

Publication Date: Jun 12 ,2025

Journal: Npj Parkinsons Disease 11(1), pp. 162

Abstract: Heterozygous GBA1 variants increase Parkinson's disease (PD) risk with variable penetrance. We investigated the interaction between genome-wide polygenic risk scores (PRS) and severity of pathogenic GBA1 variants (GBA1PVs) to assess their combined impact on PD risk. GBA1 variants were identified from whole exome sequencing in the UK Biobank and targeted PacBio sequencing in the Luxembourg Parkinson's Study, with PRS calculated using genome-wide significant SNPs. GBA1PVs were present in 8.8% of PD patients in the UK Biobank and 9.9% in LuxPark, with carriers showing consistently higher PD risk across all PRS categories. In the highest PRS category, PD risk increased 2.3-fold in the UK Biobank and 1.6-fold in LuxPark. Severe and mild GBA1 variants conferred nearly double the risk of PD compared to risk variants. Our findings demonstrate the impact of PRS on GBA1PVs penetrance, highlighting implications for genetic counseling and clinical trial design in GBA1-associated PD. Copyright © 2025. The Author(s).

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4. **Peripheral inflammation's variable impact on cognitive and symptomatic outcomes in Parkinson's disease: a longitudinal and cross-sectional analysis.**

Authors: He P.;Li Y.;Huang Z.;Gao Y.;Duan Q.;Qiu Y.;Feng S.;Huang R.;Gong L.;Ma G.;Zhang Y.;Shi L.;Wang L. and Nie, K.

Publication Date: 2025

Journal: Npj Parkinson's Disease 11(1) (pagination), pp. Article Number: 155. Date of Publication: 01 Dec 2025

Abstract: Increasing evidence supported a link between peripheral inflammation and Parkinson's disease (PD). However, the role of peripheral inflammation in the progression of PD clinical symptoms remained unclear. This study evaluates peripheral inflammation using serum differential leukocyte counts and their derived ratios. A total of 170 PD patients were

retrospectively enrolled from Guangdong Provincial People's Hospital (GDPH) and 68 from PPMI. Partial correlation analysis showed that neutrophil-to-lymphocyte ratio (NLR) negatively correlated with MoCA in GDPH but not in PPMI. Moreover, peripheral inflammation was shown to correlate with white matter integrity. The result of the longitudinal analysis showed that higher baseline NLR predicted worsening in letter number sequencing (LNS) score. Path analysis indicated that white matter integrity significantly mediated the relationship between NLR and cognitive change in the LNS score from Year 5 to baseline. Peripheral inflammation is associated with global cognition and white matter integrity in PD and predicts cognitive decline.

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5. **High-Intensity Transcranial Alternating Current Stimulation-Induced Cortical Prehabilitation Improves Quality of Life in Parkinson's Disease: A Double-Blind, Randomized Clinical Trial.**

Authors: Hou T.T.;Zhang H.Y.;Chen K.K.;Zhang T.;Wang Y.X.;Meng D.T.;Li Z.Z.;Yan H.J.;Zhen Y.;An X.;Du J.;Wang R.D.;Fang J.P.;Liu Y.H.;Yan X.;Jin Z.H. and Fang, B. Y.

Publication Date: 2025

Journal: SSRN (pagination), pp. Date of Publication: 09 Jun 2025

Abstract: Background: Parkinson's disease (PD) rehabilitation faces challenges by long treatment times and transient benefits. We aimed to assess whether combining high-intensity transcranial alternating current stimulation (Hi-tACS) with multidisciplinary intensive rehabilitation therapy (MIRT) improves quality of life (QoL) in PD over 24 weeks through cortical prehabilitation. Method(s): We conducted a randomised, double-blind, placebo-controlled trial at Beijing Rehabilitation Hospital, China, enrolling patients with idiopathic PD (Hoehn & Yahr stages 1-3, aged 45-70). Participants were randomly assigned (1:1) to receive either ten days of MIRT combined with twice-daily Hi-tACS (15 mA, 77.5 Hz, 40 minutes per session) or sham stimulation. Randomisation used block design (block size = four), and allocation was concealed. Participants, intervention staff, and outcome assessors were masked. The primary outcome was change in the Parkinson's Disease Questionnaire-39 (PDQ-39) total score from baseline (T0) to 4(T2), 12(T3), and 24(T4) weeks post-intervention, assessed in the "off" medication state. Analyses followed the intention-to-treat principle. The trial was registered with ChiCTR (ChiCTR2300071969) and is closed to new participants. Finding(s): Between October 2023 and January 2025, 60 patients were randomised (30 per group); 50 completed follow-up (25 per group). The Hi-tACS+MIRT group had significantly greater PDQ-39 score improvements than the sham group at T2 (95% CI 0.14-1.21, p=0.009), T3 (95% CI0.80-2.05, p=0.002), and T4 (95% CI 0.65-1.85, pFinding(s): Between October 2023 and January 2025, 60 patients were randomised (30 per group); 50 completed follow-up (25 per group). The Hi-tACS+MIRT group had significantly greater PDQ-39 score improvements than the sham group at T2 (95% CI 0.14-1.21, p=0.009), T3 (95% CI0.80-2.05, p=0.002), and T4 (95% CI 0.65-1.85, pInterpretation(s): Hi-tACS combined with MIRT significantly improved QoL in PD patients over 6 months. This non-invasive approach may enhance long-term functional outcomes through neuromodulation-induced cortical prehabilitation.

6. **Advanced clinical stage Parkinson's disease is linked to proinflammatory and regulatory blood cell populations.**

Authors: IchikawaEscamilla E.;EspinosaCardenas R.;LeyvaHernandez J.;AlvarezLuquin D.D.;ArceSillas A. and AdalidPeralta, L.

Publication Date: 2025

Journal: Neurological Sciences (pagination), pp. Date of Publication: 2025

Abstract: The clinical stage of Parkinson's disease (PD) can be assessed using the Hoehn & Yahr (H&Y) and MDS-UPDRS scales. Both neuroinflammation and peripheral inflammation have been linked to advanced PD. This study aimed to investigate changes in the peripheral regulatory and proinflammatory immune response in PD patients and its relationship to advanced disease. Forty-six patients were classified by clinical stage according to H&Y as "mild," "moderate," and "severe." Twenty-two healthy subjects were included as controls. MDS-UPDRS, Beck, and Schwab & England scores were measured in patients and controls. Proinflammatory and regulatory cell populations were quantified by flow cytometry in each group. As expected, total MDS-UPDRS scores and MDS-UPDRS section scores increased significantly with disease severity. Interestingly, decreased counts of activated Tregs, functional Bregs, and IL-10-producing functional Bregs were found in PD patients compared to controls. Such decrease progresses in parallel with the disease in patients. In addition, the level of activated Tregs correlated positively with Schwab & England score. The levels of pro-inflammatory cells (Th2 IL-13 +, Th2 IL-4 +, and Th17 IL6 +) were decreased in patients compared to controls. However, the levels of IL-6 producing Th17 cells showed a significant positive correlation with MDS-UPDRS III score. These results suggest a relationship between the patient's peripheral immune response and developing advanced disease. Patients with higher levels of regulatory cells have a less progressive disease and a better quality of life than those with a peripheral pro-inflammatory profile. Thus, it is necessary to develop therapeutic strategies that contribute to the regulation of inflammation in PD.

