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Parkinson's Disease

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1. **Characteristics and Hospitalization Details of Patients with Advanced Parkinson's Disease Receiving Continuous Subcutaneous Infusion of Foslevodopa/Foscarbidopa: Real-World First-Year Descriptive Study from Japan.**

Authors: Baba, Toru;Nozaki, Toshiki;Toya, Shunji;Migita, Hideyuki;Ri, Kairi and Takeda, Atsushi

Publication Date: Oct ,2026

Journal: Neurology & Therapy 15(5), pp. 2807–2821

Abstract: INTRODUCTION: The real-world characteristics of patients with advanced Parkinson's disease (PD) who receive foslevodopa/foscarbidopa (LDp/CDp) continuous subcutaneous infusion therapy (CSCI) remain poorly understood. This study aimed to describe the characteristics and hospitalization details of patients with advanced PD hospitalized for LDp/CDp CSCI in Japan. METHODS: This study was a retrospective descriptive analysis conducted using a hospital-based database provided by Medical Data Vision, Co. Ltd. Patients

with advanced PD who underwent LDp/CDp CSCI during hospitalization between July 2023 and June 2024 were enrolled. The index date was defined as the date of the first LDp/CDp prescription. Baseline patient characteristics, levodopa-equivalent dose (LED), number of pills/transdermal patches, medication classes for concomitant PD medications, and non-motor symptom medications assessed within 4 weeks prior to and including the index date, along with hospitalization details, were collected. RESULTS: We enrolled 96 patients with a mean age of 65.6 years [standard deviation (SD), 10.2], of whom 58 (60.4%) were female. The median Barthel Index was 90.0 [interquartile range (IQR): 44.2], and the hospitalization duration was 15.0 days (IQR: 9.0). Eighteen patients (18.8%) discontinued LDp/CDp CSCI during hospitalization. The mean LED of any PD medications prior to LDp/CDp CSCI initiation, the mean number of PD medication classes, and the daily pill/transdermal patch count for PD medications were 1,111.0 mg/day (SD 575.7), 3.9 (SD 1.3), and 10.6 (SD 5.0), respectively. Except for levodopa (L-Dopa), dopamine agonists (78.1%) were the most commonly used concomitant PD medications. CONCLUSIONS: In real-world clinical practice in Japan, patients with LDp/CDp CSCI tend to be younger and have preserved activities of daily living. Our results implied that patients are often managed with multiple concomitant PD medications rather than with L-Dopa dose titration prior to initiation. Further research is warranted to maximize the benefits of LDp/CDp CSCI and assess its real-world impact on pill burden. Copyright © 2026. The Author(s).

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2. **The interplay of air pollution with plasma neurodegenerative markers and metabolome for dementia, Parkinson's disease and all-cause mortality risks and transitions: The UK Biobank study.**

Authors: Beydoun M.A.;Huang T.;Hu Y.H.;Weiss J.;Georgescu M.F.;Noren Hooten N.;FanelliKuczmarski M.T.;Beydoun H.A.;Song M.;Launer L.J.;Evans M.K. and Zonderman, A. B.

Publication Date: 2026

Journal: Ecotoxicology and Environmental Safety 323(pagination), pp. Article Number: 120657. Date of Publication: 15 Se 2026

Abstract: We investigated the joint associations of circulating neurodegeneration markers-neurofilament light (NfL) and glial fibrillary acidic protein (GFAP)-ambient air pollution, and plasma metabolomic profiles with transitions from a healthy state to dementia, Parkinson's disease (PD), and all-cause mortality in the UK Biobank. The analytic sample included 19,645 participants aged >=50 years with complete proteomic, metabolomic, and environmental data. Time-to-event analyses used Cox proportional hazards and multistate Weibull models to evaluate associations and statistical interactions across health transitions. Higher NfL concentrations were associated with increased risks of transitions from healthy to PD, dementia, and death, whereas higher GFAP concentrations were specifically associated with dementia (HR = 2.65, 95% CI: 2.17-3.25). At the nominal level, particulate matter (PM2.5, PM10) showed positive statistical interactions with NfL for mortality, while nitrogen oxides (NO2/NOx) showed negative interactions with GFAP. There was little evidence of interaction between PM2.5 and either biomarker for dementia. Metabolomic principal components reflecting lipid, amino acid, and energy pathways were associated with variation in the relationships of NfL and GFAP with dementia and mortality and interacted with PM2.5 for PD

and dementia. A branched-chain amino acid-related component showed a negative interaction with GFAP for dementia, indicating weaker associations at higher levels. These findings highlight complex relationships linking air pollution, metabolic dysregulation, and neurodegeneration, and support integrative multi-omics approaches to identify pathways relevant to prevention of neurodegenerative diseases and premature mortality.Copyright © 2026 The Authors.

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3. **Sex-dependent dopaminergic vulnerability may contribute to sex differences in Parkinson's disease risk.**

Authors: Eisenstein T.;Lange F.J.;Hu M.T.M. and Klein, J. C.

Publication Date: 2026

Journal: Brain Communications 8(4) (pagination), pp. Article Number: fcag310. Date of Publication: 2026

Abstract: Men are more likely than women to develop Parkinson's disease, yet the biological basis of this sex difference in Parkinson's disease risk remains unresolved. The nigrosome-1 (NG-1), a dopaminergic subregion of the substantia nigra, is selectively vulnerable to degeneration and iron accumulation in Parkinson's disease, therefore representing a plausible locus for sex-linked vulnerability. Using iron-sensitive magnetic resonance imaging from the UK Biobank, we examined sex differences in NG-1 magnetic susceptibility across adulthood. We analysed cross-sectional data from 53 792 individuals aged 45-85 years and longitudinal follow-up in 4068 participants. Across mid-to-late adulthood, men consistently exhibited higher NG-1 magnetic susceptibility than women, suggestive of greater iron-related signal burden. In contrast, age-related trajectories and rates of within-person change were similar between sexes, with no evidence for accelerated nigrostriatal ageing in men. Sensitivity analyses showed that these sex differences were not substantially modified by genetic risk for Parkinson's disease, cardiometabolic disease or major lifestyle factors. Together, these findings suggest that sex differences in NG-1 susceptibility are expressed primarily as a stable baseline offset rather than divergent ageing dynamics. By distinguishing baseline variation from age-related changes in a selectively vulnerable dopaminergic system, this study provides population-scale evidence relevant to understanding sex differences in vulnerability to Parkinson's disease.Copyright © The Author(s) 2026. Published by Oxford University Press on behalf of the Guarantors of Brain. This is an Open Access article distributed under the terms of the Creative Commons Attribution License (https://creativecommons.org/licenses/by/4.0/), which permits unrestricted reuse, distribution, and reproduction in any medium, provided the original work is properly cited.

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4. **Effect of a Nurse-Led Educational Intervention on Knowledge, Functional Mobility, and Quality of Life among Elderly Patients with Parkinson's Disease: A Quasi-Experimental Study.**

Authors: Elsamahy E.A.;Badr Eldin S.A. and Ebied, E. M. E. S.

