

# Parkinson's Disease Current Awareness Bulletin September 2022

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# 1. Neuroinflammation and Parkinson's Disease-From Neurodegeneration to Therapeutic Opportunities

**Authors:** Araujo, Bruna;Caridade-Silva, Rita;Soares-Guedes, Carla;Martins-Macedo, Joana;Gomes, Eduardo D.;Monteiro, Susana and Teixeira, Fabio G.

#### Publication Date: Sep 17 ,2022

Journal: Cells 11(18)

**Abstract:** Parkinson's disease (PD) is the second most prevalent neurodegenerative disorder worldwide. Clinically, it is characterized by a progressive degeneration of dopaminergic neurons (DAn), resulting in severe motor complications. Preclinical and clinical studies have indicated that neuroinflammation can play a role in PD pathophysiology, being associated with its onset and progression. Nevertheless, several key points concerning the neuroinflammatory process in PD remain to be answered. Bearing this in mind, in the present review, we cover the impact of neuroinflammation on PD by exploring the role of inflammatory cells (i.e., microglia and astrocytes) and the interconnections between the brain and the peripheral system. Furthermore, we discuss both the innate and adaptive immune responses regarding PD pathology and explore the gut-brain axis communication and its influence on the progression of the disease.

#### 2. How I treat Parkinson's disease

**Authors:** Barbosa, Egberto Reis;Limongi, Joao Carlos Papaterra;Chien, Hsin Fen;Barbosa, Pedro Melo and Torres, Marcela Reuter Carrera

#### Publication Date: 2022

Journal: Arquivos De Neuro-Psiquiatria 80(5 Suppl 1), pp. 94-104

Abstract: BACKGROUND: Parkinson's disease (PD) is a complex neurodegenerative condition. Treatment strategies through all stages of disease progression could affect quality of life and influence the development of future complications, making it crucial for the clinician to be on top of the literature. OBJECTIVE: This paper reviews the current treatment of PD, from early to advanced stages. METHODS: A literature review was conducted focusing on the treatment of PD, in the different stages of progression. RESULTS: Every individual with a new diagnosis of PD should be encouraged to start exercising regularly. In the early stage, treatment should focus on using the lowest dose of levodopa or combination therapy that provides maximum functional capacity, and does not increase the risk of complications, such as peak dose dyskinesias and impulse control disorders. At the moderate and advanced stages, motor fluctuations and complications of treatment dominate the picture, making quality of life one important issue. Rehabilitation programs can improve motor symptoms and should be offered to all patients at any stage of disease progression. CONCLUSION: Many factors need to be considered when deciding on the best treatment strategy for PD, such as disease progression, presence of risk factors for motor and behavioral complications, potential side effects from dopaminergic therapy and phenotypical variabilities. Treatment should focus on functional capacity and quality of life throughout the whole disease course.

## 3. Path to Parkinson Disease Prevention: Conclusion and Outlook

**Authors:** Berg, Daniela;Crotty, Grace F.;Keavney, Jessi L.;Schwarzschild, Michael A.;Simuni, Tanya and Tanner, Caroline

## Publication Date: 08 16 ,2022

Journal: Neurology 99(7 Suppl 1), pp. 76-83

**Abstract:** Tremendous progress in our understanding of the pathophysiology and clinical manifestations of the prodromal phase of Parkinson disease (PD) offers a unique opportunity to start therapeutic interventions as early as possible to slow or even stop the progression to clinically manifest motor PD. A Parkinson's Prevention Conference, "Planning for Prevention of Parkinson's: A trial design symposium and workshop" was convened to discuss all issues that need to be addressed before the launch of the first PD prevention study. In this review, we summarize the major opportunities and challenges in designing prevention trials in PD, organized by the following critical trial design questions: Who (should be enrolled)? What (to test)? How (to measure prevention)? and the pivotal question, When during the prodromal disease (should we start these trials)? We outline the implications of these questions and their meaning for a responsible, sustainable, and fruitful further planning for prevention trials. Despite the great progress that has been made, it needs to be acknowledged that several queries remain to be carefully considered and addressed because prevention trials are being planned and become a reality. Copyright © 2022 The Author(s). Published by Wolters Kluwer Health, Inc. on behalf of the American Academy of Neurology.

# 4. Management of dysphagia and gastroparesis in Parkinson's disease in real-world clinical practice - Balancing pharmacological and non-pharmacological approaches

**Authors:** Bhidayasiri, Roongroj;Phuenpathom, Warongporn;Tan, Ai Huey;Leta, Valentina;Phumphid, Saisamorn;Chaudhuri, K. Ray and Pal, Pramod Kumar

#### Publication Date: 2022

Journal: Frontiers in Aging Neuroscience 14, pp. 979826

Abstract: Gastrointestinal (GI) issues are commonly experienced by patients with Parkinson's disease (PD). Those that affect the lower GI tract, such as constipation, are the most frequently reported GI problems among patients with PD. Upper GI issues, such as swallowing dysfunction (dysphagia) and delayed gastric emptying (gastroparesis), are also common in PD but are less well recognized by both patients and clinicians and, therefore, often overlooked. These GI issues may also be perceived by the healthcare team as less of a priority than management of PD motor symptoms. However, if left untreated, both dysphagia and gastroparesis can have a significant impact on the quality of life of patients with PD and on the effectiveness on oral PD medications. with negative consequences for motor control. Holistic management of PD should therefore include timely and effective management of upper GI issues by utilizing both non-pharmacological and pharmacological approaches. This dual approach is key as many pharmacological strategies have limited efficacy in this setting, so non-pharmacological approaches are often the best option. Although a multidisciplinary approach to the management of GI issues in PD is ideal, resource constraints may mean this is not always feasible. In 'real-world' practice, neurologists and PD care teams often need to make initial assessments and treatment or referral recommendations for their patients with PD who are experiencing these problems. To provide guidance in these cases, this article reviews the published evidence for diagnostic and therapeutic management of dysphagia and gastroparesis, including recommendations for timely and appropriate referral to GI specialists when needed and guidance on the development of an effective management plan. Copyright © 2022 Bhidayasiri, Phuenpathom, Tan, Leta, Phumphid, Chaudhuri and Pal.

# 5. Measurement tools to assess activities of daily living in patients with Parkinson's disease: A systematic review.

**Authors:** Bouca-Machado, Raquel;Fernandes, Adriana;Ranzato, Carlo;Beneby, Duane;Nzwalo, Hipolito and Ferreira, Joaquim J.