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7. **Clinical, Humanistic, and Economic Value of 'Good ON-Time' in Advanced Parkinson's Disease: A Multinational Real-World Study.**

Authors: Jimenez-Shahed, Joohi;Malaty, Irene A.;Azulay, Jean-Philippe;Parab, Ashwini;Yan, Connie H.;Kandukuri, Prasanna L.;Kukreja, Pavnit;Zamudio, Jorge;Gillespie, Alexander and Antonini, Angelo

Publication Date: Aug ,2025

Journal: Neurology & Therapy 14(4), pp. 1475–1493

Abstract: INTRODUCTION: In advanced Parkinson's disease (aPD), 'ON-time' indicates periods of better symptom control, with 'good ON-time (GOT)' indicating control without troublesome dyskinesia. Despite its importance, the impact of increased 'GOT' on aPD outcomes is understudied. This study aims to evaluate the clinical, humanistic, and economic value of incremental hourly increases in 'GOT' for people with aPD. METHODS: The study

analyzed data from people with aPD across seven countries, using the Adelphi Parkinson's Disease Specific Program survey (2017-2020). 'GOT' (calculated from self-reported ON/OFF-time and the proportion of troublesome dyskinesia time) was normalized to a 16-h day. Outcomes included symptom control, medication use, falls, activities of daily living (ADLs), quality of life (QoL), and healthcare resource utilization (HRU). Regression models evaluated relationships between incremental 'GOT' hours and outcomes. RESULTS: Of 802 patients (mean [standard deviation; SD] age, 76.1 [8.9] years; male, 60.3%) included in the analysis, mean (SD) 'GOT' was 13.1 (2.7) hours/day. Hourly increases in 'GOT' were associated with lower likelihood of reporting uncontrolled motor (odds ratio [OR] 0.79; 95% confidence interval (CI) [0.62, 1.01]) and non-motor symptoms (OR 0.88; 95% CI [0.80, 0.96]), taking >= 2 PD medication classes (OR 0.91; 95% CI [0.86, 0.97]) and lower fall risk (incidence rate ratio 0.91; 95% CI [0.87, 0.95]). Hourly increases in 'GOT' were significantly associated with reduced humanistic burden (greater ADL independence, OR 1.19; 95% CI [1.04 1.37]) and improved QoL (for Parkinson's Disease Questionnaire [PDQ]-39: coefficient - 1.49; 95% CI [- 2.46, -0.52]) and with reduced economic burden, with annual total HRU cost-savings of $8602.24 (95% CI - $12,192.70 to $5011.77). CONCLUSIONS: In this multi-country, real-world study of people with aPD, hourly increases in 'GOT' were associated with improved clinical outcomes, greater humanistic value, and reduced economic burden. Interventions that maximize improvement of 'GOT' should be considered for people with aPD adequately controlled on current therapy. Copyright © 2025. The Author(s).; plain-language-summary For most people with advanced Parkinson's disease, the waking day is characterized by periods when their symptoms are poorly controlled (OFF-time) and periods of better symptom control (ON-time). During ON-time, patients often experience involuntary muscle movements (called dyskinesia), which may be mild and non-problematic or may be more severe and troublesome. When patients are ON and have no troublesome dyskinesia (i.e., no dyskinesia or mild dyskinesia), this can be referred to as 'good ON-time.' While it is logical to assume that 'good ON-time' is preferred by patients, little is known about the association of 'good ON-time' with the burden of disease, patient quality of life or healthcare costs. This research sought to measure the impact of hourly increases in 'good ON-time' in 802 people with advanced Parkinson's disease. The researchers showed that for every 1 h more of 'good ON-time' during the waking day, there was a 21% lower likelihood of the person having uncontrolled motor symptoms, a 9% lower risk of falls, a 19% better chance that the person would be able to do daily tasks independently, and a 49% chance of them having a better quality of life. One hour per day increases in 'good ON-time' also reduce hospitalization and visits to the doctor and thus reduced the cost of treating people with advanced Parkinson's disease. The researchers carrying out this study suggest that increasing 'good ON-time' as much as possible should be a goal of treatment of advanced Parkinson's disease. Language: English

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8. **Distinct brain atrophy progression subtypes underlie phenoconversion in isolated REM sleep behaviour disorder.**

Authors: Joza S.;Delva A.;Tremblay C.;Vo A.;Filiatrault M.;Tweedale M.;Gagnon J.F.;Postuma R.B.;Dagher A.;Klein J.;Hu M.;Dusek P.;Marecek S.;Varga Z.;Taylor J.P.;O'Brien J.T.;Firbank M.;Thomas A.;Donaghy P.C.;Arnulf I., et al

Publication Date: 2025

Journal: eBioMedicine 117(pagination), pp. Article Number: 105753. Date of Publication: 01