Publication Date: 2026

Journal: International Journal of Drug Delivery Technology 16(7), pp. 419–424

Abstract: Background: Parkinson's disease (PD) is the second most common age-related neurodegenerative disorder, and its burden is rising as the global population ages. Progressive motor and non-motor symptoms compromise functional mobility and quality of life (QoL) in older adults, yet structured, nurse-led educational interventions for this population remain underused, particularly in low-resource settings. Aim(s): To evaluate the effect of an individualized, nurse-led educational intervention on disease-related knowledge, functional mobility, and QoL among elderly patients with PD. Method(s): A quasi-experimental, pretest-posttest design with a non-equivalent control group was used. Sixty elderly patients (aged >= 60 years) with PD (Hoehn and Yahr stages 1-3) attending the movement-disorder outpatient clinic of a university hospital in Cairo, Egypt, were assigned to an intervention group (n = 30) or a control group (n = 30). The intervention group received a seven-session, individualized educational program grounded in Orem's self-care model, covering disease knowledge, fall prevention, nutrition, and therapeutic exercise; the control group received routine outpatient care. Outcomes were assessed at baseline, immediately post-intervention, and at 3-month follow-up using a structured knowledge questionnaire, the Modified Hoehn and Yahr Scale, the Short Physical Performance Battery (SPPB), and the 39-item Parkinson's Disease Questionnaire (PDQ-39). Result(s): The two groups were comparable at baseline (all p > .05). At posttest, the intervention group showed significantly higher total knowledge scores than the control group (12.71 +/- 0.87 vs. 3.80 +/- 1.95) and significantly higher total SPPB scores (8.93 +/- 2.08 vs. 6.83 +/- 1.71; both p Result(s): The two groups were comparable at baseline (all p > .05). At posttest, the intervention group showed significantly higher total knowledge scores than the control group (12.71 +/- 0.87 vs. 3.80 +/- 1.95) and significantly higher total SPPB scores (8.93 +/- 2.08 vs. 6.83 +/- 1.71; both p Result(s): The two groups were comparable at baseline (all p > .05). At posttest, the intervention group showed significantly higher total knowledge scores than the control group (12.71 +/- 0.87 vs. 3.80 +/- 1.95) and significantly higher total SPPB scores (8.93 +/- 2.08 vs. 6.83 +/- 1.71; both p Conclusion(s): A structured, individualized nurse-led educational intervention significantly improved disease-related knowledge and functional mobility among elderly patients with PD, with sustained benefit at follow-up. Implications for practice: Gerontological and neuroscience nurses should consider integrating structured, self-care-based educational programs into the routine outpatient management of elderly patients with PD.Copyright © 2026, Dr. Yashwant Research Labs Pvt. Ltd. All rights reserved.

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5. **Inflammation and neuropsychiatric symptoms in Parkinson's disease: a genetic association.**

Authors: Goncalves, Alexandra Ribeiro;Mendes, Alexandre;Damasio, Joana;Vila-Cha, Nuno;Boleixa, Daniela;Santos, Cristina;Leal, Barbara and Cavaco, Sara

Publication Date: 2026

Journal: Frontiers in Aging Neuroscience 18, pp. 1877657

Abstract: Background: There has been some evidence that neuroinflammation is involved in Parkinson's disease (PD) and in psychiatric disorders. Objective: To explore the effects of IL-1beta rs16944 on PD patients' neuropsychiatric symptoms. Methods: Two hundred and eighty-

one consecutive PD patients underwent a neurological and neuropsychological evaluations, which included: Unified Parkinson's Disease Rating Scale, Schwab and England Activities of Daily Living scale, Questionnaire for Impulsive-Compulsive Disorders in Parkinson's Disease-Anytime Short, Hospital Anxiety and Depression Scale and Dementia Rating Scale-2. The Neuropsychiatric Inventory (NPI) was also applied to patients' caregivers/informants. In addition to IL-1beta rs16944, DRD3 rs6280 and GRIN2B rs7301328 were also genotyped. Non-parametric group comparisons and linear and logistic regressions were used for data analyses. Results: The IL-1beta rs16944 (specifically TT vs. CC) genotype was associated with increased frequency of impulse-control behaviors and disorders (ICBDs) and impulse control disorders (ICDs; OR = 3.54, p = 0.004 and OR = 3.63, p = 0.006, respectively) and with more NPI reports of hallucinations (OR = 3.92, p = 0.014) and more neuropsychiatric symptoms (s = 0.73, p = 0.019). The rs16944 T allele was related to more NPI reports of hallucinations (OR = 2.31, p = 0.032) and agitation/aggression (OR = 2.02, p = 0.039). Conclusion: Study findings suggest that a polymorphism previously associated with increased IL-1beta expression may increase the risk of certain neuropsychiatric symptoms in PD. Copyright © 2026 Goncalves, Mendes, Damasio, Vila-Cha, Boleixa, Santos, Leal and Cavaco.

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6. **Supporting Medication Adherence in Parkinson's Through Education: A Scoping Review of Interventions.**

Authors: Haworth H.;Carter G.;Rogers K.M.A.;Mitchell G.;Jacobs L. and Stark, P.

Publication Date: 2026

Journal: Health Expectations 29(5) (pagination), pp. Article Number: e70852. Date of Publication: 01 Oct 2026

Abstract: Background: Medication adherence in Parkinson's is complex, time-sensitive, and influenced by clinical, behavioural, and contextual factors. Educational interventions have attempted to support medication adherence; however, the scope, focus, and effectiveness of such interventions remain unclear. Method(s): This scoping review aimed to identify and map educational interventions for people with Parkinson's that included medication-related education. Seven databases were searched with no date restrictions. Quantitative, qualitative, and mixed-methods studies were eligible. Data were charted and synthesised using descriptive mapping and reflexive thematic analysis to explore intervention characteristics, reported evidence relating to medication adherence, intervention outcomes, and reported barriers and facilitators. Result(s): Eight papers reporting seven educational interventions were included. Interventions varied widely in content, delivery mode, and intensity, with medication education often embedded within broader programmes rather than delivered as a standalone intervention. Evidence regarding the potential of educational interventions to support medication adherence was reported, although this was based on a limited number of studies using direct adherence measures and more commonly on proxy indicators such as changes in knowledge, beliefs, and self-management behaviours. Outcome measures were heterogeneous, limiting comparability. Improvements were more commonly observed in understanding, confidence, and communication than in sustained symptom outcomes. No study reported explicit use of behaviour change theory or co-design approaches involving people with Parkinson's or their informal carers. Conclusion(s): Educational interventions show potential to support Parkinson's medication adherence, particularly through mechanisms

conceptually aligned with self-efficacy. Future interventions may be strengthened by explicit use of behaviour change theory and/or meaningful co-design with people with lived experience. Lived Experience or Public Contribution: A Research Involvement Manager from Parkinson's UK is a co-author and contributed to the design, conduct, and interpretation of this review, representing the perspectives of people living with Parkinson's. An advisory group comprising people with Parkinson's, carers, and healthcare professionals informed the wider research programme and reviewed the findings of this study. While no substantive changes were requested, this process supported interpretation and relevance to lived experience. Consistent with these perspectives, the review highlights a lack of co-design in existing interventions and advocates for greater involvement of people with Parkinson's in future intervention development.Copyright © 2026 The Author(s). Health Expectations published by John Wiley & Sons Ltd.

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7. **Factors associated with suicidal ideation in people with parkinsonism: findings from the PRIME-UK cross-sectional study.**

Authors: Haworth S.;Nodehi A.;BenShlomo Y.;Henderson E.J. and Tenison, E.

