Movement Disorders
CLINICAL PRACTICE
REVIEW

# A Holistic Wellness Prescription for Parkinson's Disease: Evidence-Based Perspectives and Unmet Needs

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**Abstract:** Background: In modern medicine the concept of wellness is often accompanied by various misconceptions arising from several factors, including a lack of clear definitions, the commercialization of wellness, and prevailing biases and stereotypes.

Method: Although wellness has been successfully integrated into the management of conditions like cardiovascular disease, diabetes, and cancer, it has yet to be widely applied in the field of neurology. The World Federation of Neurology, American Academy of Neurology, European Academy of Neurology, and the World Health Organization (WHO) have adopted a formal definition of brain health that emphasizes the proactive role of lifestyle choices in modifying outcomes for neurological diseases, which closely aligns with the wellness approach. This shift has been further reinforced by WHO's adoption of the Intersectoral Global Action Plan on epilepsy and other neurological disorders (2022–2031), which seeks to improve access to treatment and care while promoting brain health across the lifespan. The global push for brain health highlights the need for a structured approach to wellness in neurological conditions such as Parkinson's disease (PD).

Results/Conclusion: This critical review, conducted by a multidisciplinary task force commissioned by the International Parkinson and Movement Disorder Society, aims to provide the current evidence base on wellness in PD, identify existing gaps in knowledge, and propose a framework to integrate wellness into the holistic care of individuals with PD.

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Wellness can best be defined as "the active pursuit of activities, choices and lifestyles that lead to a state of holistic health."[1] Specific models of holistic health have been recently popularized, including Veterans Affairs' "Whole Health" model.[2] The proposed wellness prescription is a multidimensional, patient-centered paradigm that integrates lifestyle behaviors, environmental context, social support, and spiritual, mental, and physical domains. It closely aligns with Engel's biopsychosocial framework, which situates the person living with the disease at the nexus of interconnected biological, psychological, and social determinants.[2,3] For people living with Parkinson's disease (PWP), the key components of wellness include a healthy diet, prescribed exercise/programmed physical activity, sleep, mind–body approaches, and social connection, among others.[4]

In the traditional medical paradigm, the patient is often a passive recipient of care, and healthcare interventions are sporadic, reacting to a symptom or complaint rather than being proactive or preventive. This intermittent interaction with the healthcare system is compartmentalized and remains separate from the patient's day-to-day life. Patients often see their neurologist for only one 15 to 30-minute appointment every 6 months, and in some countries a neurologist or health care professional may not be accessible at all. The wellness model places the patient at the center of the care team, with goals tailored to what they consider important for their quality of life within their current social, economic, and cultural context. The patient takes an active role in making choices in their daily life—guided by individualized recommendations from their healthcare team—that influence their health outcomes. This approach cultivates self-agency, giving the patients a feeling of control over health-related actions and their consequences, which has been shown to improve quality of life.[2]

A recent review stated that the ultimate goal of health in Parkinson's disease (PD) is to support PWP in self-management and their ability to participate in activities that are meaningful to them.[5] Patient participation in their own health may include not only involvement in medical decisions but also adoption of a healthy lifestyle with regular exercise and appropriate diet.[6] PWP also have identified guidance in wellness and lifestyle pursuits as a key need for them.[7]

In this article, the International Parkinson and Movement Disorder Society (MDS) Task Force on Wellness proposes a wellness prescription for PWP, emphasizing the importance of early intervention that starts at diagnosis or even during the prodromal phase. Integrating psychiatric and psychological expertise with allied specialties, sex therapy, occupational therapy, and physiotherapy, translates the biopsychosocial framework into practice by simultaneously attending to its biological, psychological, and social dimensions. This approach encourages self-management and advocates a proactive, rather than reactive, treatment model. We also call for medical teams to use comprehensive tools as a prompt for health care professionals, to integrate holistic care for PD in a global setting.[8]

Key to the success of this wellness prescription is principles of accessibility, equality, and cultural sensitivity, as well as the integration of meaningful life experiences and a sense of purpose (Fig. 1).