Jul 2025

Abstract: Background: Synucleinopathies include a spectrum of disorders varying in features and severity, including idiopathic/isolated REM sleep behaviour disorder (iRBD), Parkinson's disease (PD), and dementia with Lewy bodies (DLB). Distinct brain atrophy patterns may already be seen in iRBD; however, how brain atrophy begins and progresses remains unclear. Method(s): A multicentric cohort of 1276 participants (451 polysomnography-confirmed iRBD, 142 PD with probable RBD, 87 DLB, and 596 controls) underwent T1-weighted MRI and longitudinal clinical assessments. Brain atrophy was quantified using vertex-based cortical surface reconstruction and volumetric segmentation. The unsupervised machine learning algorithm, Subtype and Stage Inference (SuStaIn), was used to reconstruct spatiotemporal patterns of brain atrophy progression. Finding(s): SuStaIn identified two distinct subtypes of brain atrophy progression: 1) a "cortical-first" subtype, with atrophy beginning in the frontal lobes and involving the subcortical structures at later stages; and 2) a "subcortical-first" subtype, with atrophy beginning in the limbic areas and involving cortical structures at later stages. Both cortical- and subcortical-first subtypes were associated with a higher rate of increase in MDS-UPDRS-III scores over time, but cognitive decline was subtype-specific, being associated with advancing stages in patients classified as cortical-first but not subcortical-first. Classified patients were more likely to phenoconvert over time compared to stage 0/non-classified patients. Among the 88 patients with iRBD who phenoconverted during follow-up, those classified within the cortical-first subtype had a significantly increased likelihood of developing DLB compared to PD, unlike those classified within the subcortical-first subtype. Interpretation(s): There are two distinct atrophy progression subtypes in iRBD, with the cortical-first subtype linked to an increased likelihood of developing DLB, while both subtypes were associated with worsening parkinsonian motor features. This underscores the potential utility of subtype identification and staging for monitoring disease progression and patient selection for trials. Funding(s): This study was supported by grants to S.R. from Alzheimer Society Canada (0000000082) and by Parkinson Canada (PPG-2023-0000000122). The work performed in Montreal was supported by the Canadian Institutes of Health Research (CIHR), the Fonds de recherche du Quebec - Sante (FRQS), and the W. Garfield Weston Foundation. The work performed in Oxford was funded by Parkinson's UK (J-2101) and the National Institute for Health Research (NIHR) Oxford Biomedical Research Centre (BRC). The work performed in Prague was funded by the Czech Health Research Council (grant NU21-04-00535) and by The National Institute for Neurological Research (project number LX22NPO5107), financed by the European Union - Next Generation EU. The work performed in Newcastle was funded by the NIHR Newcastle BRC based at Newcastle upon Tyne Hospitals NHS Foundation Trust and Newcastle University. The work performed in Paris was funded by grants from the Programme d'investissements d'avenir (ANR-10-IAIHU-06), the Paris Institute of Neurosciences - IHU (IAIHU-06), the Agence Nationale de la Recherche (ANR-11-INBS-0006), Electricite de France (Fondation d'Entreprise EDF), the EU Joint Programme-Neurodegenerative Disease Research (JPND) for the Control-PD Project (Cognitive Propagation in Prodromal Parkinson's disease), the Fondation Therese et Rene Planiol, the Fonds Saint-Michel; by unrestricted support for research on Parkinson's disease from Energipole (M. Mallart) and the Societe Francaise de Medecine Esthetique (M. Legrand); and by a grant from the Institut de France to Isabelle Arnulf (for the ALICE Study). The work performed in Sydney was supported by a Dementia Team Grant from the National Health and Medical Research Council (#1095127). The work performed in Cologne was funded by the Else Kroner-Fresenius-Stiftung (grant number 2019_EKES.02), the Koln Fortune Program, Faculty of Medicine, University of Cologne, and the " Netzwerke 2021 Program (Ministry of

Culture and Science of Northrhine Westphalia State). The work performed in Aarhus was supported by funding from the Lundbeck Foundation, Parkinsonforeningen (The Danish Parkinson Association), and the Jascha Foundation.

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9. **Modified frailty index-11 (mFI-11) measured frailty as a predictor of postoperative outcomes in Parkinson's disease patients undergoing deep brain stimulation: A national inpatient sample analysis.**

Authors: Khan A.H.;Heintzelman K.E.;Fletcher D.M.;Ananthasayanam U.;Bhagwat A.;Konrad P. and Memon, A. A.

Publication Date: 2025

Journal: Journal of Clinical Neuroscience 138(pagination), pp. Article Number: 111386. Date of Publication: 01 Aug 2025

Abstract: Background: Parkinson's disease (PD) presents with tremor, rigidity, bradykinesia, and postural instability. Commonly, PD is diagnosed around age 60 with the rate of diagnosis increasing with age. Deep brain stimulation (DBS) is an invasive surgical treatment for PD. Older patients, who are more likely to be frail, may experience higher risk of adverse outcomes following DBS. Method(s): This retrospective cohort study analyzed NIS data from 2016 to 2020, identifying PD patients who received DBS. Frailty was determined using the 11-item Modified Frailty Index (mFI-11), with patients classified into frail and non-frail groups. Primary outcomes included prolonged length of stay (LOS) beyond the 75th percentile, non-routine discharge, and postoperative complications. Secondary outcomes involved total hospital costs. Univariate and multivariate analyses were performed, adjusting for demographics, comorbidities (CCI), and hospital characteristics. Result(s): A total of 3,472 patients met the inclusion criteria. In univariate analysis, frailty was significantly associated with increased odds of unfavorable discharge (OR: 1.76, 95 % CI: 1.44-2.16), prolonged length of stay (OR: 1.99, 95 % CI: 1.57-2.54), postoperative complications (OR: 1.89, 95 % CI: 1.22-3.01), and higher hospital costs (mean difference: $6,780; p = 0.001). After adjustment for demographic, clinical, and hospital factors, frailty remained independently associated with unfavorable discharge (aOR: 1.27, 95 % CI: 1.01-1.60), but not with prolonged length of stay, complications, or cost. In stratified analysis, frailty was significantly associated with adverse outcomes in patients with lower comorbidity burden (CCI Result(s): A total of 3,472 patients met the inclusion criteria. In univariate analysis, frailty was significantly associated with increased odds of unfavorable discharge (OR: 1.76, 95 % CI: 1.44-2.16), prolonged length of stay (OR: 1.99, 95 % CI: 1.57-2.54), postoperative complications (OR: 1.89, 95 % CI: 1.22-3.01), and higher hospital costs (mean difference: $6,780; p = 0.001). After adjustment for demographic, clinical, and hospital factors, frailty remained independently associated with unfavorable discharge (aOR: 1.27, 95 % CI: 1.01-1.60), but not with prolonged length of stay, complications, or cost. In stratified analysis, frailty was significantly associated with adverse outcomes in patients with lower comorbidity burden (CCI Conclusion(s): Frailty is a strong predictor of adverse outcomes in PD patients undergoing DBS, particularly non-routine discharge. These findings suggest that incorporating frailty assessments into preoperative planning may improve outcomes and reduce healthcare costs.

10. **The Spectrum of Parkinson's Disease in Tertiary Care Hospital: A Clinico-Epidemiological Cross-Sectional Study.**

Authors: Khatnawliya S.;Baitha A.K.;Meena N. and Kasotia, J.

Publication Date: 2025

Journal: NeuroQuantology 23(6), pp. 18–24

Abstract: Introduction-Parkinson's disease is a progressive neurological disorder that results in significant socioeconomic repercussions for individuals, their families, and society at large. The aim of present study is to evaluate the clinico-epidemiological profile of Parkinson's disease patients visiting a tertiary care hospital. Material and methods-The hospital based observational cross-sectional study was conducted at ESIC Medical College and Hospital, Alwar, Rajasthan among patients of parkinsonian disease during the study period of August 2024 to May 2025. Convenient sampling method was used and a total of 250 patients of PD diagnosed by a neurologist or those who were admitted or attended neurology and medicine OPD were selected. The demographic data and clinical signs and symptoms were recorded. Hoehn and Yahr scale was used to assess the severity at presentation. Results-The majority of patients were aged >70 years (38%), with a male predominance (65.2%). The majority originated from urban regions (58.8%) and were classified among the lower medium (36.8%) and higher lower (28.4%) socioeconomic strata. The majority had a duration of Parkinson's disease ranging from 1 to 3 years (38.8%). Tremor was the predominant presenting symptom (57.2%), with a higher incidence of right-sided onset (52.8%). Approximately 48% of patients exhibited early stages (I-II), and the remainder were in moderate to late stages (III-V). There is a statistically significant association (p

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11. **Adaptive vs Conventional Deep Brain Stimulation of the Subthalamic Nucleus for Treatment of Parkinson's Disease: A Multicenter Retrospective Study.**