#### Publication Date: 2022

Journal: Frontiers in Neuroscience 16, pp. 945398

Abstract: Introduction: Parkinson's disease (PD) is associated with a progressive inability to accomplish essential activities of daily living (ADL) resulting in a loss of autonomy and guality of life. Accurate measurement of ADL in PD is important to monitor disease progression and optimize care. Despite its relevance, it is still unclear which measurement instruments are the most suitable for evaluating ADL in people with PD. Objective: To identify and critically appraise which measurement instruments have been used to assess ADL in PD. Methods: A systematic review was conducted using the databases CENTRAL, MEDLINE, and PEDro from their inception to October 2021 to identify all observational and experimental studies conducted in PD or atypical parkinsonism that included an ADL assessment. Titles and abstracts were screened independently by two authors. The clinimetric properties of the measurement instruments were assessed, and the instruments were classified as "recommended," "suggested," or "listed." Results: A total of 129 articles were included, with 37 measurement instruments used. The Unified Parkinson's Disease Rating Scale (UPDRS), the Schwab & England ADL scale (S&E scale), the Movement Disorder Society Unified Parkinson's Disease Rating Scale (MDS-UPDRS), the Barthel Index, the Lawton-Brody Instrumental Activities of Daily Living Scale, the Functional Independence Measure (FIM) and the Alzheimer's Disease Cooperative Study - ADL (ADCS-ADL) scale were the seven most frequently cited measurement instruments. Of these, only two included an assessment of basic and instrumental ADL. Conclusion: MDS-UPDRS and the S&E scale were the only two scales that could be classified as recommended. For the MDS-UPDRS, either the full version or only Part II, which is focused on ADL, can be used. Future studies should explore the use of wearable devices to assess ADL remotely and more continuously. Copyright © 2022 Bouca-Machado, Fernandes, Ranzato, Beneby, Nzwalo and Ferreira.

## 6. Depression in Parkinson's Disease: A Narrative Review

Authors: Chikatimalla, Rahul;Dasaradhan, Thejaswi;Koneti, Jancy;Cherukuri, Swathi Priya;Kalluru, Revanth and Gadde, Sai

## Publication Date: Aug ,2022

#### **Journal:** Cureus 14(8), pp. e27750

**Abstract:** Parkinson's disease (PD) is a progressive neurodegenerative age-related disorder that affects the central nervous system (CNS) and is characterized by uncontrollable movements such as shaking, stiffness, and loss of balance and coordination. Depression is a common non-motor manifestation of PD, but unfortunately, depression remains unrecognized and often undertreated. The underlying pathophysiology of depression in PD is complicated, and many studies have been conducted to know the exact cause, but the question remains unanswered. In this article, we discuss various pathophysiologies by which depression occurs in PD. The most widely accepted theories are neuroinflammation and monoamine oxidase theory. This article also explored the pharmacological treatment of depression in PD; this involves standard antidepressant therapy such as tricyclic antidepressants (TCA), serotonin-norepinephrine reuptake inhibitors (SNRI), selective serotonin reuptake inhibitors (SSRI), and monoamine oxidase inhibitors (MAO); non-pharmacological treatments such as electroconvulsive therapy (ECT), cognitive-behavioral therapy

(CBT) have also been discussed. However, physicians hesitate to prescribe antidepressants to patients with PD due to concerns about harmful drug-drug interactions between antidepressants and antiparkinsonian drugs. Despite the complicated link between PD and depression, the co-administration of antidepressants and antiparkinsonian drugs is safe and beneficial when appropriately managed. However, early recognition and initiation of treatment of depression in PD reduces the longitudinal course and improves the cross-sectional picture. This review article also explored the clinical and diagnostic findings and impact on the quality of life of depression in PD. Copyright © 2022, Chikatimalla et al.

# 7. Deep Brain Stimulation and Microelectrode Recording for the Treatment of Parkinson's Disease

Authors: Fejeran, Joshua; Salazar, Frank; Alvarez, Cesia M. and Jahangiri, Faisal R.

Publication Date: Aug ,2022

# Journal: Cureus 14(8), pp. e27887

Abstract: Parkinson's disease (PD) is a neurological disorder in which nigrostriatal pathways involving the basal ganglia experience a decrease in neural activity regarding dopaminergic neurons. PD symptoms, such as muscle stiffness and involuntary tremors, have an adverse impact on the daily lives of those affected. Current medical treatments seek to decrease the severity of these symptoms. Deep brain stimulation (DBS) has become the preferred safe, and reliable treatment approach. DBS involves implanting microelectrodes into subcortical areas that produce electrical impulses directly to high populations of dopamineraic neurons. The most common targets are the subthalamic nucleus (STN), and the basal ganglia's globus pallidus pars interna (GPi). Research studies suggest that DBS of the STN may cause a significant reduction in the daily dose of L-DOPA compared to DBS of the GPi. DBS of the STN has suggested that there may be sweet spots within the STN that provide hyper-direct cortical connectivity pathways to the primary motor cortex (M1), supplementary motor area (SMA), and prefrontal cortex (PFC). In addition, the pedunculopontine nucleus (PPN) may be a new target for DBS that helps treat locomotion problems associated with gait and posture. Both microelectrode recording (MER) and magnetic resonance imaging (MRI) are used to ensure electrode placement accuracy. Using MER, stimulation of the STN at high frequencies (140 Copyright © 2022, Fejeran et al.

## 8. Deep brain stimulation in Parkinson's disease: state of the art and future perspectives

Authors: Franca, Carina;Carra, Rafael Bernhart;Diniz, Juliete Melo;Munhoz, Renato Puppi and Cury, Rubens Gisbert

## Publication Date: 2022

Journal: Arquivos De Neuro-Psiquiatria 80(5 Suppl 1), pp. 105-115

**Abstract:** For more than 30 years, Deep Brain Stimulation (DBS) has been a therapeutic option for Parkinson's disease (PD) treatment. However, this therapy is still underutilized mainly due to misinformation regarding risks and clinical outcomes. DBS can ameliorate several motor and non-motor symptoms, improving patients' quality of life. Furthermore, most of the improvement after DBS is long-lasting and present even in advanced PD. Adequate patient selection, precise electric leads placement, and correct DBS programming are paramount for good surgical outcomes. Nonetheless, DBS still has many limitations: axial symptoms and signs, such as speech, balance and gait, do not improve to the same extent as appendicular symptoms and can even be worsened as a direct or indirect consequence of surgery and stimulation. In addition, there are still

unanswered questions regarding patient's selection, surgical planning and programming techniques, such as the role of surgicogenomics, more precise imaging-based lead placement, new brain targets, advanced programming strategies and hardware features. The net effect of these innovations should not only be to refine the beneficial effect we currently observe on selected symptoms and signs but also to improve treatment resistant facets of PD, such as axial and non-motor features. In this review, we discuss the current state of the art regarding DBS selection, implant, and programming, and explore new advances in the DBS field.