# Accessible for All: Global Disparities in Minoritized/ Underserved Populations

An essential component of this wellness prescription is ensuring accessibility for all, recognizing that disparities in healthcare access and outcomes are particularly pronounced globally in minoritized or underserved populations, who often face significant barriers to effective care and support. The burden of neurological disorders disproportionately affects individuals in low- and middle-income countries (LMICs), particularly regions in Asia and Africa, where 80% of the global population resides.[9] Despite this, access to neurological care, key clinical trials that shape drug prescribing, and wellness initiatives remain severely limited in these areas. This gap underscores the need for wellness to be recognized as a basic human right rather than an exclusive privilege available only to affluent populations in high-income countries. Wellness recommendations should not be dependent on material resources or luxury, but should outline accessible, practical strategies that empower individuals to improve their health and quality of life. In other words: it is not what you can buy, but what you can do for yourself to live better.

The reality is that millions of individuals in LMICs face not only a lack of access to basic treatments like levodopa, but also a lack of holistic approaches[10] that could significantly improve well-being by placing value on socializing within communities and by emphasizing dance, music, food, spirituality, and movement that brings an individual joy and meaning. Past research on the care of minoritized and underserved populations shows immense disparities in treatment for PD, spanning access to healthcare services such as specialty care, receipt of medication, surgery, and rehabilitative and palliative therapies.[9] For example, Black Americans with incident PD are 75% less likely to start PD medications or physical therapy compared to White Americans in the first 6 months after a new diagnosis.[10] There is a shocking lack of inclusion of ethnic minority subjects and subjects from LMIC in PD-related clinical trials, which can lead to tremendous disparities in care.[11] Such groups would theoretically derive greater benefit from practical and effective wellness guidance.

Our task force's wellness prescription model needs to be implemented broadly and account for pervasive infrastructure-related obstacles. Furthermore, each wellness approach will need to be tailored to the cultural context of the individual.

# Wellness Prescription

The wellness prescription outlined in this article uses a biopsychosocial framework and aims to provide a comprehensive, multifaceted approach to improving the quality of life for PWP. This prescription includes key elements such as physical activity, mental health support, mind–body strategies, nutrition, sleep management, social engagement, and sexual health, all of which will be reviewed in detail. Each component is designed to promote