Publication Date: 2026

Journal: Parkinsonism and Related Disorders 152(pagination), pp. Article Number: 108973. Date of Publication: 01 Nov 2026

Abstract: Objective: To assess the frequency, and factors associated with suicidal ideation (SI) in people with parkinsonism (PwP). Background(s): Both the neuropsychiatric and motor features, coupled with the incurable progression of parkinsonism, make this population at increased risk of suicide. Whilst a meta-analysis found a pooled prevalence of SI of 22%, frequency of SI and the associated factors vary significantly between studies. Method(s): This single-centre cross-sectional questionnaire study included participants with a diagnosis of idiopathic Parkinson's Disease (PD), and other types of parkinsonism (excluding drug-induced). Participants were considered to have SI if they reported passive or active suicidal thoughts on question 9 of the Beck Depression Inventory. We present descriptive statistics and logistic regression models to estimate associations between PD symptoms, health and demographic measures, and SI. Result(s): 442 participants were included (66% male, median age 75.9 years (IQR 70.7-81.4). SI was reported by 19% of participants (n = 82; 95%CI 15-22%) Factors associated with SI after adjustment for possible confounders included female sex (OR 1.89; 95%CI 1.16-3.08; p = 0.01), non-iPD parkinsonism (OR 2.70; 95%CI 1.38-5.30; p = 0.004), living in rented accommodation (OR 4.48; 95%CI 2.24-8.94; p Result(s): 442 participants were included (66% male, median age 75.9 years (IQR 70.7-81.4). SI was reported by 19% of participants (n = 82; 95%CI 15-22%) Factors associated with SI after adjustment for possible confounders included female sex (OR 1.89; 95%CI 1.16-3.08; p = 0.01), non-iPD parkinsonism (OR 2.70; 95%CI 1.38-5.30; p = 0.004), living in rented accommodation (OR 4.48; 95%CI 2.24-8.94; p Result(s): 442 participants were included (66% male, median age 75.9 years (IQR 70.7-81.4). SI was reported by 19% of participants (n = 82; 95%CI 15-22%) Factors associated with SI after adjustment for possible confounders included female sex (OR 1.89; 95%CI 1.16-3.08; p = 0.01), non-iPD parkinsonism (OR 2.70; 95%CI 1.38-5.30; p = 0.004), living in rented accommodation (OR 4.48; 95%CI 2.24-8.94; p Result(s): 442 participants were included (66% male, median age 75.9 years (IQR 70.7-81.4). SI was

reported by 19% of participants (n = 82; 95%CI 15-22%) Factors associated with SI after adjustment for possible confounders included female sex (OR 1.89; 95%CI 1.16-3.08; p = 0.01), non-iPD parkinsonism (OR 2.70; 95%CI 1.38-5.30; p = 0.004), living in rented accommodation (OR 4.48; 95%CI 2.24-8.94; p Conclusion(s): We demonstrated that SI is common in this population. Female gender, non-iPD parkinsonism, higher NMS and rented accommodation were associated with increased odds of SI. Awareness of these associated factors assists clinicians in identifying individuals at higher risk.Copyright © 2026 The Authors

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8. **Psychiatric consultation outcomes in deep brain stimulation candidacy: clinical and psychosocial correlates from a retrospective cohort.**

Authors: Kocyigit Y. and Ay, S. B.

Publication Date: 2026

Journal: Neurological Sciences 47(10) (pagination), pp. Article Number: 791. Date of Publication: 01 Oct 2026

Abstract: Background/Objectives: Preoperative psychiatric assessment in deep brain stimulation (DBS) candidacy extends beyond contraindication screening to include informed consent capacity and psychosocial preparedness. This study examined factors associated with psychiatric consultation outcomes in DBS candidates. Method(s): This retrospective single-centre study reviewed 363 patients referred for preoperative psychiatric consultation at Etlik City Hospital between September 2022 and January 2026. Outcomes were classified as "suitable," "conditionally suitable," or "not suitable." Associations were assessed using univariate analyses, with multinomial logistic regression including NMS restricted to the Parkinson's disease subgroup. Result(s): Outcomes were "suitable," "conditionally suitable," and "not suitable" in 66.9%, 22.6%, and 10.5% of patients, respectively. Among patients with Parkinson's disease, psychiatric history was present in 35.3% and NMS in 73.5%. In the adjusted subgroup model, limited/absent support, insufficient informed-consent capacity, and NMS were correlates of "conditionally suitable" status, whereas limited/absent support, insufficient consent capacity, impaired cognitive status, and psychiatric history were correlates of "not suitable" status (psychiatric history: aOR = 5.513, 95% CI 1.941-15.657, p = 0.001). As these variables contributed to outcome classification, they should be interpreted as correlates rather than independent predictors. Age, sex, education, and SMMSE score were not significantly associated with outcome. Conclusion(s): Within the Parkinson's disease subgroup, social/care support, informed-consent capacity, psychiatric history, and NMS were associated with consultation outcome, whereas demographic factors and SMMSE score were not. Cognitive status showed only a category-specific association with the "not suitable" outcome and should be interpreted cautiously. These findings support structured psychiatric assessment in multidisciplinary DBS candidate selection.Copyright © Fondazione Societa Italiana di Neurologia 2026.

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9. **Premorbid depression across levodopa equivalent daily dose-defined treatment trajectories in Parkinson's disease: A nationwide register-based cohort study.**

Authors: LangeskovChristensen M.;Borghammer P.;Ostergaard S.D. and Rohde, C.

Publication Date: 2026

Journal: Parkinsonism and Related Disorders 152(pagination), pp. Article Number: 108984. Date of Publication: 01 Nov 2026

Abstract: Background: Depression is a common comorbidity in Parkinson's disease (PD) and may precede diagnosis by several years. It remains unclear whether prodromal depression is associated with specific PD subtypes or faster disease progression. We investigated whether pre-diagnostic depression incidence differs according to post-diagnostic proxies of PD progression, defined by dopaminergic treatment intensity and escalation. Method(s): In this Danish nationwide register-based cohort study, 19,165 individuals with incident PD (2007-2019) were identified. PD progression was approximated using two approaches: (1) mean levodopa equivalent daily dose (LEDD) during follow-up and (2) annual rate of LEDD escalation in the first five years after PD diagnosis. Incident depression was defined as the first redeemed antidepressant prescription or hospital diagnosis. Depression incidence rates were examined across a 7-year pre-diagnostic period and compared using hazard rate ratios. Result(s): Overall, 11.7% of patients had registry-captured depression before PD diagnosis. Depression incidence increased progressively toward diagnosis, with a marked rise in the final year. However, no consistent differences in pre-diagnostic depression rates were observed across treatment intensity groups or LEDD escalation trajectories. Conclusion(s): Prodromal depression does not appear to be associated with accelerated motor progression of PD as approximated by dopaminergic treatment patterns. These findings suggest that depression is a general prodromal feature of PD rather than a marker of more aggressive disease subtypes. Future studies using more precise subtype markers are needed to clarify the relationship between neuropsychiatric symptoms and PD heterogeneity.Copyright © 2026 The Authors

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10. **Micro-bursts matter: vigorous intermittent lifestyle physical activity and risk of common brain disorders in a prospective cohort study.**

Authors: Liu, Chang;Wang, Jiang-Yan;Jia, Xiao-Yu;Jia, Cun-Xian and Liu, Bao-Peng

Publication Date: Aug 18 ,2026

Journal: International Journal of Behavioral Nutrition & Physical Activity 23(1)

Abstract: BACKGROUND: Physical activity, particularly moderate-to-vigorous physical activity, is important for brain health; however, many adults do not meet recommended activity levels. Vigorous intermittent lifestyle physical activity (VILPA) may provide a feasible alternative. This study examined the associations of accelerometer-derived vigorous intermittent lifestyle physical activity with the risk of five common brain disorders. METHODS: This prospective cohort study used accelerometer data from the UK Biobank to quantify daily VILPA according to both duration and standardized frequency, using bouts lasting up to 1 min and up to 2 min. Incident anxiety, depression, dementia, Parkinson's disease, and stroke were ascertained through linked health records. Cox proportional hazards models were used to estimate hazard ratios (HRs) and 95% confidence intervals (CIs). Restricted cubic spline models were applied to examine dose-response associations. Analyses were further stratified by exercise habit status. RESULTS: During a median follow-up of approximately 8 years, 2,150 anxiety (2.47%), 1,511 depression (1.81%), 676 dementia (0.74%), 343 Parkinson's

disease (0.37%), and 1,385 stroke cases (1.55%) were identified. Higher VILPA frequency and duration were associated with lower risks of several brain disorders. Compared with the lowest quartile, modest VILPA levels were associated with reduced risks of anxiety (HR = 0.80, 95% CI: 0.71-0.90), depression (HR = 0.86, 95% CI: 0.75-0.99), dementia (HR = 0.72, 95% CI: 0.59-0.88), and Parkinson's disease (HR = 0.58, 95% CI: 0.43-0.78). Associations with stroke were weaker and less consistent. Dose-response analyses showed inverse nonlinear associations for anxiety, depression, dementia, and Parkinson's disease, characterized by a steep initial decline followed by a gradual plateau. Similar patterns were observed among both exercisers and non-exercisers. CONCLUSIONS: VILPA was associated with lower risks of several common brain disorders. Incorporating brief bursts of vigorous movement into daily life may represent a feasible strategy for promoting brain health. Copyright © 2026. The Author(s).