Authors: Li Q.;Wang K.;Wei P.;Shan Y.;Li J.;Zhu J.;Zheng Z.;Niu C.;Xiong C.;Li W.;Wu Q.;Xiao Q.;Cui G.;Wang X.;Guan Y.;Luan G.;Liu B.;Dong H.;Liang S.;Li H., et al

Publication Date: 2025

Journal: Neuromodulation (pagination), pp. Date of Publication: 2025

Abstract: Objectives: Conventional deep brain stimulation (cDBS) is an established treatment for Parkinson's disease (PD), whereas adaptive DBS (aDBS) represents a promising approach with potential advantages in minimizing stimulation-induced side effects and enhancing quality of life. This study evaluated the safety and efficacy of a newly developed aDBS closed-loop neurostimulation (CNS) device for one year across multiple centers, with the primary objective of comparing the outcomes of aDBS and cDBS. Material(s) and Method(s): This retrospective study included 62 patients with PD who underwent bilateral subthalamic nucleus (STN) DBS. Outcomes were assessed using the Movement Disorder Society Unified Parkinson's Disease Rating Scale (MDS-UPDRS), Parkinson's Disease Questionnaire-39 (PDQ-39), and Schwab and England Activities Scale, whereas the levodopa-equivalent daily dose (LEDD) and adverse events were monitored. This two-phase trial randomized participants into Stim-on or

Stim-off groups for 90-day postoperative comparison followed by nonrandomized evaluation of aDBS vs cDBS at 360 days after surgery. Result(s): At 90 days postoperatively, the Stim-on group exhibited superior outcomes to those in the Stim-off group except for LEDD and speech in the medication-on state. At the 360-day postoperative assessment, the aDBS group showed significantly greater improvements than did the cDBS group in MDS-UPDRS II (57.29% vs 33.02%, p = 0.022), MDS-UPDRS IV (59.83% vs 36.69%, p = 0.026), PDQ-39 (56.91% vs 27.37%, p = 0.031), and LEDD reduction (53.35% vs 29.16%, p = 0.002). CNS aDBS recorded clear STN-beta signals, which could be adopted as a biomarker. Conclusion(s): Both aDBS and cDBS significantly alleviate motor symptoms and enhance quality of life in patients with PD. Although comparable in motor symptom control, aDBS indicated advantages over cDBS across LEDD reduction, MDS-UPDRS II, MDS-UPDRS IV, and PDQ-39 over the long term. Further studies with extended follow-up and larger sample sizes are required to validate these results.

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12. **Predictive model for the therapeutic effect of bilateral subthalamic nucleus deep brain stimulation on the freezing of gait in Parkinson's disease.**

Authors: Limuge Q.;Zhang Y.;Jia X.;Wang F.;Yu D.;Chen L.;Zhang L. and Jiang, Y.

Publication Date: 2025

Journal: Frontiers in Aging Neuroscience 17(pagination), pp. Article Number: 1511845. Date of Publication: 2025

Abstract: Background: Freezing of gait (FOG) is a major disabling symptom that affects the quality of life of patients with Parkinson's disease (PD). To date, notions regarding the effects of deep brain stimulation of the subthalamic neucleus (STN-DBS) on FOG remain controversial. Therefore, we developed a prediction model based on the influence of bilateral deep brain stimulation (DBS) of the subthalamic nucleus (STN) on FOG in patients with PD. Method(s): We collected data from 104 PD participants with FOG who underwent STN-DBS at Xuanwu Hospital between September 2017 and June 2022. The patients were divided into a training set (70%; n=68) and a validation set (30%; n=36). The selected characteristics in the LASSO regression were used in multivariate logistic regression to build the prediction model. The receiver operating characteristic (ROC) curves were constructed for the training and validation sets to verify the model's efficiency. Result(s): Independent variables in the prediction model included Unified Parkinson's Disease Rating Scale II (UPDRS II), UPDRS IV, leg rigidity, Montreal Cognitive Assessment (MoCA) score, and Mini-Mental State Examination (MMSE) score. The prediction model formula is as follows: Logit(y)=-1.0043+0.159xUPDRS II+0.030xUPDRS IV - 1.726xleg rigidity + 0.121xMoCA + 0.036xMMSE. To validate the model, we analyzed the ROC curves of the training and validation sets. The area under the ROC curve (AUC) of internal validation was 0.869 (95% confidence interval [CI]: 0.771-0.967) and the AUC of external validation was 0.845 (95% CI: 0.6526-1). The calibration plots showed good calibration. Conclusion(s): The model we developed can effectively assist clinicians in assessing the efficacy of deep brain stimulation of the bilateral subthalamic nucleus for freezing of gait in Parkinson's disease patients. This approach can support the formulation of personalized treatment plans and has the potential to improve patient outcomes.

13. **Association of Autoimmune Diseases with the Risk of Parkinson's Disease.**

Authors: Ma Y.;Xiao Y.;Zhang S.;Liu J. and Shang, H.

Publication Date: 2025

Journal: Neuroepidemiology 59(3), pp. 203–215

Abstract: Introduction: PD is a progressive neurodegeneration disease characterized by cardinal motor symptoms such as bradykinesia and tremor. The pathogenesis of PD remains unclear. It is hypothesized that immune system dysfunction may contribute to PD. Thus, autoimmune diseases may influence the risk of incident PD. Method(s): We included 398,329 participants without PD at the baseline from UK Biobank. The association between 20 autoimmune diseases with PD was examined using cox hazards regression analyses, adjusting covariates like age, sex, and smoking status in the statistical models. Sensitivity analyses were conducted, adjusting for polygenic risk score and the reported source of PD, to check the robustness. Result(s): After an average follow-up of 13.1 +/- 0.816 years, 2,245 participants were diagnosed with incident PD. After multiple comparison correction, only multiple sclerosis (MS) reached statistical significance and showed an increased risk for incident PD. Compared with non-MS patients, the risk of incident PD in MS patients was 2.57-fold with age and sex being adjusted (95% CI, 1.59-4.14; adjust p value = 0.002). After adjusting lifestyle and other factors, the hazard ratio of incident PD in MS patients was 2.49 (95% CI, 1.55-4.02; adjust p value = 0.004). Excluding the self-reported PD cases in the sensitivity analysis, MS was a detrimental factor for incident PD (HR, 2.06; 95% CI, 1.56-4.05; adjust p value = 0.004). The link between MS and PD did not reach the statistical significance in the sensitivity analysis adjusting the PRS (adjust p value = 0.95). Conclusion(s): Our study provided evidence from observational analyses that MS was associated with an increased risk of PD. Further investigations should be performed to determine the causal association and potential pathophysiology between MS and PD.

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14. **Levodopa-carbidopa related severe mixed dyskinesia in a patient with advanced Parkinson's disease admitted to the intensive care unit.**

Authors: Movahedan M.;Shah K. and McDermid, R.