# 9. Breathing disorders in neurodegenerative diseases

Authors: Ghosh, Soumya

# Publication Date: 2022

Journal: Handbook of Clinical Neurology 189, pp. 223-239

**Abstract:** Neurodegenerative disorders are a diverse group of conditions caused by progressive degeneration of neurons resulting in cognitive, motor, sensory, and autonomic dysfunction, leading to severe disability and death. Pulmonary dysfunction is relatively common in these conditions. may be present early in the disease, and is less well recognized and treated than other symptoms. There are variable disorders of upper and lower airways, central control of ventilation, strength of respiratory muscles, and breathing during sleep which further impact daily activities and quality of life and have the potential to injure vulnerable neurons. Laryngopharyngeal dysfunction affects speech, swallowing, and clearance of secretions, increases the risk of aspiration pneumonia, and can cause stridor and sudden death. In Parkinson's disease, L-Dopa benefits some pulmonary symptoms but there are limited pharmacological treatment options for pulmonary dysfunction. Targeted treatments include strengthening of respiratory muscles, positive airway pressure in sleep and techniques to improve cough efficacy. Well-designed clinical trials are needed to evaluate the long-term benefits of these interventions. Challenges for the future include earlier identification of pulmonary dysfunction in the clinic, institution of the most effective treatments (based on clinical trials that measure long-term meaningful outcomes) and the development of neuroprotective treatment. Copyright © 2022 Elsevier B.V. All rights reserved.

# 10. Detection and assessment of Parkinson's disease based on gait analysis: A survey

Authors: Guo, Yao; Yang, Jianxin; Liu, Yuxuan; Chen, Xun and Yang, Guang-Zhong

# Publication Date: 2022

Journal: Frontiers in Aging Neuroscience 14, pp. 916971

**Abstract:** Neurological disorders represent one of the leading causes of disability and mortality in the world. Parkinson's Disease (PD), for example, affecting millions of people worldwide is often manifested as impaired posture and gait. These impairments have been used as a clinical sign for the early detection of PD, as well as an objective index for pervasive monitoring of the PD patients in daily life. This review presents the evidence that demonstrates the relationship between human gait and PD, and illustrates the role of different gait analysis systems based on vision or wearable sensors. It also provides a comprehensive overview of the available automatic recognition systems for the detection and management of PD. The intervening measures for improving gait performance are summarized, in which the smart devices for gait intervention are emphasized. Finally, this review highlights some of the new opportunities in detecting, monitoring, and treating of PD based on gait, which could facilitate the development of objective gait-based biomarkers for personalized support and treatment of PD. Copyright © 2022 Guo, Yang, Liu, Chen and Yang.

# 11. Data on the effect of Parkinson's disease multimodal complex treatment in a German University Hospital.

Authors: Heimrich, Konstantin G. and Prell, Tino

Publication Date: Oct ,2022

Journal: Data in Brief 44, pp. 108496

Abstract: This article presents demographic and detailed clinical data from 159 patients with Parkinson's disease or atypical Parkinsonian syndromes treated in the Parkinson's disease multimodal complex treatment (PD-MCT) from 01.01.2019 until 31.12.2019 at the Department of Neurology of the University Hospital Jena, Germany. At baseline, the following variables were collected: age, sex, diagnosis, phenotype, disease duration, Hoehn and Yahr stage, Movement Disorder Society sponsored revision of the unified Parkinson's disease rating scale (MDS-UPDRS) part I-IV, levodopa equivalent daily dose (LEDD), Tinetti test, nonmotor symptoms questionnaire (NMSQ), Montreal Cognitive Assessment (MoCA), measures of depressive symptoms using the Hospital Anxiety and Depression Scale (HADS-D) and the Beck Depression Inventory (BDI-II), health-related quality of life assessed by the Short-Form Health Survey (SF-12), and the treatment duration according to the Operation and Procedure Classification System. To assess the short-term effect of PD-MCT, the MDS-UPDRS III, Tinetti test, and LEDD were collected again at discharge from hospital. One month after discharge, a first follow-up was conducted and patients rated their general condition. One year after discharge, a second follow-up was conducted and the SF-12 was collected. The dataset allows determination of the effect of PD-MCT and identification of predictors of a beneficial treatment. The dataset can be used by clinicians and academia for further research and as reference. The dataset can also be used in a large range of other topics where demographic and clinical parameters of the PD-MCT are relevant. The data presented herein is associated with the research article "Short- and Long-Term Effect of Parkinson's Disease Multimodal Complex Treatment" [1] and available on Mendeley Data [2]. Copyright © 2022 The Author(s). Published by Elsevier Inc.

# 12. Poor sleep quality is associated with fatigue and depression in early Parkinson's disease: A longitudinal study in the PALS cohort.

**Authors:** Koh, Matthew Rui En;Chua, Cong Yang;Ng, Samuel Yong-Ern;Chia, Nicole Shuang-Yu;Saffari, Seyed Ehsan;Chen, Regina Yu-Ying;Choi, Xinyi;Heng, Dede Liana;Neo, Shermyn Xiumin;Tay, Kay Yaw;Au, Wing Lok;Tan, Eng-King;Tan, Louis Chew-Seng and Xu, Zheyu

## Publication Date: 2022

Journal: Frontiers in Neurology [Electronic Resource] 13, pp. 998103

**Abstract:** Background: Sleep disorders are common in Parkinson's disease (PD). However, the longitudinal relationship between sleep quality and the other non-motor symptoms of PD has not been well characterized, especially in early PD. Objective: To explore the value of baseline sleep quality in predicting the progression of other non-motor symptoms in early PD. Methods: 109 early PD patients were recruited to the study. Patients were stratified into good and poor sleepers using the Pittsburgh Sleep Quality Index (PSQI). Assessments performed at baseline and 1 year follow-up included the Epworth Sleepiness Scale, Fatigue Severity Scale, Non-Motor Symptom Scale, Geriatric Depression Scale, Hospital Anxiety and Depression Scale, Apathy Scale, Montreal Cognitive Assessment and detailed neuropsychological assessments. Multivariable linear regression was performed at baseline to investigate differences in clinical scores between poor and good sleepers, while multivariable regression models were used to investigate associations

between sleep quality and progression of test scores at 1 year follow-up. Results: 59 poor sleepers and 50 good sleepers were identified. At baseline, poor sleepers had greater HADS anxiety scores (p = 0.013) [2.99 (95% CI 2.26, 3.73)] than good sleepers [1.59 (95% CI 0.75, 2.42)]. After 1 year, poor sleepers had greater fatigue (FSS scores +3.60 as compared to -2.93 in good sleepers, p = 0.007) and depression (GDS scores +0.42 as compared to -0.70, p = 0.006). Conclusion: This study shows a longitudinal association between sleep quality, fatigue, and depression in early PD patients, independent of medication effect and disease severity, this may support the hypothesis that a common serotonergic pathway is implicated in these non-motor symptoms. Copyright © 2022 Koh, Chua, Ng, Chia, Saffari, Chen, Choi, Heng, Neo, Tay, Au, Tan, Tan and Xu.

# 13. Viruses, parkinsonism and Parkinson's disease: the past, present and future

**Authors:** Leta, Valentina;Urso, Daniele;Batzu, Lucia;Lau, Yue Hui;Mathew, Donna;Boura, Iro;Raeder, Vanessa;Falup-Pecurariu, Cristian;van Wamelen, Daniel and Ray Chaudhuri, K.