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11. **Optimising fall risk classification models in Parkinson's disease using clinical and mobility outcomes.**

Authors: Mirando M.;Del Din S.;Rehman R.Z.U.;Pavese C.;Nardone A.;Lawson R.A.;Yarnall A.J.;Rochester L. and Alcock, L.

Publication Date: 2026

Journal: Parkinsonism and Related Disorders 152(pagination), pp. Article Number: 108934. Date of Publication: 01 Nov 2026

Abstract: Background: Falls are a serious concern in Parkinson's disease (PD), often leading to hospitalisation, dependence and reduced quality of life. Effective fall management requires identification of those at risk. This cross-sectional, discriminative study aimed to evaluate which selection of outcomes best discriminate retrospective fallers from non-fallers, to inform a future prospective clinical prediction tool. Method(s): People with PD were recruited (ICICLE-GAIT; 54- and 72-month follow up assessments). Fallers and non-fallers were stratified based on prospective fall reports. A total of 299 outcomes across 4 domains were collected: clinical (n = 9), lab-based mobility (gait n = 60, turning n = 99), real-world mobility (n = 131). Receiver operating characteristic analysis evaluated classification models distinguishing fallers from non-fallers. Area under the curve (AUC) determined which models were optimal. Models were re-applied at 72-months. Result(s): Of the 48 participants, 32 (67%) were classified as fallers and 16 (33%) as non-fallers. Significant group differences (faller vs. non-faller) were found in all domains at 54-months; clinical (n = 2/9), lab-based gait (n = 8/60), lab-based turning (n = 19/99) and real-world mobility (n = 5/131). At 54-months, turning was the strongest single-domain model (apparent AUC = 0.86, sensitivity = 0.74, specificity = 0.93; optimism-corrected AUC = 0.61), followed by real-world mobility (AUC = 0.82, sensitivity = 0.68, specificity = 1.00; optimism-corrected AUC = 0.72). All multi-domain combinations including turning showed acceptable discrimination, with AUC values > 0.70. At 72-months, turning alone retained apparent perfect discrimination (AUC = 1.00), whereas clinical (AUC = 0.52), gait (AUC = 0.51) and real-world (AUC = 0.69) models declined substantially. Conclusion(s): Turning showed strong discriminative power in classifying PD fallers remaining robust over time and outperforming other assessments. Real-world mobility also had strong discriminative value, highlighting the importance of ecologically valid continuous monitoring. As this study was discriminative and exploratory in nature, these findings should be interpreted as hypothesis-generating pending external validation. Future models should explore whether real-world

turning provides superior discriminative value to lab-based turning.Copyright © 2026

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12. **Comparative Motor Outcomes and Programming Timelines After Deep Brain Stimulation for Parkinson's Disease With Abbott Infinity TM Versus Medtronic Percept TM Systems.**

Authors: Pema, Patrick;Messer, Triston;Barsch, Jake;Heath, Jake;Kuo, Yen-Hong;Danish, Burhanuddin;Dolce, Dana;Patel, Nitesh V.;Danish, Shabbar and Hundal, Jasdeep S.

Publication Date: Aug ,2026

Journal: Cureus 18(8), pp. e115177

Abstract: Introduction Deep brain stimulation (DBS) is an established therapy for the management of advanced Parkinson's disease, contributing to improvements in motor symptoms and quality of life. Medtronic Percept TM (Medtronic plc, Galway, Ireland) and Abbott Infinity TM (Abbott Laboratories, Abbott Park, Illinois, United States) DBS systems are both widely used by clinicians yet lack real-world head-to-head comparisons of postoperative outcomes. This study evaluated motor outcomes, dopamine challenge responsiveness, cognitive baseline measures, and time to initial programming of patients implanted with Medtronic versus Abbott DBS systems. Methods We performed an exploratory retrospective cohort study of patients with Parkinson's disease who underwent primary DBS implantation with either the Abbott Infinity or Medtronic Percept systems between October 2021 and November 2024 at Jersey Shore University Medical Center, New Jersey, United States. Thirty-nine patients were screened, of whom six were excluded for not meeting inclusion criteria, leaving 33 patients for analysis. Between-group comparisons were performed using nonparametric tests. Longitudinal postoperative Unified Parkinson's Disease Rating Scale Part III (UPDRS) motor scores were evaluated using a generalized estimating equation model accounting for repeated measurements within patients and adjusting for baseline UPDRS Part III score. Exploratory within-group comparisons were performed using Wilcoxon signed-rank tests with Holm correction for multiple comparisons. Results A total of 33 patients met inclusion criteria; these included 10 Abbott Infinity and 23 Medtronic Percept recipients. Baseline characteristics were similar between groups, including age, sex, and preoperative UPDRS motor scores. Postoperative UPDRS motor scores did not differ significantly between patients with Abbott Infinity or Medtronic Percept at three months, six months, nine months, or 12 months. Longitudinal analysis demonstrated no significant device-by-time interaction ($p = 0.608$). At 12 months, median UPDRS motor score was 10.5 in the Abbott group and 8.0 in the Medtronic group ($p = 0.969$). Dopamine challenge OFF scores, ON scores, percent improvement, baseline Dementia Rating Scale scores, and time to initial programming were also not significantly different between groups. Median time to initial programming was 27.5 days for Abbott Infinity and 25.0 days for Medtronic Percept ($p = 0.317$). Conclusion In this single-center exploratory retrospective cohort, no statistically significant differences were detected between Abbott Infinity and Medtronic Percept DBS systems in postoperative motor outcome trajectories, dopamine challenge profiles, baseline cognitive measures, or time to initial programming. Given the small and imbalanced cohort, these findings should not be interpreted as demonstrating equivalence between devices. Larger, longer-term prospective multi-center studies are needed to determine whether clinically meaningful device-specific differences exist. Copyright © 2026, Pema et al.

13. **Effects of an Inpatient Program on Medication Errors in Hospitalized People with Parkinson's Disease.**

Authors: Piccinin C.C.;Yu J.R.T.;Stepanyants V.;Hogue O.;Sonneborn C.;Brooks A.;Clark P.;Shaffer S.;Moser L.;LopezGonzalez T.;Sokola B.S.;Lewin K.;Popov R.;Sperling S.A.;Fernandez H.H. and Walter, B. L.