Publication Date: 2025

Journal: BMJ Case Reports 18(5) (pagination), pp. Article Number: e264300. Date of Publication: 21 May 2025

Abstract: Parkinson's disease (PD) is characterised by motor complications that can become difficult to manage with disease progression. Certain medications used to treat PD, such as levodopa-carbidopa, can also cause motor complications. The timing and type of motor complication occurrence can provide important clues in determining the cause and help with treatment optimisation. This case report highlights the management of severe mixed dyskinesia in a critically ill PD patient admitted to the intensive care unit (ICU). The patient experienced debilitating motor complications, requiring intensive monitoring and personalised levodopa-carbidopa dose adjustments. Following the optimisation of her regimen, which

included increasing the frequency of lower doses and the addition of another agent, her motor complications improved. This report underscores the need for individualised treatment strategies in advanced PD and the benefit of ICU-level close monitoring to optimise PD therapy in patients with severe dyskinesias.

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15. **Prognostic significance of peripheral lymphocyte counts in Parkinson's disease.**

Authors: Omata, Shinsuke;Fujita, Hiroaki;Sakuramoto, Hirotaka;Ogaki, Keitaro and Suzuki, Keisuke

Publication Date: 2025

Journal: Clinical Parkinsonism & Related Disorders 12, pp. 100344

Abstract: Background: Inflammation plays a pivotal role in the pathogenesis of Parkinson's disease (PD). The aim of this study was to explore whether peripheral blood markers are associated with subsequent disease outcomes in patients with PD. Methods: We conducted a follow-up study among consecutive patients with PD and investigated the association between outcomes and baseline blood markers, including neutrophil, lymphocyte, and monocyte counts; the neutrophil-to-lymphocyte ratio; motor/nonmotor symptoms; and radionuclide scanning findings. Results: Of the 112 patients, 97 (87%) met the eligible criteria. Over the average 1800-day follow-up period, 33 patients completed the full follow-up, 30 patients reached an endpoint (death, 3; hospitalization, 12; and placement in a nursing home, 6; home medical care 9), and 34 patients were censored. At the baseline assessment, patients who reached an endpoint were older and had higher Hoehn and Yahr stages and motor symptom scores, larger reductions in cardiac metaiodobenzylguanidine scintigraphy accumulation and lower peripheral lymphocyte counts than patients who completed follow-up or were censored. Kaplan-Meier curve analysis revealed that patients who had low peripheral lymphocyte counts had a shorter time to reach an endpoint than those with preserved lymphocyte counts. According to the multivariate Cox proportional hazards regression analysis, motor symptoms and peripheral lymphocyte count were associated with reaching an endpoint. Conclusions: Among the blood biomarkers, a lower lymphocyte count was associated with worse outcomes in patients with PD. Low peripheral lymphocyte counts may be predictive of subsequent worse PD outcomes.

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16. **Diagnostic and prognostic value of alpha-synuclein seed amplification assay kinetic measures in Parkinson's disease: a longitudinal cohort study.**

Authors: Orru C.D.;Vaughan D.P.;Vijiaratnam N.;Real R.;MartinezCarrasco A.;Fumi R.;Jensen M.T.;Hodgson M.;Girges C.;GilMartinez A.L.;Stafford E.J.;Wu L.;Lerche S.;Wurster I.;Groveman B.R.;Hughson A.G.;Ansorge O.;Quaegebeur A.;Allinson K.S.J.;Warner T.T., et al

Publication Date: 2025

Journal: The Lancet Neurology 24(7), pp. 580–590

Abstract: Background: alpha-synuclein seed amplification assay (SAA) positivity has been proposed as a diagnostic biomarker for Parkinson's disease. However, studies of the

prognostic value of this biomarker have been limited to small, single-centre studies over short follow-up periods. We aimed to assess the diagnostic and prognostic value of quantitative CSF alpha-synuclein SAA kinetic measures in Parkinson's disease. Method(s): In this longitudinal cohort study, we collected and analysed data from participants with Parkinson's disease, progressive supranuclear palsy, and healthy controls enrolled in three cohorts: the UK parkinsonism cohort, the Parkinson's Progression Markers Initiative (PPMI) international observational study, and the Tubingen Parkinson's disease cohort. Baseline CSF alpha-synuclein SAA data and longitudinal clinical data were collected between Jan 1, 2005, and Nov 1, 2023. The following seeding kinetic measures were calculated from the alpha-synuclein SAA curve for each SAA-positive sample: time to threshold (TTT) for a positive SAA result; maximum Thioflavin T fluorescence during the reaction time (MaxThT); and area under the fluorescence curve during the reaction time (AUC). We compared seeding kinetic measures between sporadic Parkinson's disease and progressive supranuclear palsy, and between sporadic Parkinson's disease and monogenic Parkinson's disease. We used time-to-event analyses to assess the ability of alpha-synuclein SAA kinetic measures to predict an unfavourable outcome in Parkinson's disease, adjusting for sex, age, and disease duration at SAA testing. Finding(s): We analysed data from 1631 participants: newly generated data from the UK parkinsonism cohort (Parkinson's disease, n=66; progressive supranuclear palsy, n=52; controls, n=9) and previously generated data from the PPMI (Parkinson's disease, n=1036; controls, n=239) and Tubingen (Parkinson's disease, n=229) cohorts. In the UK parkinsonism cohort, alpha-synuclein SAA was positive in 63 (96%) of 66 Parkinson's disease samples and eight (15%) of 52 progressive supranuclear palsy samples, with six (75%) of eight positive progressive supranuclear palsy samples having distinct low and slow seeding kinetics (low MaxThT and high TTT) as a marker of Lewy body co-pathology. TTT was faster in GBA1-associated Parkinson's disease compared with sporadic Parkinson's disease in both the PPMI (p=0.04) and Tubingen (p=0.01) cohorts. In the PPMI cohort, after excluding individuals who had an unfavourable outcome at the time of baseline SAA testing, an unfavourable outcome was observed in 593 (73%) of 810 participants with alpha-synuclein SAA-positive Parkinson's disease during a median follow-up period of 4.5 years (IQR 2-9). TTT at baseline predicted only cognitive decline (Montreal Cognitive Assessment score Finding(s): We analysed data from 1631 participants: newly generated data from the UK parkinsonism cohort (Parkinson's disease, n=66; progressive supranuclear palsy, n=52; controls, n=9) and previously generated data from the PPMI (Parkinson's disease, n=1036; controls, n=239) and Tubingen (Parkinson's disease, n=229) cohorts. In the UK parkinsonism cohort, alpha-synuclein SAA was positive in 63 (96%) of 66 Parkinson's disease samples and eight (15%) of 52 progressive supranuclear palsy samples, with six (75%) of eight positive progressive supranuclear palsy samples having distinct low and slow seeding kinetics (low MaxThT and high TTT) as a marker of Lewy body co-pathology. TTT was faster in GBA1-associated Parkinson's disease compared with sporadic Parkinson's disease in both the PPMI (p=0.04) and Tubingen (p=0.01) cohorts. In the PPMI cohort, after excluding individuals who had an unfavourable outcome at the time of baseline SAA testing, an unfavourable outcome was observed in 593 (73%) of 810 participants with alpha-synuclein SAA-positive Parkinson's disease during a median follow-up period of 4.5 years (IQR 2-9). TTT at baseline predicted only cognitive decline (Montreal Cognitive Assessment score Interpretation(s): Assessing alpha-synuclein SAA kinetic measures might aid in the diagnostic differentiation of Parkinson's disease from progressive supranuclear palsy with Lewy body co-pathology. Furthermore, faster seeding kinetics are found in GBA1-Parkinson's disease and predict cognitive decline in Parkinson's disease independently of Alzheimer's disease co-pathology. Funding(s): Medical

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17. **Hospital Care for Mental Health and Substance Abuse Conditions in Parkinson's Disease.**

Authors: Rathod S.A.K.;Bamanya P.H.;Ninama P.B. and Rathva, P. S.