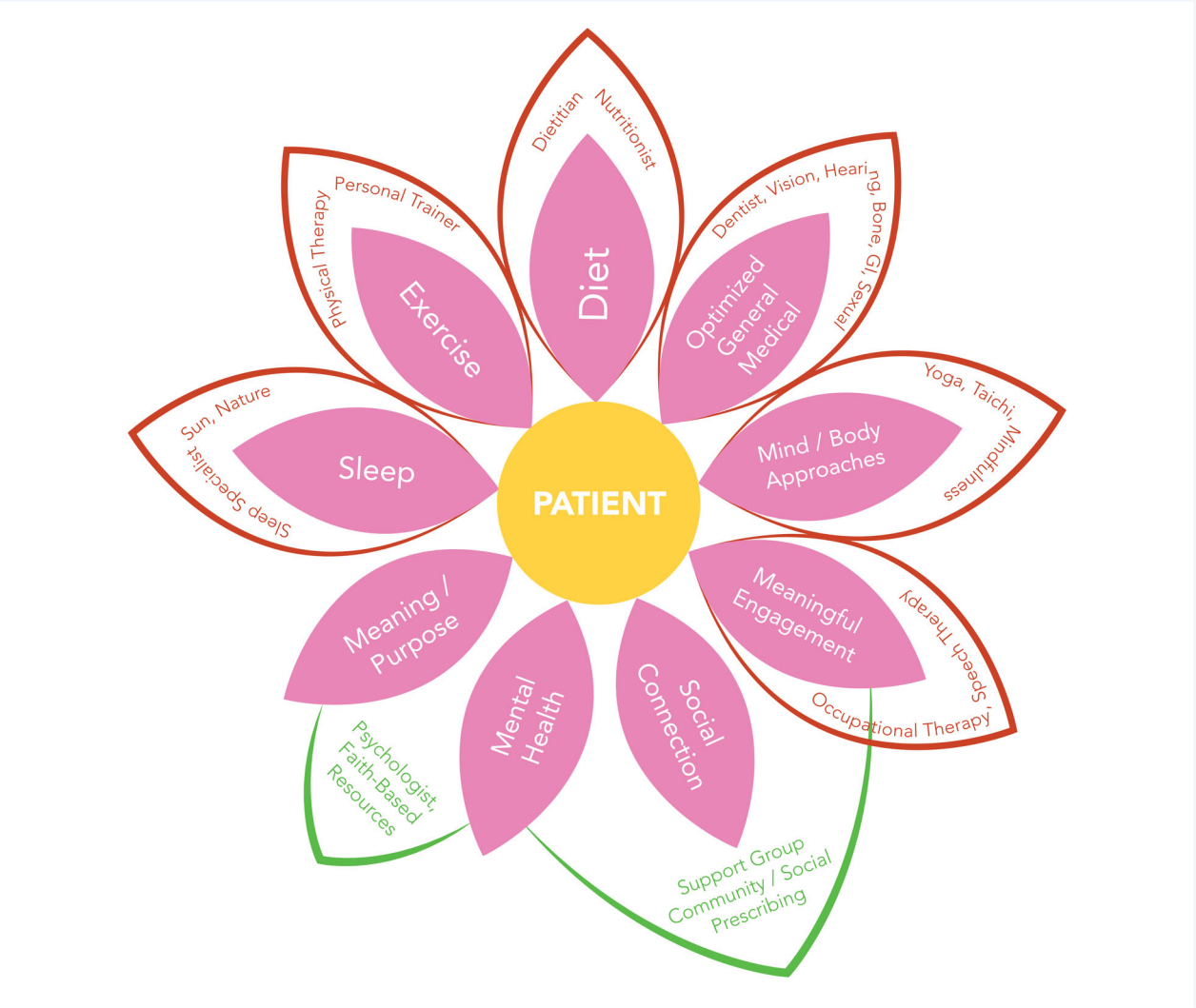


FIG. 1. The wellness prescription (modified from Subramanian et al Touch Neurology- Illustrated by Ms. Giulia Barone)[4].

holistic, personalized care across diverse patient populations. Tables 1 and 2 outline recommendations specific to symptoms and lifestyle choices, along with their evidence-based benefits.

## Physical Activity

Exercise is a crucial enabler of wellness. Exercise studies have consistently demonstrated positive effects on motor symptoms, improving physical function, mobility, strength, balance, and gait in PWP.[12–14] Emerging evidence also suggests physical exercise may benefit non-motor symptoms such as sleep disturbance,[15] pain,[16] cognitive impairment,[17] anxiety,[18] depression,[19] and constipation.[20] Moreover, some studies have evaluated exercise as an intervention to prevent or delay disease progression in PD, although more evidence is needed.[21]

General exercise guidelines support early initiation of exercise programs at the time of PD diagnosis, in addition to the clear benefits now shown in those with well-established disease.[12,13] These guidelines recommend that PWP should incorporate approximately 150 min per week of moderate to high-intensity aerobic exercise, at least 2 days a week of strengthening exercises, additional exercises for balance, agility, and multitasking, and regular daily stretching. Ongoing exercise is required to maintain the beneficial effects, and a physically active lifestyle should be encouraged.[12,13]

A wide range of PD-specific exercise programs are currently recommended and studied, including dance,[22,23] tai chi,[24] qigong,[25] Nordic walking,[26] boxing,[27] aquatic exercise,[28] climbing,[29] Pilates,[30] and yoga.[31] Although the quality of many of these studies have been reasonable, further large-scale, long-term studies are needed.

Group classes offer a social environment that is much appreciated by patients,[32,33] and partnered dance has been associated with greater enjoyment and motivation compared with non-partnered dance.[32] Because of its nature as a social activity, dancing may help prevent social isolation in patients with PD.[34]

**TABLE 1** *Evidence-based integrative treatments to consider in PD—practical tips*

| Category | Recommendations |
|---|---|
| Physical activity | ≥150 mins/week of moderate intensity aerobic exercise (walking, cycling, boxing, etc.)<br>≥2 days/week of strength training (weights, resistance bands, sit-ups, etc.)<br>Exercises for balance, agility, multitasking, stretching<br>OT principals of "stand up, sit less and move more"<br>Emphasis on daily activity counts not just vigorous physical activity<br>Proactive rehab with specialized PT, OT, SLP if available |
| Nutrition | Plant-based foods, Mediterranean, or MIND diet; fresh fruits, vegetables, nuts, seeds, fish, olive oil; limit processed foods, red meats, sweets, sodas, dairy |
| Sleep | Optimal sleep hygiene, regularity, duration, efficiency, timing<br>Sunlight/nature exposure |
| Social connection | Awareness of clinical significance of loneliness; screening at visits<br>Social prescriptions for intimate, social, collective interactions<br>CBT/CBT principals for loneliness<br>Support group referral |
| Mind body practices | Meditation, yoga, or tai chi for balance, gait, falls, mood, stress<br>Art therapy for visuo-spatial, visual-cognitive skills<br>Music or dance therapy for balance, freezing of gait, dexterity<br>Acupuncture for pain, non-motor symptoms |
| Holistic assessment | Mental health screen—treat depression/ anxiety<br>Vision, hearing, dental, gut, bone, sexual health |
| Self-management | Education—lifestyle advice, medication management strategies, e-health resources, social and emotional support, CBT |