Publication Date: 2026

Journal: Annals of Neurology (pagination), pp. Date of Publication: 2026

Abstract: Objective: Hospitalized people with Parkinson's disease (PwP) face increased risks of medication errors and discharge to non-home settings, both of which are associated with adverse outcomes. This study assessed differences in medication error rates and discharge outcomes before and after implementation of a dedicated inpatient program for hospitalized PwP. Method(s): During 2023, a Parkinson's disease (PD) inpatient program was implemented and refined combining: (1) an electronic health record (EHR) census for identification of hospitalized PwP; (2) inpatient monitoring and alignment of inpatient and outpatient regimens by movement-disorders-trained advanced practitioners; (3) customized EHR alerts and levodopa orders; (4) pharmacist support, and (5) staff education. Medication error rates and clinical outcomes were compared between January and June 2024 (post-implementation phase) and a pre-implementation retrospective cohort from 2018. Result(s): From January to June 2024, 366 post-implementation admissions were monitored. Among those receiving contraindicated medications, the median number of doses decreased from 2 (interquartile range [IQR] = 1-6) during pre-implementation to 1 (IQR: 1-2) post-implementation (p = 0.015). Days with a levodopa dose deviation decreased from 43.1% to 38.3%, p Result(s): From January to June 2024, 366 post-implementation admissions were monitored. Among those receiving contraindicated medications, the median number of doses decreased from 2 (interquartile range [IQR] = 1-6) during pre-implementation to 1 (IQR: 1-2) post-implementation (p = 0.015). Days with a levodopa dose deviation decreased from 43.1% to 38.3%, p Result(s): From January to June 2024, 366 post-implementation admissions were monitored. Among those receiving contraindicated medications, the median number of doses decreased from 2 (interquartile range [IQR] = 1-6) during pre-implementation to 1 (IQR: 1-2) post-implementation (p = 0.015). Days with a levodopa dose deviation decreased from 43.1% to 38.3%, p Result(s): From January to June 2024, 366 post-implementation admissions were monitored. Among those receiving contraindicated medications, the median number of doses decreased from 2 (interquartile range [IQR] = 1-6) during pre-implementation to 1 (IQR: 1-2) post-implementation (p = 0.015). Days with a levodopa dose deviation decreased from 43.1% to 38.3%, p Interpretation(s): Following implementation of a multidisciplinary and proactive inpatient program, reductions in medication errors and improved discharge outcomes were observed among PwP. ANN NEUROL 2026.Copyright © 2026 The Author(s). Annals of Neurology published by Wiley Periodicals LLC on behalf of American Neurological Association.

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14. **Why do some patients adhere worse? The role of frailty and depression in Parkinson disease.**

Authors: Pytel A.;Kocierz E.;Blachnio K.;SzymanskaChabowska A.;Dusinska A. and Chabowski, M.

Publication Date: 2026

Journal: Patient Education and Counseling 152(pagination), pp. Article Number: 109823. Date of Publication: 01 Nov 2026

Abstract: Objective: To investigate associations of frailty, depression, disease severity, and sociodemographic factors with treatment adherence, health behaviours, and disease-related knowledge in patients with Parkinson disease (PD), and to examine the relationship between health behaviours and quality of life. Method(s): The study included 99 patients with PD (mean age: 70.11 +/- 5.5 years; mean disease duration: 8.3 +/- 5.68 years), all classified as Hoehn and Yahr stage 2 or higher. Standardized assessment tools included the Parkinson Disease Questionnaire (PDQ-39), Schwab and England Activities of Daily Living Scale (SE-ADL), Beck Depression Inventory (BDI), Adherence to Refills and Medications Scale (ARMS), Tilburg Frailty Indicator (TFI), Unified Parkinson Disease Rating Scale (UPDRS), Health Behaviour Inventory (HBI), and an author-designed clinical and sociodemographic questionnaire. Result(s): Frailty was identified in 86.37% of participants. Non-frail patients demonstrated significantly better health behaviours (89.38 +/- 8.25 vs 82.58 +/- 10.16, p Result(s): Frailty was identified in 86.37% of participants. Non-frail patients demonstrated significantly better health behaviours (89.38 +/- 8.25 vs 82.58 +/- 10.16, p Result(s): Frailty was identified in 86.37% of participants. Non-frail patients demonstrated significantly better health behaviours (89.38 +/- 8.25 vs 82.58 +/- 10.16, p Result(s): Frailty was identified in 86.37% of participants. Non-frail patients demonstrated significantly better health behaviours (89.38 +/- 8.25 vs 82.58 +/- 10.16, p 70 y.o. group, p 70 y.o. group, p Conclusion(s): Frailty, depressive symptoms, disease severity, and sociodemographic factors were associated with treatment adherence and health behaviours in patients with PD. Non-frail patients showed better adherence and healthier behaviours, while greater depressive symptom severity was associated with poorer adherence. Practice implications: Comprehensive PD care should address psychosocial, emotional, and behavioural factors alongside neurological management to support treatment adherence and patient care.Copyright © 2026 The Authors

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15. **Pilot Study Employing a Machine Learning Approach as a Potential Method for Predicting Parkinson's Disease Using Voice as a Digital Biomarker and the SHAP Approach for Feature Engineering.**

Authors: Rashidi M.;Shah S.A.H.;Coppola C.;Buccoliero A.;Arima S.;Lupo A.;My F.;Lorenzo M.;Donzella M. and Maffia, M.

Publication Date: 2026

Journal: Bioengineering 13(8) (pagination), pp. Article Number: 917. Date of Publication: 01 Aug 2026

Abstract: Introduction: Voice-based digital biomarkers have emerged as a promising approach for distinguishing individuals with neurodegenerative disorders, particularly Parkinson's disease (PD), from healthy subjects (HS). With the increasing availability of smartphone and web-based recording tools, voice data can be collected efficiently in both clinical and remote settings. However, further validation is required before such approaches can be translated into routine clinical practice. Method(s): This study used a cross-sectional

analysis at the recording level, treating repeated recordings from the same participant as separate observations collected at Vito Fazzi Hospital in Lecce, Italy. Speech recordings from individuals with Parkinson's disease (PD) and healthy controls were collected using the dedicated Talia smartphone and web application. Sustained vowel phonation (/a/) was analyzed as the primary speech task. Following data acquisition, feature extraction was performed as a crucial step in the speech analysis pipeline, as the quality and relevance of the extracted features directly influence the ability of machine learning models to discriminate between Parkinson's disease (PD) patients and healthy controls. To capture various aspects of speech impairment associated with PD, a comprehensive set of acoustic features was extracted, including long-term features (pitch, jitter, and shimmer), nonlinear descriptors such as Recurrence Period Density Entropy (RPDE), and short-term feature based on Mel-Frequency Cepstral Coefficients (MFCCs). These features were subsequently used to develop and evaluate machine learning models for the classification of Parkinson's disease and healthy subjects. Feature selection was performed using SHAP to identify the most informative vocal biomarkers. Model performance was assessed using five independent random train-test splits (70% training and 30% testing), supported by an internal five-fold cross-validation procedure within the training data. Multiple machine learning models were developed and evaluated, including Random Forest, Logistic Regression, Support Vector Machine, Naive Bayes, K-Nearest Neighbors, Decision Tree, Artificial Neural Network, and Gradient Boosting. Result(s): The evaluated models demonstrated strong recording-level classification performance. Artificial Neural Networks (ANN) and K-Nearest Neighbors (KNN) achieved the highest accuracy scores (0.9545 and 0.9494, respectively), along with superior recall (up to 0.9500), precision (up to 0.9551), and F1-score (up to 0.9525). Both models also exhibited excellent discriminative ability, with ROC-AUC values reaching 0.9882 (ANN) and 0.9893 (KNN). In contrast, Naive Bayes and Decision Tree showed comparatively lower performance across all metrics. Log-loss analysis further confirmed the robustness of ANN and KNN, which achieved the lowest values (0.2552 and 0.2510, respectively), indicating well-calibrated predictions. Overall, the findings highlight the consistency and generalizability of ANN and KNN across cross-validation splits. Conclusion(s): This study demonstrates that machine learning models, particularly ANN and KNN, can effectively differentiate Parkinson's disease from healthy conditions using voice recordings. The integration of explainable AI for feature selection enhances model transparency and clinical relevance. However, the reported performance estimates were obtained from a recording-level analysis and should be interpreted as preliminary findings. Further studies involving larger cohorts and participant-level validation strategies are required to determine the generalizability and clinical applicability of these approaches.Copyright © 2026 by the authors.