Publication Date: 2025

Journal: International Journal of Current Pharmaceutical Review and Research 17(5), pp. 903–907

Abstract: Background: Parkinson's disease (PD) is a progressive neurodegenerative disorder often accompanied by significant mental health conditions and substance abuse, which adversely affect patient outcomes. Despite their prevalence, these comorbidities remain under-recognized in hospital settings. Aim(s): To assess the prevalence of mental health disorders and substance abuse among hospitalized Parkinson's disease patients and evaluate the impact of hospital care interventions on clinical outcomes. Method(s): A prospective observational study was conducted over 11 months at GMERS Medical College and Hospital, Junagadh, Gujarat. A total of 100 PD patients admitted during the study period were enrolled. Data on mental health status, substance abuse, and hospital interventions were collected using structured questionnaires and clinical assessments. Statistical analysis was performed using SPSS version 23.0. Result(s): Among the participants, 48% were diagnosed with mental health disorders, predominantly depression (30%) and anxiety (15%). Substance abuse was present in 22%, mainly alcohol use. A significant association was observed between mental health disorders and substance abuse (p=0.0004). Psychiatric interventions during hospitalization led to clinical improvement in 70% of treated patients. Conclusion(s): Mental health disorders and substance abuse are common and interrelated in PD patients. Hospital-based screening and integrated interventions significantly improve patient outcomes. Recommendations: Routine mental health and substance abuse screening should be implemented in hospital care protocols for Parkinson's disease. Multidisciplinary collaboration is essential for comprehensive management and improved quality of life.Copyright © 2025 Dr. Yashwant Research Labs Pvt. Ltd.. All rights reserved.

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18. **Association between transcranial direct current stimulation and disability and quality of life in individuals with Parkinsonism: cross-sectional study.**

Authors: Reddy R.S.;Tedla J.S.;Ahmad I.;Kakaraparthi V.N.;Dixit S.;Gular K.;Samuel P.S.;Aljehani S.M. and Alarabi, F. A.

Publication Date: 2025

Journal: Frontiers in Neurology 16(pagination), pp. Article Number: 1601778. Date of Publication: 2025

Abstract: Background: Parkinsonism is a progressive neurodegenerative disorder

characterized by motor and non-motor impairments, significantly impacting quality of life (QoL). Transcranial direct current stimulation (tDCS) has shown promise in improving motor and cognitive functions when combined with physical therapy. This study aimed to explore the association between tDCS exposure and disability levels, as well as its impact on self-reported QoL in individuals with Parkinsonism undergoing physical therapy. Method(s): This cross-sectional study enrolled 51 participants diagnosed with Parkinsonism from a tertiary care hospital's neurology outpatient clinic. Based on clinical records of tDCS sessions, participants were stratified into tDCS-exposed and non-exposed groups. Disability was assessed using the World Health Organization Disability Assessment Schedule, and QoL was measured using the Parkinson's Disease Questionnaire (PDQ-39). Statistical analyses included t-tests for comparing means and Pearson correlation coefficients for assessing relationships between tDCS exposure, disability, and QoL. Result(s): The tDCS-exposed group demonstrated lower mean disability scores (WHODAS 2.0: 42.50+/-8.12) and better quality of life scores (PDQ-39: 35.10+/-6.45) compared to the non-exposed group (WHODAS 2.0: 45.30+/-9.21; PDQ-39: 40.15+/-7.32); however, these differences were not statistically significant (disability: p =0.131; QoL: p =0.236). Subgroup analyses revealed statistically significant improvements among participants under 65years of age (disability mean difference=-3.3, 95% CI: -6.17 to -0.43, p =0.023) and those in Hoehn and Yahr stages 1-2 (QoL mean difference=-3.7, 95% CI: -6.16 to -1.24, p =0.004). Additionally, a moderate negative correlation was observed between tDCS session frequency and disability scores (r =-0.60, 95% CI: -0.78 to -0.30, p =0.04), and a weak negative correlation with quality of life scores (r =-0.43, 95% CI: -0.66 to -0.11, p =0.039). Conclusion(s): These findings suggest possible associations between tDCS exposure and clinical outcomes in individuals with Parkinsonism; however, due to the cross-sectional design and underpowered subgroup analyses, results should be interpreted with caution and viewed as hypothesis-generating.

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19. **Assessment of nutritional status in elderly hospitalised patients with Parkinson's Disease: validation of CONUT and GNRI.**

Authors: Soke N.E.;Kara G.;Yardimci H.;Kocer B.;Erkoc Ataoglu N.E. and Tokcaer Bora, H. A.

Publication Date: 2025

Journal: Parkinsonism and Related Disorders 137(pagination), pp. Article Number: 107890. Date of Publication: 01 Aug 2025

Abstract: Introduction: In elderly patients with Parkinson's Disease (PD), many motor and non-motor symptoms negatively affect nutritional status and increase the risk of malnutrition. It is important to select a screening tool that is objective, rapid, and reliable for the assessment of nutritional status. The aim of this study is to evaluate the sensitivity and specificity of the Geriatric Nutritional Risk Index (GNRI) and the Controlling Nutritional Status (CONUT) score indices in determining malnutrition in elderly hospitalised patients with PD by comparing them with the Mini Nutritional Assessment-Long Form (MNA-LF). Method(s): The data for the study were collected by the researcher using the face-to-face interview technique. The MNA-Long Form, the GNRI, and the CONUT was calculated. Result(s): The study included a total of 94 participants aged between 67 and 78 years. When using CONUT versus MNA-LF, the

sensitivity of CONUT was 52.9 % but the specificity was 83.3 %, with a PPV of 90.2 % and a NPV of 37.7 %. When using GNRI versus MNA-LF, the sensitivity of GNRI was 45.7 % but the specificity was 83.3 %, with a PPV of 88.9 % and a NPV of 34.5 %. Conclusion(s): Elderly hospitalised patients with Parkinson's Disease, when MNA-LF cannot be used, CONUT, an objective, rapid and practical tool, may be an effective approach to assessing malnutrition.