# Publication Date: Sep ,2022

# Journal: Journal of Neural Transmission 129(9), pp. 1119-1132

**Abstract:** Parkinsonism secondary to viral infections is not an uncommon occurrence and has been brought under the spotlight with the spread of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection. A variety of viruses have been described with a potential of inducing or contributing to the occurrence of parkinsonism and Parkinson's disease (PD), although the relationship between the two remains a matter of debate originating with the description of encephalitis lethargica in the aftermath of the Spanish flu in 1918. While some viral infections have been linked to an increased risk for the development of PD, others seem to have a causal link with the occurrence of parkinsonism. Here, we review the currently available evidence on viral-induced parkinsonism with a focus on potential pathophysiological mechanisms and clinical features. We also review the evidence on viral infections as a risk factor for developing PD and the link between SARS-CoV-2 and parkinsonism, which might have important implications for future research and treatments. Copyright © 2022. The Author(s).

## 14. Excessive Daytime Sleepiness in Parkinson's Disease

**Authors:** Liu, Hanshu;Li, Jingwen;Wang, Xinyi;Huang, Jinsha;Wang, Tao;Lin, Zhicheng and Xiong, Nian

## Publication Date: 2022

## Journal: Nature & Science of Sleep 14, pp. 1589-1609

**Abstract:** Excessive daytime sleepiness (EDS) is one of the most common sleep disorders in Parkinson's disease (PD). It has attracted much attention due to high morbidity, poor quality of life, increased risk for accidents, obscure mechanisms, comorbidity with PD and limited therapeutic approaches. In this review, we summarize the current literature on epidemiology of EDS in PD to address the discrepancy between subjective and objective measures and clarify the reason for the inconsistent prevalence in previous studies. Besides, we focus on the effects of commonly used antiparkinsonian drugs on EDS and related pharmacological mechanisms to provide evidence for rational clinical medication in sleepy PD patients. More importantly, degeneration of wake-promoting nuclei owing to primary neurodegenerative process of PD is the underlying pathogenesis of EDS. Accordingly, altered wake-promoting nerve nuclei and neurotransmitter systems in PD patients are highlighted to providing clues for identifying EDS-causing targets in the sleep and wake cycles.

Future mechanistic studies toward this direction will hopefully advance the development of novel and specific interventions for EDS in PD patients. Copyright © 2022 Liu et al.

# 15. Magnetic resonance and dopamine transporter imaging for the diagnosis of Parkinson's disease: a narrative review

**Authors:** Otani, Rafael Tomio Vicentini;Yamamoto, Joyce Yuri Silvestre;Nunes, Douglas Mendes;Haddad, Monica Santoro and Parmera, Jacy Bezerra

# Publication Date: 2022

Journal: Arquivos De Neuro-Psiquiatria 80(5 Suppl 1), pp. 116-125

**Abstract:** BACKGROUND: the diagnosis of Parkinson's disease (PD) can be challenging, especially in the early stages, albeit its updated and validated clinical criteria. Recent developments on neuroimaging in PD, altogether with its consolidated role of excluding secondary and other neurodegenerative causes of parkinsonism, provide more confidence in the diagnosis across the different stages of the disease. This review highlights current knowledge and major recent advances in magnetic resonance and dopamine transporter imaging in aiding PD diagnosis. OBJECTIVE: This study aims to review current knowledge about the role of magnetic resonance imaging and neuroimaging of the dopamine transporter in diagnosing Parkinson's disease. METHODS: We performed a non-systematic literature review through the PubMed database, using the keywords "Parkinson", "magnetic resonance imaging", "diffusion tensor", "diffusion-weighted", "neuromelanin", "nigrosome-1", "single-photon emission computed tomography", "dopamine transporter imaging". The search was restricted to articles written in English, published between January 2010 and February 2022. RESULTS: The diagnosis of Parkinson's disease remains a clinical diagnosis. However, new neuroimaging biomarkers hold promise for increased diagnostic accuracy, especially in earlier stages of the disease. CONCLUSION: Future validation of new imaging biomarkers bring the expectation of an increased neuroimaging role in the diagnosis of PD in the following years.

# 16. Exploring the Paradox of COVID-19 in Neurological Complications with Emphasis on Parkinson's and Alzheimer's Disease

**Authors:** Rai, Sachchida Nand;Tiwari, Neeraj;Singh, Payal;Singh, Anurag Kumar;Mishra, Divya;Imran, Mohd;Singh, Snigdha;Hooshmandi, Etrat;Vamanu, Emanuel;Singh, Santosh K. and Singh, Mohan P.

## Publication Date: 2022

Journal: Oxidative Medicine & Cellular Longevity 2022, pp. 3012778

**Abstract:** Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is a human coronavirus (HCoV) that has created a pandemic situation worldwide as COVID-19. This virus can invade human cells via angiotensin-converting enzyme 2 (ACE2) receptor-based mechanisms, affecting the human respiratory tract. However, several reports of neurological symptoms suggest a neuroinvasive development of coronavirus. SARS-CoV-2 can damage the brain via several routes, along with direct neural cell infection with the coronavirus. The chronic inflammatory reactions surge the brain with proinflammatory elements, damaging the neural cells, causing brain ischemia associated with other health issues. SARS-CoV-2 exhibited neuropsychiatric and neurological manifestations, including cognitive impairment, depression, dizziness, delirium, and disturbed sleep. These symptoms show nervous tissue damage that enhances the occurrence of neurodegenerative disorders and aids dementia. SARS-CoV-2 has been seen in brain necropsy and isolated from the cerebrospinal fluid of COVID-19 patients. The associated inflammatory reaction in some COVID-19

patients has increased proinflammatory cytokines, which have been investigated as a prognostic factor. Therefore, the immunogenic changes observed in Parkinson's and Alzheimer's patients include their pathogenetic role. Inflammatory events have been an important pathophysiological feature of neurodegenerative diseases (NDs) such as Parkinson's and Alzheimer's. The neuroinflammation observed in AD has exacerbated the Abeta burden and tau hyperphosphorylation. The resident microglia and other immune cells are responsible for the enhanced burden of Abeta and subsequently mediate tau phosphorylation and ultimately disease progression. Similarly, neuroinflammation also plays a key role in the progression of PD. Several studies have demonstrated an interplay between neuroinflammation and pathogenic mechanisms of PD. The dynamic proinflammation stage guides the accumulation of alpha-synuclein and neurodegenerative progression. Besides, few viruses may have a role as stimulators and generate a cross-autoimmune response for alpha-synuclein. Hence, neurological complications in patients suffering from COVID-19 cannot be ruled out. In this review article, our primary focus is on discussing the neuroinvasive effect of the SARS-CoV-2 virus, its impact on the blood-brain barrier, and ultimately its impact on the people affected with neurodegenerative disorders such as Parkinson's and Alzheimer's. Copyright © 2022 Sachchida Nand Rai et al.

# 17. Short-Term Motor Outcomes in Parkinson's Disease after Subthalamic Nucleus Deep Brain Stimulation Combined with Post-Operative Rehabilitation: A Pre-Post Comparison Study.