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16. **Healthy rural living: a misplaced optimism? : District-level agricultural index and Parkinson's disease risk in Austria.**

Authors: Santer A.;Fulop G.;Langer A.;Ludwig M.;Cetin H.;Zimprich F.;Brucke C. and Zach, H.

Publication Date: 2026

Journal: Wiener Klinische Wochenschrift (pagination), pp. Date of Publication: 21 Se 2026

Abstract: BACKGROUND: Occupational exposure to pesticides is a well-established

environmental risk factor for Parkinson's disease (PD). Living in agricultural regions has also been associated with PD risk, although evidence remains inconsistent. This study examines whether past district-level agricultural intensity is associated with current Parkinson's disease hospitalization prevalence across Austrian districts. METHOD(S): We obtained district-level hospitalization prevalence data for individuals with a main or secondary diagnosis of PD from the Austrian national hospital discharge register for the years 2015-2023. Agricultural employment is quantified using an Agricultural Index (ACI), defined as the proportion of the working population employed in agriculture and forestry, derived from national population censuses conducted in 1981, 1991, and 2001. Associations between the cumulative ACI and cumulative PD hospitalization prevalence per region among the general population are assessed using Pearson correlation and linear regression analyses. RESULT(S): The cumulative ACI from 1981, 1991, and 2001 is significantly associated with PD hospitalization prevalence between 2015 and 2023 at the district level. In linear regression analysis, the cumulative ACI significantly predicts PD hospitalization prevalence (p = 0.01), explaining 6.8% of the variance (R2 = 0.068). CONCLUSION(S): Austrian districts with historically higher agricultural employment and intensity exhibit higher contemporary hospitalization prevalences among individuals with Parkinson's disease (PD). These findings support existing evidence linking rural environments to increased PD risk and suggest that agricultural environmental exposures can affect not only agricultural workers but also the general population residing in highly agricultural regions.Copyright © 2026. The Author(s).

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17. **Online Comprehensive Care Therapy Complementary Program Improves Quality of Life in People with Parkinson's Disease.**

Authors: Santos Garcia, Diego;Campo Prieto, Pablo;Breijo Garcia, Carmen M.;Gil, Lucia Dafonte;Pereiro Nogueira, Juan;Blanco Lopez, Jessica and Doblas, Francisco

Publication Date: Aug 25 ,2026

Journal: Brain Sciences 16(9)

Abstract: Objectives: Non-pharmacological therapies are a cornerstone of Parkinson's disease (PD) treatment, but there is not enough evidence of their benefit when delivered altogether online. Our objective was to analyze the efficacy and safety of an online comprehensive care therapy program (OL-CCTP) in people with PD (PwP). Material and methods: This was a proof-of-concept experimental, prospective, 6-month interventional study comparing a PD treatment group (PwP-T) with a control group (PwP-C). The OL-CCTP included group sessions of physical therapy/therapeutic exercise, nutrition, speech therapy, cognitive stimulation, and psychological support (126 sessions over 6 months). The primary outcome was the change in quality of life at 6 months, as measured by the PDQ-39 questionnaire. Mood (Beck Depression Inventory-II [BDI-II]), the non-motor symptom burden (Non-Motor Symptoms Scale [NMSS]), and disability (Schwab and England Activities of Daily Living Scale [ADLS]) were also assessed. Results: Sixty patients (36 PwP-T and 24 PwP-C) completed the assessments. A reduction of 12.9% (from 78.4 +/- 17.9 to 68.3 +/- 18.7; p p p = 0.438) in the PwP-C group (p = 0.009). The BDI-II and NMSS scores decreased significantly by 13.1% (p = 0.001) and 20.3% (p = 0.046), respectively, in the PwP-T group but not in the PwP-C group. There were no significant changes in ADLS in either group. No adverse events were reported. Conclusions: After 6 months of OL-CCTP, an improvement of 12.9% was

observed in the quality of life of patients with PD.

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18. **A curriculum-guided unified framework for robust unsupervised domain adaptation on multi-cohort Parkinson's disease diagnosis.**

Authors: Shen Y.;Hai J.;Qiao K.;Chen J.;Li Y. and Yan, B.

Publication Date: 2026

Journal: Quantitative Imaging in Medicine and Surgery 16(9) (pagination), pp. Article Number: 708. Date of Publication: 2026

Abstract: Background: Current artificial intelligence (AI) models for Parkinson's disease (PD) diagnosis via magnetic resonance imaging (MRI) are significantly impeded by domain shift, and performance often decreases due to heterogeneity in imaging protocols and scanners across hospitals. While existing unsupervised domain adaptation (UDA) methods combining self-training and adversarial training enhance model generalizability, their dependence on pseudo-labels often introduces confirmation bias from noisy predictions. This study aimed to mitigate pseudo-label noise, enhance domain-invariant feature learning and develop a novel UDA framework for robust cross-center PD diagnosis. Method(s): We propose a curriculum-guided unified UDA (CGU-UDA) framework that integrates self-training and adversarial training. Its core innovation is a feedback loop between adaptive pseudo-label refinement and contextual feature regularization. First, a curriculum learning scheduler dynamically adjusts confidence thresholds per class based on real-time learning progress and progressively filters high-quality pseudo-labels. Second, a consistency constraint module enforces prediction agreement between original target images and their randomly masked image and leverages these refined labels to promote robust, context-aware feature learning. Finally, an adversarial domain discriminator conditioned on a randomized multilinear map is applied to align feature distributions across domains. Result(s): Evaluations on two independent multi-cohort PD MRI datasets show that CGU-UDA consistently surpasses leading UDA benchmarks. It achieves an average increase of over 2% in classification accuracy and over 3% in area under the curve (AUC) across varied cross-domain tasks. On Hospital->Parkinson's Progression Markers Initiative (PPMI), accuracy improved from 65.81% of baseline to 67.95%, AUC from 0.6474 to 0.7148; on PPMI->Hospital, accuracy improved from 63.83% to 65.96%, AUC from 0.6324 to 0.6687. Ablation studies confirm that both the dynamic thresholding mechanism and the masked consistency constraint are crucial to this performance gain. Conclusion(s): This work advances robust medical AI model by directly tackling the pseudo-label noise problem in domain adaptation. The CGU-UDA framework demonstrates strong potential for deploying reliable diagnostic models across diverse clinical settings and leading to effective clinical application.Copyright © AME Publishing Company.

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19. **Underrecognized restless legs syndrome in Parkinson's disease: Diagnostic delay, association with sleep burden, and dopaminergic exposure in a Thai cohort.**

Authors: Srikajon J.;Srivanitchapoom P.;Pitakpatapee Y.;Saengphatrachai W.;Pisarnpong A.;Pimolsri C.;Wangthumrong T.;Udompunturuk S.;Engchuan M.;Nurak P. and Chotinaiwattarakul, W.