Abbreviations: PD, Parkinson's disease; OT, occupational therapist; PT, physical therapist; SLP, speech language pathologist; MIND, Mediterranean-DASH Intervention for Neurodegenerative Delay; CBT, cognitive behavioral therapy.

Different systematic reviews and meta-analysis agree that dance (eg, tango, waltz/foxtrot, ballroom, Irish dancing, Sardinian folk dancing) improves motor impairments, specifically balance and motor symptom severity in individuals with mild to moderate PD.[35,36] A recent review on adherence found most contemporary exercise and rehabilitation programs tend to focus on individuals with mild to moderate symptoms, often overlooking those with dementia, significant mood disorders, sensory impairments, or more advanced stages.[37]

PWP need clear guidance on exercise, improved access to community resources, and consideration of their personal preferences, capacities, and cultural context, considering all aspects of wellness.[12] To address specific motor or non-motor symptoms, tailored, goal-directed exercise programs designed explicitly for PWP may be the most effective option, especially in more advanced stages.[14] Exercise behavior is influenced by patients' exercise beliefs, age at PD onset, initial doctor's advice, education level, symptoms, and exercise-promoting factors, with high exercise levels particularly associated with specific types of exercises and group activities.[38] Importantly, in a 2024 study by Jagota et al,[38] PWP who were never advised by their doctors to exercise comprised a higher proportion of non-exercisers than those who were advised.

Therefore, based on all the above considerations and the current evidence base, we introduce a pragmatic, adaptable framework (Fig. 2) for tailoring exercise prescriptions in PD. The model links patient-specific variables, including comorbidities, functional capacity, and personal goals, to evidence-backed exercise modalities. Developed from clinical observations, empirical literature, and consensus guidelines, each module targets a key functional domain often compromised in PD, which include gait and fall risk, posture and transfers, cognition, and mood.

Recommendations are stratified by symptom profile and care setting (eg, newly diagnosed community-dwelling individuals vs. institutionalized patients), ensuring a patient-centered, context-sensitive approach. The framework specifies safe and feasible activities aligned with the individual's current physical and cognitive status and delineates referral thresholds for physiotherapists, occupational therapists, or specialized neurorehabilitation centers, which are consistent with contemporary standards of care.

## Nutrition

Nutrition intersects with PD in many crucial ways. Food intake can interact with antiparkinsonian medication, such as interactions between protein-containing foods and levodopa that interfere with levodopa transport, whereas protein redistribution diets, in which protein intake is separated from levodopa intake or concentrated at dinner, can improve motor fluctuations.[39] Moreover, there are a number of PD-related factors that can have an impact on adequate nutrition[40]: motor symptoms can interfere with shopping for and preparing food; sensory

**TABLE 2** *Evidence-based integrative treatments to consider in PD—symptoms and lifestyle choices*

| Type | Benefits (evidence-based) |
|---|---|
| Physical exercise | Motor—physical function, mobility, strength, balance, gait<br>NMS—sleep, pain, cognition, anxiety/depression, constipation<br>? delay disease progression |
| Diet | Decrease risk to develop PD, older age at onset, slower progression, lower mortality rates |
| Sleep | Improve well-being, QOL, depression, cognition, fatigue in PWP and caregiver QOL |
| Sunlight exposure | Mental well-being, stress, circadian rhythm, sleep |
| Greenspace proximity | Decrease risk of PD |
| Mental health screen+ treat symptoms | Improve ADL's and QOL |
| Mind–body approaches | |
| Mindfulness | Anxiety, depression, QOL, pain |
| Yoga | Mindful yoga—anxiety, depression, spiritual wellbeing, QOL<br>Hatha yoga—balance, gait, falls |
| Dance | Motor—balance<br>NMS—depression, apathy, cognition |
| Tai chi. qigong | Postural stability, functional capacity, falls, sleep |
| Music therapy-singing, | Balance, FOG, gait, mental health, speech |
| Art therapy | Visuospatial/visuo-cognitive skills |
| Animal-assisted therapy | Equine—?<br>Pets—? |
| Acupuncture | NMS—depression, anxiety, sleep, fatigue, pain, QOL |
| Social connection | ? anxiety/depression/ cognition/sleep |