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20. **Neurodegenerative Conditions in the Geriatric Population Increase Risk of Distal Radius Fracture: A Nationwide Study.**

Authors: Vance G.R.;Benedict K.;Bowen E.C.;Hathaway B.F.;Thames C.B. and Walker, M. E.

Publication Date: 2025

Journal: Journal of Hand Surgery Global Online 7(5) (pagination), pp. Article Number: 100740. Date of Publication: 01 Se 2025

Abstract: Purpose: Rising prevalence of geriatric neurodegenerative conditions calls for urgency to characterize common injuries in these populations for adequate targeted injury prevention. Although distal radius fracture (DRF) is common in older populations because of age-related decline, the current study aimed to report on associations between neurodegenerative conditions and DRF incidence in this senior cohort. Method(s): Data used in this study came from Epic Cosmos, a community collaboration of health systems representing more than 227,000,000 patient records from more than 1,301 hospitals and 28,600 clinics. All patients aged at least 60 years with an encounter between December 7, 2013, and December 6, 2023, were included and sorted based on neurodegenerative condition diagnoses using registry information and International Classification of Diseases 10 codes. Distal radius fracture incidence after the age of 60 years was measured using International Classification of Diseases 10 codes, and 99% confidence intervals were recorded. Odds ratios of DRF between those with and without neurodegenerative conditions were calculated. Result(s): Patients listed in the Alzheimer and Dementia Registry compared with those not listed had an increase in DRF incidence after the age of 60 years. Stratified by diagnosis, Alzheimer disease was associated with higher DRF incidence than Parkinson disease, Huntington disease, frontotemporal dementia, Lewy body, and normal pressure hydrocephalus. Each condition listed was associated with a higher incidence of DRF than those without the condition. Conclusion(s): Although uncomplicated aging is undoubtedly associated with diminished motor function, this relationship may be exacerbated by common neurodegenerative conditions, especially Alzheimer disease. Although cognitive symptoms may be more evident, patients affected by these conditions may need exceptionally diligent monitoring because of increased fall and fracture risk. Level of Evidence: Differential Diagnosis/Symptom Prevalence Study IV.

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21. **Executive Dysfunction and Prefrontal Cortex Dysregulation in Early-Onset Parkinson's Disease: An fNIRS Study.**

Authors: Wang H.;Liang Z.;Yan Z. and Liu, Y.

Publication Date: 2025

Journal: Journal of Integrative Neuroscience 24(5) (pagination), pp. Article Number: 36989. Date of Publication: 01 May 2025

Abstract: Background: Executive function (EF) impairment is a recognized common cognitive deficit in early-onset Parkinson's disease (EOPD), profoundly impacting patient autonomy and quality of life. While EF-related cognitive decline has been extensively studied in late-onset Parkinson's disease (LOPD), research on EOPD remains limited. Addressing this gap, this study uniquely employed functional near-infrared spectroscopy (fNIRS), a technique well-adapted for assessing patients with motor challenges, to explore EF-related neural mechanisms in EOPD patients with mild cognitive impairment. Method(s): This study included 30 patients with PD, classified into distinct cognitive profiles based on comprehensive assessments of their cognitive function. To assess functional changes in the prefrontal cortex (PFC) we administered a verbal fluency test to evaluate EF during task performance. In the resting state, we recorded neural activity and analyzed the amplitude of low-frequency fluctuations (ALFF) to assess spontaneous brain activity. Result(s): During executive tasks, patients with EF-dominant impairment (EOPD-EL) showed increased activation in the dorsolateral prefrontal cortex (DLPFC) and medial prefrontal cortex (mPFC), indicating disrupted balance between the executive and default mode networks. Resting-state analysis revealed reduced spontaneous activity in the ventrolateral prefrontal cortex (VLPFC), suggesting impaired regulatory efficiency in these regions. These findings support the dual syndrome hypothesis in EOPD, with EF dysfunction as a primary deficit that may lead to secondary cognitive challenges. Conclusion(s): This study underscores the central role of PFC dysfunction in EOPD-related EF impairment, identifying abnormalities in the DLPFC, mPFC, and VLPFC as key contributors to cognitive decline. These results lay the groundwork for early detection of EF deficits and inform targeted interventions to mitigate cognitive decline in EOPD.

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22. **Impact of Y chromosome loss on the risk of Parkinson's disease and progression.**

Authors: Wang J.;Chen X.;Du W.;Lin C.;Liao Y.;Corvol J.C.;MapleGrodem J.;Campbell M.C.;Elbaz A.;Lesage S.;Brice A.;Schwarzschild M.A.;Taba P.;Koks S.;Alves G.;Tysnes O.B.;Perlmutter J.S.;Maiti B.;van Hilten J.J.;Barker R.A., et al

Publication Date: 2025

Journal: eBioMedicine 117(pagination), pp. Article Number: 105769. Date of Publication: 01 Jul 2025

Abstract: Background: Loss of Y chromosome (LOY), an age-related somatic mutation, is associated with various age-related diseases, but its role in the onset and progression of Parkinson's disease (PD) remains unclear. This study investigated the relationship between blood LOY levels and the risk of PD onset and progression. Method(s): We estimated the LOY level for each male participant based on genome-wide arrays or whole genome sequencing data. We performed Cox proportional hazards regression analysis among 222,598 male participants in the UK Biobank and linear mixed model analysis involving 2574 male individuals with PD across 14 cohorts, encompassing 19,562 visits. In the Parkinson's Progression Markers Initiative (PPMI) cohort, we further compared brain structure using T1-weighted magnetic resonance imaging (MRI) scans, and carried out brain network functional

connectivity analysis based on resting-state functional MRI (rs-fMRI) datasets. Additionally, we assessed the LOY status in single-nucleus RNA sequencing (snRNA-seq) data, which included 1,303,531 cells from 279 post-mortem samples across five brain regions, and performed temporal dynamic gene expression analysis. Finding(s): Male participants with LOY had a slightly higher risk of developing PD during follow-up (HR = 1.16, 95% CI = 1.01-1.34, P = 0.04). Among males affected by PD, LOY carriers experienced accelerated neurodegenerative progression, manifesting as more rapid motor impairment (P = 0.0072) and cognitive decline (P = 0.0005) compared to non-LOY carriers. Patients with PD carrying LOY also exhibited decreased network functional connectivity in certain brain regions. Notably, LOY cells were particularly enriched in microglia/immune and vascular/epithelial cells, and a subset of genes in LOY-Mic P2RY12 cells were associated with PD progression. Interpretation(s): This data-driven study highlights the potential association of LOY with the onset and progression of PD through the analysis of multi-scale data, including clinical phenotypes, brain neuroimaging maps, and molecular profiles from single-nucleus transcriptome across multi-brain regions. These findings suggest that LOY may be an accomplice to the onset and progression of PD. Funding(s): G.L.'s work is supported by the Shenzhen Fundamental Research Program (JCYJ20240813151132042), National Natural Science Foundation of China (32270701, 32470708), Young Talent Recruitment Project of Guangdong (2019QN01Y139), the Science and Technology Planning Project of Guangdong Province (2023B1212060018) and Shenzhen Key Laboratory for Systems Medicine in Inflammatory Diseases (ZDSYS20220606100803007). This study is supported by High-performance Computing Public Platform (Shenzhen Campus) of Sun Yat-sen University. C.R.S.'s work is supported by NIH grants NINDS/NIA R01NS115144, the U.S. Department of Defense, and the American Parkinson Disease Association Center for Advanced Parkinson Research. C.R.S.'s research work was funded in part by Aligning Science Across Parkinson's 000301 through the Michael J. Fox Foundation for Parkinson's Research (MJFF). The study was made possible in part by a philanthropic support for Illumina MEGA chip genotyping (to Brigham & Women's Hospital and C.R.S.). CHWG received funding support from an RCUK/UKRI Research Innovation Fellowship awarded by the Medical Research Council (MR/R007446/1; MR/W029235/1) and from the NIHR Cambridge Biomedical Research Centre (NIHR203312). The views expressed are those of the author(s) and not necessarily those of the NIHR or the Department of Health and Social Care. For the purpose of open access, the author has applied a CC BY public copyright licence to all Author Accepted Manuscripts arising from this submission.