**Authors:** Sato, Kazunori;Hokari, Yoshihide;Kitahara, Eriko;Izawa, Nana;Hatori, Kozo;Honaga, Kaoru;Oyama, Genko;Hatano, Taku;Iwamuro, Hirokazu;Umemura, Atsushi;Shimo, Yasushi;Hattori, Nobutaka and Fujiwara, Toshiyuki

# Publication Date: 2022

## Journal: Parkinsons Disease 2022, pp. 8448638

Abstract: Background: The effects of subthalamic nuclear deep brain stimulation therapy (STN-DBS) and combined postoperative rehabilitation for patients with Parkinson's disease with postural instability have yet to be well reported. This study investigated the effects of short-term postoperative rehabilitation with STN-DBS on physical function in patients with Parkinson's disease. Methods: Patients diagnosed with Parkinson's disease who were admitted to our hospital for STN-DBS surgery were included in this study. Data were prospectively collected and retrospectively analyzed. Postoperative rehabilitation consisted of muscle-strengthening exercises, stretching, and balance exercises for 40-60 minutes per day for approximately 14 days. The Mini-Balance Evaluation Systems Test (Mini-BESTest), Timed Up and Go test (TUG) seconds and steps, Trunk Impairment Scale (TIS), seconds for 10 times toe-tapping, lower limb extension torque using StrengthErgo240, and center of pressure sway in the quiet standing posture were evaluated preoperatively, postoperatively, and at discharge. Mini-BESTest changes were also evaluated in the two groups classified by the presence or absence of postural instability. One-way and two-way repeated measures analyses of variance were performed for each of the three periods of change, and paired t-tests with the Bonferroni method were performed as multiple comparison tests. A stepwise multiple regression model was used to identify factors associated with balance improvement. Results: A total of 60 patients with Parkinson's disease were included, and there were significant increases in Mini-BESTest, TIS, StrengthErgo240, and postural sway during closed-eye standing compared to pre- and postoperative conditions at discharge (p p p p Copyright © 2022 Kazunori Sato et al.

# 18. People with Parkinson's perspectives and experiences of self-management: Qualitative findings from a UK study.

**Authors:** Shah, Ria;Read, Joy;Davies, Nathan;Nimmons, Danielle;Pigott, Jennifer;Schrag, Anette;Walters, Kate and Armstrong, Megan

## Publication Date: 2022

Journal: PLoS ONE [Electronic Resource] 17(9), pp. e0273428

Abstract: INTRODUCTION: Parkinson's prevalence is growing, and more people are being impacted by the condition than ever before. Self-management has been proposed as one way to enable people living with the condition to improve or maintain their guality of life and wellbeing whilst living at home. AIM: To explore the views and experiences of how people living with Parkinson's self-manage their condition and identify areas needed to be incorporated into self-management resources or interventions. METHOD: Twenty people with Parkinson's from across London and Hertfordshire, UK took part in semi-structured interviews on self-management. Interviews were transcribed and analysed using thematic analysis to identify themes. RESULTS: Three main themes were identified: (1) Management of physical symptoms, which included engaging in physical activities, adapting their lifestyles, managing medication and using e-health resources; (2) Management of emotional impact, which involved using a range of cognitive and practical strategies, and seeking talking therapies and medication; and (3) barriers to self-management such as accessing accurate information, experiencing stigma towards their condition which impacted their self-esteem and identity, in turn impacting on their ability to self-manage. CONCLUSION: Holistic and person-centred self-management programmes or interventions should be developed incorporating components such as medication and emotional support, individualised planning of exercise regimes, and accessible, timely and accurate information. Furthermore, more public health knowledge on Parkinson's is needed to help reduce stigma.

# 19. A 6-month longitudinal study on worsening of Parkinson's disease during the COVID-19 pandemic.

Authors: Shalash, Ali;Helmy, Asmaa;Salama, Mohamed;Gaber, Ahmed;El-Belkimy, Mahmoud and Hamid, Eman

#### Publication Date: Aug 31 ,2022

Journal: Npj Parkinsons Disease 8(1), pp. 111

**Abstract:** Further studies are required to investigate the impact of the COVID-19 pandemic on Parkinson's disease (PD) progression. This study investigated the motor and non-motor progression of people with PD (PWP) at 6 months during the COVID-19 pandemic compared with that during the pre-pandemic period. Patients were recruited from Ain Shams University Hospitals, Cairo, in the period between April 2019 and December 2020. Fifty patients were included, of whom 17 and 33 patients were followed for 6 months before and during the pandemic, respectively. All patients were assessed at baseline and at 6 months using the MDS-UPDRS, Schwab and England scale (S&E), Hoehn and Yahr scale (H&Y), Berg Balance Scale, Timed Up and Go test (TUG), International Physical Activity Questionnaire, New Freezing of Gait Questionnaire, Non-Motor Symptoms Scale, and Beck Depression Inventory (BDI). Both groups were matched in age, gender, and disease characteristics. Patients followed during the pandemic showed more significant worsening of the total, part I and motor part of MDS-UPDRS, and balance scores (p Copyright © 2022. The Author(s).

# 20. A Literature Review of High-Tech Physiotherapy Interventions in the Elderly with Neurological Disorders

Authors: Spanakis, Marios;Xylouri, Ioanna;Patelarou, Evridiki and Patelarou, Athina

# Publication Date: 2022

**Journal:** International Journal of Environmental Research & Public Health [Electronic Resource] 19(15), pp. 07 28

**Abstract:** Neurological physiotherapy adopts a problem-based approach for each patient as determined by a thorough evaluation of the patient's physical and mental well-being. Tauhis work aims to provide a literature review of physical therapy interventions in the elderly with neurological diseases (NDs) and discuss physiotherapy procedures and methods that utilize cutting-edge technologies for which clinical studies are available. Hence, the review focuses on acute NDs (stroke), deteriorating NDs (Parkinson's disease), and age-related cognitive impairment. The most used physiotherapy procedures on which clinical data are available are balance and gait training (robot-assisted or not), occupational therapy, classical physiotherapy, walking and treadmill training, and upper limb robot-assisted therapy. Respectively, the most often-used equipment are types of treadmills, robotic-assisted equipment (Lokomat R and Gait Trainer GT1), and portable walkway systems (GAITRite R), along with state-of-the-art technologies of virtual reality, virtual assistants, and smartphones. The findings of this work summarize the core standard tools and procedures, but more importantly, provide a glimpse of the new era in physiotherapy with the utilization of innovative equipment tools for advanced patient monitoring and empowerment.

## 21. Hospital-treated infections in early- and mid-life and risk of Alzheimer's disease, Parkinson's disease, and amyotrophic lateral sclerosis: A nationwide nested case-control study in Sweden.