Abbreviations: PD, Parkinson's disease; NMS, non-motor symptoms; QOL, quality of life; PWP, people with PD; ADL, activities of daily living; FOG, freezing of gait.

symptoms such as hyposmia and hypogeusia as well as alterations in the brain's reward systems can interfere with appetite and enjoyment of food; and gastrointestinal symptoms including dysphagia, delayed gastric emptying, nausea, and constipation can lead to anorexia, early satiety, and impaired levodopa absorption.[41] Cognitive decline, apathy, depression, and impulse control disorders all can alter dietary intake and choices. In addition, socioeconomic hardship for PWP is an important factor in preventing nutritious diets and is related to PD severity.[42] All of these factors can lead to nutritional deficits in PWP, and a recent meta-analysis concluded that about one-third of study participants living with PD were at risk of malnutrition, which in turn is associated with worse PD outcomes and quality of life.[43] In this context, the limitation of protein intake during the day can lead to low overall protein intake, which in turn can worsen sarcopenia, frailty, and functional decline.[39] Further trials will need to establish optimal protein intake levels in PD-specific subgroups.

Specific dietary patterns are linked to PD risk, progression, and mortality, with most epidemiological studies investigating Mediterranean-type diets (MEDI) and related patterns such as the Mediterranean-DASH Intervention for Neurodegenerative Delay (MIND) diet,[44] the alternative healthy eating index (AHEI),[45] and a PD-specific diet based on patient-reported outcomes in PD (PRO).[42] Features common to the MEDI, MIND, PRO, and AHEI diets are fresh fruits, vegetables, legumes, nuts, seeds, whole grains, fish, and olive oil and avoidance of processed foods, red meat, fried food, and sweets. The positive effects reported for these diets include a lower risk to develop PD or parkinsonism,[44,46–49] a later age of onset,[50] slower progression,[42,44] and lower mortality rates.[45] A United Kingdom (UK) Biobank cohort study found a lower risk of PD associated with a diet rich in plant-based foods (−18%) and especially healthful plant-based foods (−22%) (ie, rich in vegetables, nuts, and tea), whereas an unhealthful plant-based diet (ie, higher in sweets, sugar-sweetened beverages, juices, refined grains, and potatoes) was associated with a higher risk of PD (+38%).[51]

Diet is a major modulator of the gut microbiome, and emergent cross-sectional data support that higher diet quality is associated with higher levels of anti-inflammatory short-chain fatty acids like butyrate and reduced pro-inflammatory bacterial species.[52] There is, however, a paucity of randomized controlled trials (RCTs) into dietary patterns, with preliminary evidence suggesting cognitive benefits of the Mediterranean[53] and ketogenic diets possibly demonstrating improvement in non-motor domains such as urinary symptoms, pain/sensory disturbance, fatigue, daytime sleepiness, and cognitive impairment.[54]

Hydration is critical for PWP. Cognitive decline, apathy, depression, reduced sensation of thirst, and the fear to worsen urinary symptoms contribute to the common issue of