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23. **Parkinson's Disease Detection via Bilateral Gait Camera Sensor Fusion Using CMSA-Net and Implementation on Portable Device.**

Authors: Wang, Jinxuan;Huo, Hua;Liu, Wei;Zhao, Changwei;Kang, Shilu and Ma, Lan

Publication Date: Jun 13 ,2025

Journal: Sensors 25(12)

Abstract: The annual increase in the incidence of Parkinson's disease (PD) underscores the critical need for effective detection methods and devices. Gait video features based on camera sensors, as a crucial biomarker for PD, are well-suited for detection and show promise for the development of portable devices. Consequently, we developed a single-step segmentation

method based on Savitzky-Golay (SG) filtering and a sliding window peak selection function, along with a Cross-Attention Fusion with Mamba-2 and Self-Attention Network (CMSA-Net). Additionally, we introduced a loss function based on Maximum Mean Discrepancy (MMD) to further enhance the fusion process. We evaluated our method on a dual-view gait video dataset that we collected in collaboration with a hospital, comprising 304 healthy control (HC) samples and 84 PD samples, achieving an accuracy of 89.10% and an F1-score of 81.11%, thereby attaining the best detection performance compared with other methods. Based on these methodologies, we designed a simple and user-friendly portable PD detection device. The device is equipped with various operating modes-including single-view, dual-view, and prior information correction-which enable it to adapt to diverse environments, such as residential and elder care settings, thereby demonstrating strong practical applicability.

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24. **Immediate effects of extracorporeal radial pressure wave therapy on dystonia, static plantar pressure distribution, and balance in patients with Parkinson's disease.**

Authors: Xu Z.;Huang X.;Liu Q.;Peng B.;Zhou L.;Dong X.;Dai G.;Zhu X.;Weng Z.;Lei D. and Chen, X.

Publication Date: 2025

Journal: Frontiers in Aging Neuroscience 17(pagination), pp. Article Number: 1539225. Date of Publication: 2025

Abstract: Background: Extracorporeal radial pressure wave therapy (ERPWT) has emerged as a potential non-invasive treatment for various musculoskeletal and neurological disorders. This study investigates the immediate effects of ERPWT on dystonia, static plantar pressure distribution, and balance in patients with Parkinson's disease (PD). Method(s): Thirteen participants with PD were recruited from the Department of Rehabilitation Medicine at the First Affiliated Hospital of Sun Yat-sen University. After obtaining informed consent, clinical information was recorded, and measurements of lower limb muscle tone, stiffness, and elasticity, as well as static plantar pressure distribution and center of pressure (COP), were measured. Participants subsequently received a single session of ERPWT administered to the bilateral plantar fascia. Following ERPWT, participants were re-evaluated immediately after treatment. Result(s): After ERPWT, significant decreases were observed in muscle tone, stiffness, and elasticity of the achilles tendon on the more PD-affected side and the anterior aspect of the planta on both feet (pResult(s): After ERPWT, significant decreases were observed in muscle tone, stiffness, and elasticity of the achilles tendon on the more PD-affected side and the anterior aspect of the planta on both feet (p0.05). Conclusion(s): These findings indicate that a single session of ERPWT applied to the bilateral planta fascia can yield immediate beneficial effects in reducing dystonia symptoms and improving balance in patients with Parkinson's disease. This therapy may serve as an adjunctive treatment to address motor symptoms in this population. Further research is warranted to explore the long-term effects of ERPWT and its mechanisms of action in PD patients.

25. **Delirium and Parkinson: medications to avoid.**

Authors: Zanini A. and Aubert, C. E.

Publication Date: 2025

Journal: Revue Medicale Suisse 21(921), pp. 1197–1198

Abstract: Delirium is very common in hospitalized patients with Parkinson's disease. Prevention plays a very important role, but sometimes medication therapy is unavoidable. In this case, several medications are contraindicated due to their anti-dopaminergic effect. These effects can lead to very pronounced extrapyramidal symptoms. If necessary, therapy with quetiapine may be administered. It is important to be aware of patient comorbidities before prescribing a medication to treat delirium.

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26. **Exploring the Impact of Constipation on Mental Health and Non-Motor Symptoms in Parkinson's Disease Patients: A Clinical and Mendelian Randomization Approach.**

Authors: Zhang, Xiaomei;Sun, Jianhua;Jiang, Jie;Huang, Yin;Wang, Qunjuan;Zhao, Zongbo;Chen, Juping;Gu, Dongmei and Guo, Jing

Publication Date: Jun 28 ,2025

Journal: Journal of Gastrointestinal & Liver Diseases 34(2), pp. 181–198

Abstract: BACKGROUND AND AIMS: Parkinson's disease (PD) patients frequently experience constipation and non-motor symptoms, significantly affecting their quality of life. Although constipation is common, its causal relationship with mental health issues, such as anxiety and depression, remains underexplored. This study aims to investigate the association between constipation severity, non-motor symptoms, and mental health outcomes in PD patients. METHODS: A total of 97 PD patients from three hospitals in Changshu City were included in this study. Clinical data were collected using assessment tools, including the Non-Motor Symptoms Scale, Patient Assessment of Constipation Quality of Life questionnaire, Hamilton Depression Rating Scale , and Hamilton Anxiety Rating Scale. Mendelian randomization analysis was applied to examine the causal relationships between constipation severity, non-motor symptoms, and mental health outcomes. RESULTS: A moderate correlation was found between constipation severity and non-motor symptoms, especially in elderly and female patients. However, no significant causal association was identified between constipation and mental health issues such as anxiety, depression, or sleep disorders. CONCLUSIONS: The study underscores the importance of managing constipation in PD patients to improve their non-motor symptoms and quality of life. Despite the observed correlation with non-motor symptoms, further studies are needed to clarify the role of constipation in mental health issues in PD.

Sources Used:

The following databases are used in the creation of this bulletin: EMBASE and Medline.

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