**Authors:** Sun, Jiangwei;Ludvigsson, Jonas F.;Ingre, Caroline;Piehl, Fredrik;Wirdefeldt, Karin;Zagai, Ulrika;Ye, Weimin and Fang, Fang

## Publication Date: Sep ,2022

Journal: PLoS Medicine / Public Library of Science 19(9), pp. e1004092

Abstract: BACKGROUND: Experimental observations have suggested a role of infection in the etiology of neurodegenerative disease. In human studies, however, it is difficult to disentangle whether infection is a risk factor or rather a comorbidity or secondary event of neurodegenerative disease. To this end, we examined the risk of 3 most common neurodegenerative diseases in relation to previous inpatient or outpatient episodes of hospital-treated infections. METHODS AND FINDINGS: We performed a nested case-control study based on several national registers in Sweden. Cases were individuals newly diagnosed with Alzheimer's disease (AD), Parkinson's disease (PD), or amyotrophic lateral sclerosis (ALS) during 1970 to 2016 in Sweden, identified from the National Patient Register. For each case, 5 controls individually matched to the case on sex and year of birth were randomly selected from the general population. Conditional logistic regression was used to estimate odds ratios (ORs) and 95% confidence intervals (CIs) with adjustment for potential confounders, including sex, year of birth, area of residence, educational attainment, family history of neurodegenerative disease, and Charlson comorbidity index. Infections experienced within 5 years before diagnosis of neurodegenerative disease were excluded to reduce the influence of surveillance bias and reverse causation. The analysis included 291,941 AD cases (median age at diagnosis: 76.2 years; male: 46.6%), 103,919 PD cases (74.3; 55.1%), and 10,161 ALS cases (69.3; 56.8%). A hospital-treated infection 5 or more years earlier was associated with an increased risk of AD (OR = 1.16, 95% CI: 1.15 to 1.18, P < 0.001) and PD (OR = 1.04, 95% CI:

1.02 to 1.06, P < 0.001). Similar results were observed for bacterial, viral, and other infections and among different sites of infection including gastrointestinal and genitourinary infections. Multiple infections before age 40 conveyed the greatest risk of AD (OR = 2.62, 95% CI: 2.52 to 2.72, P <0.001) and PD (OR = 1.41, 95% CI: 1.29 to 1.53, P < 0.001). The associations were primarily due to AD and PD diagnosed before 60 years (OR = 1.93, 95% CI: 1.89 to 1.98 for AD, P < 0.001; OR = 1.29, 95% CI: 1.22 to 1.36 for PD, P < 0.001), whereas no association was found for those diagnosed at 60 years or older (OR = 1.00, 95% CI: 0.98 to 1.01 for AD, P = 0.508; OR = 1.01, 95% CI: 0.99 to 1.03 for PD, P = 0.382). No association was observed for ALS (OR = 0.97, 95% CI: 0.92 to 1.03, P = 0.384), regardless of age at diagnosis. Excluding infections experienced within 10 years before diagnosis of neurodegenerative disease confirmed these findings. Study limitations include the potential misclassification of hospital-treated infections and neurodegenerative diseases due to incomplete coverage of the National Patient Register, as well as the residual confounding from unmeasured risk or protective factors for neurodegenerative diseases. CONCLUSIONS: Hospitaltreated infections, especially in early- and mid-life, were associated with an increased risk of AD and PD, primarily among AD and PD cases diagnosed before 60 years. These findings suggest that infectious events may be a trigger or amplifier of a preexisting disease process, leading to clinical onset of neurodegenerative disease at a relatively early age. However, due to the observational nature of the study, these results do not formally prove a causal link.

# 22. Neurological and psychiatric risk trajectories after SARS-CoV-2 infection: an analysis of 2-year retrospective cohort studies including 1 284 437 patients.

Authors: Taquet, Maxime;Sillett, Rebecca;Zhu, Lena;Mendel, Jacob;Camplisson, Isabella;Dercon, Quentin and Harrison, Paul J.

## Publication Date: 2022

#### Journal: The Lancet.Psychiatry 9(10), pp. 815-827

Abstract: BACKGROUND: COVID-19 is associated with increased risks of neurological and psychiatric sequelae in the weeks and months thereafter. How long these risks remain, whether they affect children and adults similarly, and whether SARS-CoV-2 variants differ in their risk profiles remains unclear. METHODS: In this analysis of 2-year retrospective cohort studies, we extracted data from the TriNetX electronic health records network, an international network of de-identified data from health-care records of approximately 89 million patients collected from hospital, primary care, and specialist providers (mostly from the USA, but also from Australia, the UK, Spain, Bulgaria, India, Malaysia, and Taiwan). A cohort of patients of any age with COVID-19 diagnosed between Jan 20, 2020, and April 13, 2022, was identified and propensity-score matched (1:1) to a contemporaneous cohort of patients with any other respiratory infection. Matching was done on the basis of demographic factors, risk factors for COVID-19 and severe COVID-19 illness, and vaccination status. Analyses were stratified by age group (age =65 years [older adults]) and date of diagnosis. We assessed the risks of 14 neurological and psychiatric diagnoses after SARS-CoV-2 infection and compared these risks with the matched comparator cohort. The 2-year risk trajectories were represented by time-varying hazard ratios (HRs) and summarised using the 6-month constant HRs (representing the risks in the earlier phase of follow-up, which have not yet been well characterised in children), the risk horizon for each outcome (ie, the time at which the HR returns to 1), and the time to equal incidence in the two cohorts. We also estimated how many people died after a neurological or psychiatric diagnosis during follow-up in each age group. Finally, we compared matched cohorts of patients diagnosed with COVID-19 directly before and after the emergence of the alpha (B.1.1.7), delta (B.1.617.2), and omicron (B.1.1.529) variants. FINDINGS: We identified 1 487 712 patients with a recorded diagnosis of COVID-19 during the study period, of whom 1 284 437 (185 748 children, 856 588 adults, and 242 101 older adults; overall mean age 42.5 years [SD 21.9]; 741 806 [57.8%] were female and 542 192 [42.2%] were male) were adequately matched with an equal number of patients with another respiratory infection. The risk