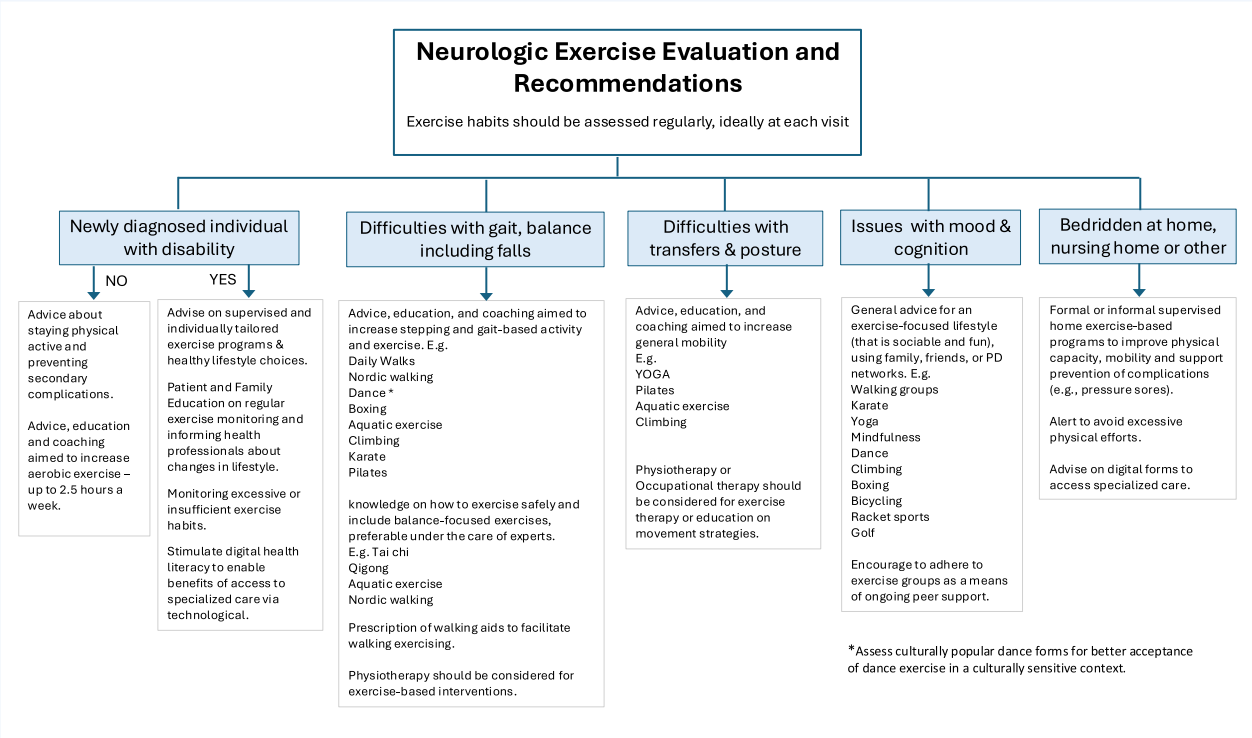


**FIG. 2.** Proposed pragmatic and adaptable Parkinson's disease (PD) exercise model.

inadequate hydration, which in turn can contribute to postural hypotension, constipation, cognition, and cardiovascular events. Recommendations for fluid intake should be personalized to the PWP given potential cardiac and other contraindications.

Nutraceuticals and supplements are a diverse group of products with a wide range of goals, therapeutic targets, and mechanisms of action and are beyond the scope of this review. PWP frequently have deficient levels of vitamin D and vitamin B12, requiring supplementation to achieve levels capable of supporting physiological functions.[55]

Microbiome-modulating interventions are of increasing interest in PD,[56] yet RCTs into gut microbiome-modulating therapies with diet, prebiotics, probiotics, or fecal matter transplants are still sparse and heterogeneous in methods and quality. RCTs into probiotics and prebiotics have shown benefits for gastrointestinal symptoms, including constipation,[57] as well as other non-motor symptoms such as sleep and anxiety.[58] RCTs into fecal matter transplants have overall been safe, and the highest quality ones have shown mixed results for motor function as a primary outcome with both benefit for motor function[59] as well as negative results.[60]

Overall, nutrition and hydration are related to many aspects of PD, but more high-quality, larger, and longer RCTs are urgently needed to provide robust information on strategies to optimize nutrition in PWP. In the meantime, mostly plant-based, Mediterranean-type diets have the best level of evidence for the prevention and management of PD (Fig. 3), and dietary counseling should be tailored to personal preferences, environmental context (eg, cultural cooking traditions), and socioeconomic considerations, following the guidance laid out in the section "Culturally Competent Care."