Publication Date: 2026

Journal: Sleep Medicine 148(pagination), pp. Article Number: 109258. Date of Publication: 01 Dec 2026

Abstract: Purpose Restless legs syndrome (RLS) is a potentially treatable yet underrecognized contributor to sleep disturbance in Parkinson's disease (PD). The extent of missed diagnosis and its clinical implications in routine PD care remain unclear. We aimed to determine the prevalence of RLS, quantify diagnostic delay, and examine associations with sleep burden in a Thai PD cohort. Methods We conducted a cross-sectional study of consecutive patients with PD at a tertiary care center. RLS was diagnosed using International Restless Legs Syndrome Study Group (IRLSSG) criteria and confirmed by a specialist interview. Sleep burden was assessed using the Parkinson's Disease Sleep Scale-2 (PDSS-2) and the Pittsburgh Sleep Quality Index (PSQI). Multivariable logistic regression was used to identify factors associated with RLS. Results Among 250 patients with PD, 23.2% (95% CI, 18.4-28.8) met criteria for RLS. Notably, 95.8% of cases had not been previously diagnosed, with a mean diagnostic delay of 5.83 years. In multivariable analysis, higher PDSS-2 scores (adjusted OR 1.08, 95% CI 1.04-1.13) and higher levodopa equivalent daily dose (per 100 mg increase: adjusted OR 1.10, 95% CI 1.02-1.20) were independently associated with RLS. Conclusions RLS is prevalent in PD but often goes unnoticed, leading to delayed diagnosis in routine clinical practice. Its presence strongly correlates with greater sleep disruption and increased use of dopaminergic medications. These results underscore the importance of systematically screening for and appropriately managing RLS in routine PD care. The study was registered on ClinicalTrials.gov (NCT06684782) on November 12, 2024. Clinical trial The study was approved by the Human Research Ethics Committee at Siriraj Hospital, Mahidol University (Si813/2024). Statement of significance Nearly 25% of PD patients experience RLS, which is linked to poor sleep and higher doses of dopaminergic medications. Notably, 95.8% of these cases had not been diagnosed before, with an average delay of 5.83 years, indicating a significant gap in standard PD care and raising concerns. This research highlights how often RLS is overlooked in PD management, even within specialized clinics. PD patients with RLS had a higher motor burden, and 3.4% reported augmentation. These findings emphasize the importance of increasing clinical awareness and screening for RLS during routine PD visits, as well as developing a strategic approach to RLS in PD.Copyright © 2026 Elsevier B.V.

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20. **Coffee and Parkinson's disease: associations by CYP1A2 genotype and sex in UK Biobank.**

Authors: Wang, Jieping;Wang, Huanyu;Wan, Kang;Wang, Ruwen;Guo, Shanshan;Ma, Fuyi;Xiang, Yang;Ma, Hao;Zong, Geng;Zhi, Xiao;Tian, Xiaoli;Zhou, Guodong and Wang, Ru

Publication Date: Aug 31 ,2026

Journal: Npj Parkinsons Disease 12(1)

Abstract: Coffee consumption has been associated with Parkinson's disease (PD), but findings remain inconsistent. We examined whether this association differs by CYP1A2 genotype and sex in 435,551 UK Biobank participants free of PD at baseline. During a median follow-up of 15.7 years, 3319 incident PD cases were identified. In overall analyses, coffee

intake was not associated with PD risk. However, coffee intake significantly interacted with CYP1A2 genotype. Among AA carriers, coffee intake below 5 cups/day was associated with lower PD risk (HR 0.83, 95% CI 0.74-0.93), and spline analyses indicated a nonlinear association with the lowest risk at around 3 cups/day. In contrast, high coffee intake (>=5 cups/day) was associated with higher PD risk in AC carriers (HR 1.43, 95% CI 1.11-1.85) and CC carriers (HR 1.84, 95% CI 1.08-3.11). Sex-stratified analyses showed that the inverse association in AA carriers was more evident in women, whereas increased risk at high intake among AC/CC carriers was mainly observed in men. These findings support heterogeneity in the association between coffee intake and PD risk according to CYP1A2 genotype. Copyright © 2026. The Author(s).

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21. **Frequency and prognostic outcomes of emergency diagnosis in 13 non-neoplastic conditions in England: A population-based cohort study using linked electronic health records of 1.7 million patients.**

Authors: Whitfield E.;White B.;Barclay M.E.;Rafiq M.;Zakkak N.;Berglund M.;Singh H.;McPhail S.;Denaxas S. and Lyratzopoulos, G.

Publication Date: 2026

Journal: PLOS Medicine 23(8) (pagination), pp. Article Number: e1005182. Date of Publication: 2026

Abstract: Background: In patients with cancer, diagnosis through or soon after the use of emergency hospital care ('emergency diagnosis') is associated with advanced disease and poor prognosis. The varied and complex reasons for emergency diagnoses-including rapid disease progression, patient factors, and system delays-are unlikely to be unique to cancer. However, little is known about the frequency and prognostic outcomes of emergency diagnosis in other conditions. We aimed to document the frequency of emergency diagnoses across various non-neoplastic conditions and examine the association of emergency diagnosis with clinical outcomes. Methods and findings: We analysed records from linked primary care, secondary care, and death data (Clinical Practice Research Datalink (CPRD), Hospital Episode Statistics, Office for National Statistics) for 1,701,154 patients with one of 13 exemplar conditions (axial spondyloarthritis, coeliac disease, coronary/ischaemic heart disease, chronic obstructive pulmonary disease (COPD), inflammatory bowel disease (IBD), Lyme disease, multiple sclerosis (MS), Parkinson's disease, polycystic ovary syndrome, rheumatoid arthritis, schizophrenia, subacute bacterial endocarditis, and tuberculosis) in England between 1999 and 2019. We examined the percentage of patients diagnosed as an emergency and compared their mortality and time in hospital in the year post-diagnosis with patients who were not diagnosed as an emergency. Emergency diagnosis occurred in at least 20% of patients for 9 out of 13 conditions in our sample, including more than 30% of patients with Parkinson's disease and 35% of patients with COPD. For 9 out of 13 conditions, there was a substantial increase (at least +10% difference) in 1-year mortality in patients diagnosed as an emergency versus patients who were not diagnosed as an emergency. After adjusting for age and year of diagnosis, deprivation, comorbidity burden, and the healthcare setting in which the diagnosis was made, patients diagnosed as an emergency were typically much more likely to die within one year. This association held even in conditions with generally good prognosis, such as coeliac disease (adjusted odds ratio 7.53, 95% CI [5.64, 10.1], women) and IBD (adjusted

odds ratio 5.99, 95% CI [5.30, 6.78], men). Similarly large differences were observed for time in hospital in the year post-diagnosis by emergency diagnosis status. For example, adjusted rate ratios of 8.76 (95% CI [6.52, 11.8]) for men with coeliac disease, and 5.59 (95%CI [2.57, 12.2]) for women diagnosed with Lyme disease. The findings were consistent across two subsets of CPRD data (Aurum, GOLD). Analyses of patients with five supplementary cancer sites (brain, colon, lung, pancreas, and ovary) produced findings concordant with prior literature, supporting the validity of the study methods. The main study limitation is the assumption of accurate recording of diagnoses in health records. Conclusion(s): Emergency diagnosis is common and associated with worse clinical outcomes in a wide range of conditions with diverse aetiology. Further research and investment to reduce the number of emergency diagnoses is needed, particularly for diseases where diagnosis in community settings should be expected (e.g., rheumatoid arthritis and COPD), and conditions such as coeliac disease, IBD, and MS, where emergency diagnosis is associated with particularly poor outcomes.Copyright This is an open access article, free of all copyright, and may be freely reproduced, distributed, transmitted, modified, built upon, or otherwise used by anyone for any lawful purpose. The work is made available under the Creative Commons CC0 https://creativecommons.org/publicdomain/zero/1.0/ public domain dedication.

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22. **Joint network analysis of non-motor symptoms and quality of life in patients with Parkinson's disease.**

Authors: Wu C.;Wang X.;Li J.;Yang S.;Cong X. and Jin, Y.