trajectories of outcomes after SARS-CoV-2 infection in the whole cohort differed substantially. While most outcomes had HRs significantly greater than 1 after 6 months (with the exception of encephalitis; Guillain-Barre syndrome; nerve, nerve root, and plexus disorder; and parkinsonism), their risk horizons and time to equal incidence varied greatly. Risks of the common psychiatric disorders returned to baseline after 1-2 months (mood disorders at 43 days, anxiety disorders at 58 days) and subsequently reached an equal overall incidence to the matched comparison group (mood disorders at 457 days, anxiety disorders at 417 days). By contrast, risks of cognitive deficit (known as brain fog), dementia, psychotic disorders, and epilepsy or seizures were still increased at the end of the 2-year follow-up period. Post-COVID-19 risk trajectories differed in children compared with adults: in the 6 months after SARS-CoV-2 infection, children were not at an increased risk of mood (HR 1.02 [95% CI 0.94-1.10) or anxiety (1.00 [0.94-1.06]) disorders, but did have an increased risk of cognitive deficit, insomnia, intracranial haemorrhage, ischaemic stroke, nerve, nerve root, and plexus disorders, psychotic disorders, and epilepsy or seizures (HRs ranging from 1.20 [1.09-1.33] to 2.16 [1.46-3.19]). Unlike adults, cognitive deficit in children had a finite risk horizon (75 days) and a finite time to equal incidence (491 days). A sizeable proportion of older adults who received a neurological or psychiatric diagnosis, in either cohort, subsequently died, especially those diagnosed with dementia or epilepsy or seizures. Risk profiles were similar just before versus just after the emergence of the alpha variant (n=47 675 in each cohort). Just after (vs just before) the emergence of the delta variant (n=44 835 in each cohort), increased risks of ischaemic stroke, epilepsy or seizures, cognitive deficit, insomnia, and anxiety disorders were observed, compounded by an increased death rate. With omicron (n=39 845 in each cohort), there was a lower death rate than just before emergence of the variant, but the risks of neurological and psychiatric outcomes remained similar. INTERPRETATION: This analysis of 2-year retrospective cohort studies of individuals diagnosed with COVID-19 showed that the increased incidence of mood and anxiety disorders was transient, with no overall excess of these diagnoses compared with other respiratory infections. In contrast, the increased risk of psychotic disorder, cognitive deficit, dementia, and epilepsy or seizures persisted throughout. The differing trajectories suggest a different pathogenesis for these outcomes. Children have a more benign overall profile of psychiatric risk than do adults and older adults, but their sustained higher risk of some diagnoses is of concern. The fact that neurological and psychiatric outcomes were similar during the delta and omicron waves indicates that the burden on the health-care system might continue even with variants that are less severe in other respects. Our findings are relevant to understanding individuallevel and population-level risks of neurological and psychiatric disorders after SARS-CoV-2 infection and can help inform our responses to them. FUNDING: National Institute for Health and Care Research Oxford Health Biomedical Research Centre, The Wolfson Foundation, and MQ Mental Health Research. Copyright © 2022 The Author(s). Published by Elsevier Ltd. This is an Open Access article under the CC BY 4.0 license. Published by Elsevier Ltd.. All rights reserved.

# 23. Evaluation of Effecting Factors About Exercise Motivation in Patients with Parkinson's Disease.

Authors: Wu, Pei-Ling and Ho, Hsueh-Hou

#### Publication Date: Oct ,2022

Journal: Florence Nightingale Journal of Nursing 30(3), pp. 217-223

**Abstract:** AIM: The aim of this study was to explore the factors that affect exercise motivation in patients with Parkinson's disease. METHODS: Data collected in Taiwan from March 2016 to January 2017. Using convenience sampling, a total of 49 participants were recruited, and participants who usually regularly exercise >= 150 minutes per week. Using the 8-item Parkinson's Disease Questionnaire (PDQ-8), Geriatric Depression Scale (GDS), Unified Parkinson's Disease Rating Scale part II - III (UPDRS part II - III), Fatigue Severity Scale (FSS), Pittsburg Sleep Quality Index (PSQI), and Hospital Anxiety Scale (HAS). Descriptive statistics, Pearson correlation analysis,

and multiple linear regression analysis were adopted for data analysis. RESULTS: Pearson correlation analysis showed L-Dopa dosage, UPDRS part II - III, FSS, PSQI, GDS-15, Hospital Anxiety Scale, and PDQ-8 were significantly correlated with exercise motivation. Fatigue was the strongest factor related to exercise motivation and explained 42.52% of the total variances; moreover, motor ability and activity of daily living explained 24.6% and 12.0% of the total variances, respectively. CONCLUSION: Motor ability, the activity of daily living and fatigue were related factors of Parkinson's disease patients' exercise motivation.

# 24. Research Progress of Music Therapy on Gait Intervention in Patients with Parkinson's Disease

Authors: Wu, Zhuolin;Kong, Lingyu and Zhang, Qiuxia

# Publication Date: 2022

**Journal:** International Journal of Environmental Research & Public Health [Electronic Resource] 19(15), pp. 08 04

**Abstract:** Music therapy is an effective way to treat the gait disorders caused by Parkinson's disease. Rhythm music stimulation, therapeutic singing, and therapeutic instrument performance are often used in clinical practice. The mechanisms of music therapy on the gait of patients with Parkinson's disease include the compensation mechanism of cerebellum recruitment, rhythm entrainment, acceleration of motor learning, stimulation of neural coherence, and increase of cortical activity. All mechanisms work together to complete the intervention of music therapy on patients' gait and help patients to recover better. In this paper, the effect of music therapy on gait disorders in Parkinson's disease patients was reviewed, and some suggestions were put forward.

# 25. Mild cognitive impairment in patients with Parkinson's disease: An updated mini-review and future outlook

Authors: Yu, Rwei-Ling and Wu, Ruey-Meei

## Publication Date: 2022

Journal: Frontiers in Aging Neuroscience 14, pp. 943438

**Abstract:** Mild cognitive impairment (MCI) is one of the common non-motor symptoms in patients with Parkinson's disease (PD). MCI is the transition stage between normal aging and full-blown dementia and is also a powerful predictor of dementia. Although the concept of MCI has been used to describe some of the PD symptoms for many years, there is a lack of consistent diagnostic criteria. Moreover, because of the diverse patterns of the cognitive functions, each cognitive impairment will have a different progression. In this review, we overviewed the diagnostic criteria for PD-MCI, primarily focused on the heterogeneity of PD-MCI patients' cognitive function, including various types of cognitive functions and their progression rates. A review of this topic is expected to be beneficial for clinical diagnosis, early intervention, and treatment. In addition, we also discussed the unmet needs and future vision in this field. Copyright © 2022 Yu and Wu.

## 26. The relationship between Parkinson's disease and gastrointestinal diseases

Authors: Zeng, Jiaqi;Wang, Xinchan;Pan, Fei and Mao, Zhiqi

Publication Date: 2022

#### Journal: Frontiers in Aging Neuroscience 14, pp. 955919

**Abstract:** An increasing number of studies have provided evidence for the hypothesis that the pathogenesis of Parkinson's disease (PD) may derive from the gut. Firstly, Lewy pathology can be induced in the enteric nervous system (ENS) and be transported to the central nervous system (CNS) via the vagal nerve. Secondly, the altered composition of gut microbiota causes an imbalance between beneficial and deleterious microbial metabolites which interacts with the increased gut permeability and the gut inflammation as well as the systemic inflammation. The activated inflammatory status then affects the CNS and promotes the pathology of PD. Given the above-mentioned findings, researchers start to pay attention to the connection between PD and gastrointestinal diseases including irritable bowel syndrome, inflammatory bowel disease (IBD), microscopic colitis (MC), gastrointestinal infections, gastrointestinal neoplasms, and colonic diverticular disease (CDD). This review focuses on the association between PD and gastrointestinal diseases of PD from the gut. Copyright © 2022 Zeng, Wang, Pan and Mao.