## Sleep

Sleep dysfunction is common in PWP and may include disturbances of sleep (eg, insomnia, rapid eye movement [REM] sleep behavior disorder), wakefulness (excessive daytime sleepiness), and circadian rhythms.[61] PD-related sleep disruption is multifactorial and can include neurodegeneration in sleep-regulatory pathways, dysregulation of key neurotransmitters and clock genes, effects of motor and non-motor symptoms, drug side effects, and primary sleep disorders. Sleep's role in possibly modulating the glymphatic system, which may clear toxic α-synuclein proteins, and in decreasing neuroinflammation may play a role in the risk and progression of PD, and there has been recent emphasis on the bidirectional relationship between sleep and PD.[62] Poor sleep in PWP may predict depression, cognitive dysfunction, and fatigue[63]; impair driving and activities; predispose one to falls and safety risks; and decrease quality of life for patients and caregivers.[64] In fact, sleep quality of PWP is one of the most powerful predictors of caregivers' quality of life,[65] and the FORTE multicenter study demonstrated that the Psychological Well-being Scale in PWP was significantly correlated with sleep impairment.[66]

Although the Sleep Foundation recommends that adults get at least 7 hours of sleep each night, the optimal length can vary with age, personal needs, and sleep quality.[67] Management of

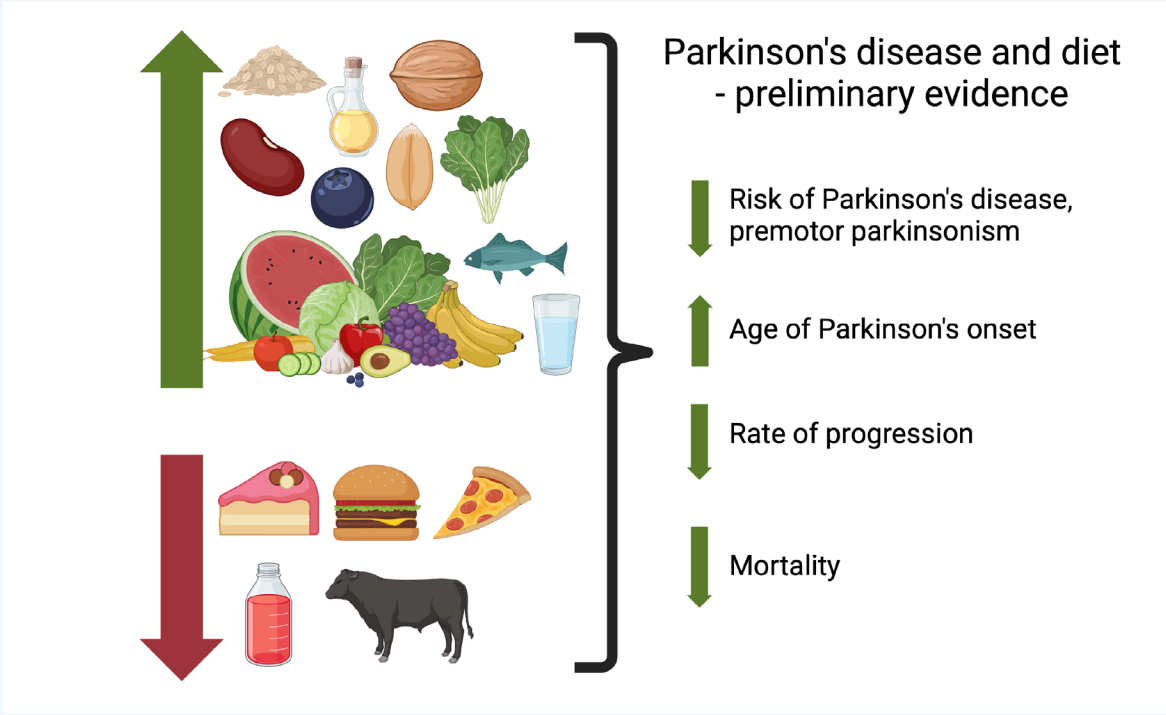


FIG. 3. Parkinson's disease and diet: the evidence base.

sleep disturbances depends on the specific issue.[68] Cognitive behavioral therapy (CBT) for insomnia, which is based on changing dysfunctional behaviors and thinking patterns contributing to sleep disruption, has been successfully used in the general population. Referral to a sleep specialist may be helpful. Addressing sleep hygiene, incorporating regular exercise, modifying diet, and managing stress are essential. Other treatments may include medications (for nighttime PD symptoms) or positive-airway pressure devices (for sleep apnea). Light therapy is a home-based, generally low-cost intervention with minimal side effects. However, studies vary in the device and treatment regimen used, so work remains to understand the optimal light strength and dose to account for mood, sleep, and potentially other PD symptoms.