Publication Date: 2026

Journal: Frontiers in Aging Neuroscience 18(pagination), pp. Article Number: 1939150. Date of Publication: 2026

Abstract: Background - Non-motor symptoms (NMS) are highly prevalent in Parkinson's disease (PD) and are major determinants of declining quality of life (QoL), yet traditional statistical approaches are insufficient to capture the complex interactions between NMS and QoL. Network analysis offers a promising alternative for exploring these interactions. Objective - To construct a joint network of non-motor symptoms (NMS) and quality of life (QoL) in patients with Parkinson's disease (PD), identify core and bridge nodes, and inform precision nursing interventions. Methods - A convenience sample of 342 PD patients was recruited between January and June 2026 from the PD specialty outpatient clinic and neurology inpatient wards of a tertiary specialized hospital in Tianjin, and investigated using the Non-Motor Symptoms Scale (NMSS) and the Parkinson's Disease Questionnaire-39 (PDQ-39). A joint network model was constructed via network analysis, and network structures were compared between early- and mid-to-late-stage patients. Results - NMSS6 gastrointestinal symptoms (Str = 1.027), PDQ5 social support (Str = 0.995), and PDQ6 cognition (Str = 0.992) were the core nodes of the joint network based on strength centrality. PDQ6 cognition (Bridge Str = 0.326) and NMSS3 mood/cognition (Bridge Str = 0.260) were the key bridge symptoms linking NMS and QoL. Mobility and social support showed the highest expected influence (EI = 0.960 and 0.939, respectively). The overall network structure differed significantly between early-stage and mid-to-late-stage patients (p = 0.004), whereas global network strength did not; after correction for multiple comparisons. Conclusion - Complex associations exist between NMS and QoL in PD patients and are reorganized across disease stages;

gastrointestinal symptoms, cognition, and social support represent candidate targets for future longitudinal and interventional research.Copyright © 2026 Wu, Wang, Li, Yang, Cong and Jin.

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23. **The Mediating Effect of Physiological Health Fear Between Depressive Mood and Sleep Quality in Elderly Parkinson's Disease Patients.**

Authors: Wu L.;Lu L.;Zhang X.;Xu T.;Gu X. and Shen, C.

Publication Date: 2026

Journal: Brain and Behavior 16(9) (pagination), pp. Article Number: e71670. Date of Publication: 01 Se 2026

Abstract: Objective: To investigate the relationship between depressive mood and sleep quality in elderly patients with Parkinson's disease (PD), and to analyze the mediating role of fear of progression (FoP). Method(s): Between June 2024 and April 2025, 234 elderly patients with PD attending the Affiliated Hospital of Nantong University were enrolled. Participants completed the General Demographic Questionnaire, the 15-item Geriatric Depression Scale (GDS-15), the Fear of Progression Questionnaire Short Form (FoP-Q-SF), and the Parkinson's Disease Sleep Scale (PDSS). Spearman's rank correlation analysis was used to assess associations among variables. Mediation analyses were conducted using the PROCESS macro (version 4.0) in SPSS. Result(s): Sleep quality [median (IQR): 104 (84-130)] was significantly negatively correlated with depressive mood [7 (3-11)], total FoP [35 (30-40)], and the physiological health fear subscale [19 (17-22)] (r = -0.434, -0.318, -0.419, respectively; all p Result(s): Sleep quality [median (IQR): 104 (84-130)] was significantly negatively correlated with depressive mood [7 (3-11)], total FoP [35 (30-40)], and the physiological health fear subscale [19 (17-22)] (r = -0.434, -0.318, -0.419, respectively; all p Result(s): Sleep quality [median (IQR): 104 (84-130)] was significantly negatively correlated with depressive mood [7 (3-11)], total FoP [35 (30-40)], and the physiological health fear subscale [19 (17-22)] (r = -0.434, -0.318, -0.419, respectively; all p Result(s): Sleep quality [median (IQR): 104 (84-130)] was significantly negatively correlated with depressive mood [7 (3-11)], total FoP [35 (30-40)], and the physiological health fear subscale [19 (17-22)] (r = -0.434, -0.318, -0.419, respectively; all p Conclusion(s): In elderly patients with PD, depressive mood directly impairs sleep quality and also exerts an indirect negative effect via fear related to physiological health deterioration. Targeting both depression and FoP, particularly physiological health concerns may improve sleep outcomes in this population.Copyright © 2026 The Author(s). Brain and Behavior published by Wiley Periodicals LLC.

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24. **Layered classification in Parkinson's disease: a content analysis of clinical, prodromal, and biological criteria evolution.**

Authors: Yusufujiang A.;Zeng S. and Li, H.

Publication Date: 2026

Journal: Frontiers in Aging Neuroscience 18(pagination), pp. Article Number: 1935021. Date of Publication: 01 Jul 2026

Abstract: Background - Parkinson's disease (PD) is no longer described through a single diagnostic vocabulary. Clinical criteria, prodromal probability models, and biological research classifications now operate in parallel after the 2024 NSD-ISS and SynNeurGe proposals. Objective - To clarify how major PD criteria and research frameworks have justified diagnostic change and redistributed the roles of clinical signs, biomarkers, genetics, and prodromal markers. Methods - We conducted a targeted document-based qualitative content analysis of eight purposively selected landmark PD criteria or criteria-adjacent framework documents, with the 1988 UK Brain Bank/Lewy body source retained as a historical lineage anchor. Document-declared aims and perceived diagnostic problems were coded with a prespecified framework, and twelve diagnostic elements were assigned interpretative ordinal scores according to their document-specific textual roles. Results - Within the selected corpus, stated priorities shifted from clinicopathological specificity, standardization, and differential diagnosis toward early identification, biomarker integration, staging/subtyping, and trial readiness. Diagnostic-element roles moved from motor signs, exclusions, and dopaminergic response toward RBD/olfaction in prodromal probability frameworks and toward alpha-synuclein SAA, dopaminergic imaging, and genetics in 2024 biological research frameworks. The analyzed documents indicated materially different 2024 architectures: NSD-ISS emphasized biological definition and integrated staging, whereas SynNeurGe used a multidimensional S/N/G structure. Conclusion - Our analysis suggests that contemporary PD classification can be understood as a layered architecture rather than a simple replacement sequence. Clinical criteria remain necessary for care, prodromal criteria support early-risk research, and biological frameworks require longitudinal, pathological, technical, ethical, and global-access validation before clinical translation.Copyright © 2026 Yusufujiang, Zeng and Li.

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25. **Influence of age on the thickness of retinal nerve fiber layer in patients with mild-to-moderate stages of Parkinson's disease: Case series.**

Authors: de Andrade E.P.;Endo C.M.;Kanas P.I.F.;Morimoto L.;Aidar M.N.;Lima J.C.O.e.;Madeira D.C.;Boppre Y.T.;KaraJose A.C.;Ferraz H.B.;Saba R.A. and Tavares, I. M.

Publication Date: 2024

Journal: Neural Regeneration Research 6(3) (pagination), pp. Article Number: 74. Date of Publication: 01 Mar 2024

Abstract: Introduction: - Parkinson's disease, a neurodegenerative disease, involves motor and nonmotor components. Vision, a nonmotor component, has been studied by the analysis of the retinal layers by optical coherence tomography (OCT), and the main finding is the thinning of the retinal nerve fiber layer (RNFL). The aim of this study was to verify the influence of age on the thickness of retinal nerve fiber in patients with mild-to-moderate stages of Parkinson's disease. Material(s) and Method(s): - Healthy individuals and patients with Parkinson's disease were included in this prospective, cross-sectional, and observational study. The patients were recruited according to the clinical criteria from the neurology clinic of two major hospitals, with the description of the Hoehn and Yahr scale score. Healthy subjects were recruited from the general clinic and hospital staff. A comprehensive ophthalmic examination was performed previously on the spectral-domain OCT. Result(s): - There was a significant effect of age in the thickness of the RNFL in patients with Parkinson's disease, in the right eye in the lower quadrant (P = 0.026) and in the left eye in the upper (P = 0.029) and

temporal (P = 0.037) quadrants, as well in the control group in the upper (P = 0.003) and lower quadrant (P = 0.024). Conclusion(s): - This case series could demonstrate that in mild-to-moderate stages of the Hoehn and Yahr Scale, there is an asymmetric correlation between aging and the decrease in superior, inferior, and temporal RNFL between the eyes of patients with Parkinson's disease, and this finding precedes the decrease in visual acuity.Copyright: © 2024 The Pan-American Journal of Ophthalmology

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