# 27. A bibliometric analysis of COVID-19 publications in neurology by using the visual mapping method.

Authors: Zhang, Qian; Li, Jian and Weng, Ling

#### Publication Date: 2022

Journal: Frontiers in Public Health 10, pp. 937008

Abstract: Background: The characteristic symptom of coronavirus disease 2019 (COVID-19) is respiratory distress, but neurological symptoms are the most frequent extra-pulmonary symptoms. This study aims to explore the current status and hot topics of neurology-related research on COVID-19 using bibliometric analysis. Methods: Publications regarding neurology and COVID-19 were retrieved from the Web of Science Core Collection (WoSCC) on March 28 2022. The Advanced search was conducted using "TS = ('COVID 19' or 'Novel Coronavirus 2019' or 'Coronavirus disease 2019' or '2019-nCOV' or 'SARS-CoV-2' or 'coronavirus-2') and TS = ('neurology'or 'neurological' or 'nervous system' or 'neurodegenerative disease' or 'brain' or 'cerebra' or 'nerve')". Microsoft Excel 2010 and VOSviewer were used to characterize the largest contributors, including the authors, journals, institutions, and countries. The hot topics and knowledge network were analyzed by CiteSpace and VOSviewer. Results: A total of 5,329 publications between 2020 and 2022 were retrieved. The United States, Italy, and the United Kingdom were three key contributors to this field. Harvard Medical School, the Tehran University of Medical Sciences, and the UCL Queen Square Institute of Neurology were the major institutions with the largest publications. Josef Finsterer from the University of Sao Paulo (Austria) was the most prolific author. Tom Solomon from the University of Liverpool (UK) was the most cited author. Neurological Sciences and Frontiers in Neurology were the first two most productive journals, while Journal of Neurology held the first in terms of total citations and citations per publication. Cerebrovascular diseases, neurodegenerative diseases, encephalitis and encephalopathy, neuroimmune complications, neurological presentation in children, long COVID and mental health, and telemedicine were the central topics regarding the neurology-related research on COVID-19. Conclusion: Neurology-related research on COVID-19 has attracted considerable attention worldwide. Research topics shifted from "morality, autopsy, and telemedicine" in 2020 to various COVID-19-related neurological symptoms in 2021, such as "stroke," "Alzheimer's disease," "Parkinson's disease," "Guillain-Barre syndrome," "multiple sclerosis," "seizures in children," and "long COVID." "Applications of telemedicine in neurology during COVID-19 pandemic," "COVID-19related neurological complications and mechanism," and "long COVID" require further study. Copyright © 2022 Zhang, Li and Weng.

# 28. Effects of mind-body exercises on cognitive impairment in people with Parkinson's disease: A mini-review

Authors: Zhang, Ting;Liu, Wei and Gao, Song

# Publication Date: 2022

Journal: Frontiers in Neurology [Electronic Resource] 13, pp. 931460

Abstract: Parkinson's disease (PD) is an important health problem caused by the degeneration of brain neurons. Bradykinesia and lower balance ability seriously affect the quality of life of people with PD. Non-motor symptoms, such as cognitive impairment, accompany the course of the disease but still lack sufficient attention. In general, drugs combined with cognitive training are the most common ways to improve cognitive impairment in people with PD. However, long-term use of psychiatric drugs may lead to side effects such as brain death and movement disorders. Recently, mindfulness has been used by researchers in the treatment of cognitive impairment, because healthy older adults who engage in mind-body exercises for a long time have higher cognitive levels than normal aging populations. Mind-body exercise, as a therapy that combines concentration, breath control, and physical activity, is beneficial for improving practitioners' brain and mental health. Mind-body exercises such as Tai Chi, yoga, dance, and Pilates can improve cognitive performance in older adults with or without cognitive impairment. Therefore, mind-body exercise may be a feasible strategy for the treatment of cognitive impairment in people with PD. This study summarizes the latest evidence that mind-body exercises including Tai Chi. Qigong, voga, and dance improve cognitive impairment associated with PD. We also explored the limitations of current mind-body exercise research, aiming to provide new ideas for improving mind-body exercise as a strategy to alleviate cognitive impairment in people with PD. Copyright © 2022 Zhang, Liu and Gao.

29. Efficacy of repetitive transcranial magnetic stimulation in Parkinson's disease: A systematic review and meta-analysis of randomised controlled trials.

**Authors:** Zhang, Wenjie;Deng, Bin;Xie, Fen;Zhou, Hang;Guo, Ji-Feng;Jiang, Hong;Sim, Amy;Tang, Beisha and Wang, Qing

## Publication Date: Oct ,2022

#### Journal: EClinicalMedicine 52, pp. 101589

Abstract: Background: Repetitive transcranial magnetic stimulation (rTMS) is a non-invasive form of brain stimulation that positively regulates the motor and non-motor symptoms of Parkinson's disease (PD). Although, most reviews and meta-analysis have shown that rTMS intervention is effective in treating motor symptoms and depression, very few have used randomised controlled trials (RCTs) to analyse the efficacy of this intervention in PD. We aimed to review RCTs of rTMS in patients with PD to assess the efficacy of rTMS on motor and non-motor function in patients with PD. Methods: In this systematic review and meta-analysis, we searched PubMed, MEDLINE and Web of Science databases for RCTs on rTMS in PD published between January 1, 1988 to January 1, 2022. Eligible studies included sham-controlled RCTs that used rTMS stimulation for motor or non-motor symptoms in PD. RCTs not focusing on the efficacy of rTMS in PD were excluded. Summary data were extracting from those RCTs by two investigators independently. We then calculated standardised mean difference with random-effect models. The main outcome included motor and non-motor examination of scales that were used in PD motor or non-motor assessment. This study was registered with PROSPERO, CRD42022329633. Findings: Fourteen studies with 469 patients met the criteria for our meta-analysis. Twelve eligible studies with 381 patients were pooled to analyse the efficacy of rTMS on motor function improvement. The effect size on motor scale scores was 0.51 (P 2 = 29%). Five eligible studies with 202 patients were collected to

evaluate antidepressant-like effects. The effect size on depression scale scores was 0.42 (P = 0.004), and were not distinctly heterogeneous (I2 = 25%), indicating a significant anti-depressive effect (P = 0.004). The results suggest that high-frequency of rTMS on primary motor cortex (M1) is effective in improving motor symptoms; while the dorsolateral prefrontal cortex (DLPFC) may be a potentially effective area in alleviating depressive symptom. Interpretation: The findings suggest that rTMS could be used as a possible adjuvant therapy for PD mainly to improve motor symptoms, but could have potential efficacy on depressive symptoms of PD. However, further investigation is needed. Funding: The National Natural Science Foundation of China (NO: 81873777, 82071414), Initiated Foundation of Zhujiang Hospital (NO: 02020318005), Scientific Research Foundation of Guangzhou (NO: 202206010005), and Science and Technology Program of Guangdong of China (NO: 2020A0505100037). Copyright © 2022 The Authors.

## Dementia Research in the time of Covid

As part of World Alzheimer's Month, Professor Martin Rossor, NIHR National Director for Dementia Research, reflects on how the COVID-19 pandemic has affected dementia research, and how it might look as we emerge from it.

https://www.nihr.ac.uk/blog/dementia-research-in-the-time-of-covid/28810

# Sources Used:

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

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