Exposure to nature and natural light has generally been shown to have beneficial effects on physical and immune health, mental well-being, and stress reduction, especially for older adults and PWP.[69] Natural light exposure also offers significant benefits, such as production of vitamin D, in which many PWP are deficient, as well as supporting circadian rhythm and sleep regulation, which are disrupted in many PWP.

## Mental Health

Mental health is an essential part of any wellness model and is the backbone of the biopsychosocial framework. Key differences distinguish the approach to mental health in the wellness model compared to traditional mental health services: (1) the wellness approach is more proactive. Most traditional mental health systems start with screening for mental disorders but end if nothing is diagnosed. This approach does nothing to mitigate future risk or promote optimal mental health. In progressive neurodegenerative disorders like PD, risk increases with disease duration so repeat screening and proactive strategies to protect and strengthen mental health are essential. (2) Wellness interventions do not stop at resolution of mental disorder symptoms, but are a lifestyle change designed to achieve the highest quality of life possible.[70]

Proactive wellness strategies in PD that reduce the risk and impact of mental disorders include social prescribing, support group membership, behavioral activation (exercise, meditation/mindfulness, relaxation therapies, etc), and annual screening for mental health disorders.[71] Anxiety, depression, apathy, and psychosis are among the most prevalent mental health disorders in PWP, and individuals often have more than one condition at diagnosis. Once identified, optimal treatment requires close coordination between the treating neurologist and psychiatrist (or other mental health care provider), as motor symptoms and dopaminergic therapy often play a central role in the severity and time course of the psychiatric symptoms.[72–74] Effectively treating mental health disorders, such as depression, is crucial for improving daily functioning and quality of life, making it a worthy goal for providers and patients alike.[71]

## Mind–Body Strategies

In PD, perceived psychological stress has been reported to be associated with physiological responses and measurable biological

correlates in cortisol and inflammation, which may impact symptom expression.[75,76] Acute and chronic stress is also associated with a higher risk of developing PD and with exacerbation of motor and non-motor symptoms in PWP.[75–78] Increasing evidence demonstrates the effectiveness of both mind–body and body–mind approaches, including mindfulness, meditation, and yoga, in reducing stress and improving quality of life.[79]

A meta-analysis of studies in PWP found that yoga is effective in promoting changes in motor function (such as gait and balance), anxiety, depression, and quality of life.[31] Yoga poses can be modified to suit various levels of ability. Yoga includes meditation and breath work, which can directly impact the autonomic nervous system, making it an ideal practice for PWP throughout the disease. Chair yoga was found to be efficacious in Hoehn and Yahr stages 1.5 to 3[80]; however, more studies are needed for stages 4 and 5. A recent RCT showed that a mindfulness yoga program significantly reduced psychological distress, improved spiritual well-being, and improved health-related quality of life, while maintaining the same benefits on motor symptoms, than did conventional physical exercises (stretching and resistance training) in individuals with mild-to-moderate PD.[81]

Emerging evidence supports the role of meditative movement in modulating inflammatory pathways relevant to PD. A 2023 meta-analysis found that practices like tai chi, qigong, and yoga significantly lowered levels of interleukin-6 (IL-6), a cytokine associated with neuroinflammation and PD progression.[82] A 2025 PD-specific trial confirmed these effects, showing reduced IL-6 and improved mood and anxiety, highlighting both anti-inflammatory and psychosocial benefits of meditative movement interventions.[83]

Mindfulness-based interventions (MBI) focus on bringing one's attention to the present moment with acceptance of thoughts, feelings, sensations, and emotions in a nonjudgmental way.[84] Mindfulness-based stress reduction (MBSR) is a group training, incorporating yoga, body scan, and mindfulness mediation.[84] MBSR and MBI have been shown to be feasible and effective in reducing neuropsychiatric symptoms and in improving quality of life in PD.[85–87] RCTs evaluating the impact of a MBI for PWP have demonstrated changes in behavioral measures[86–88] and structural brain changes on MRI following the intervention.[89] A recent survey on 5000 people with PD showed a positive relationship between the frequency with which MBI were practiced and the level of improvements of PD symptom severity that was experienced.[90] In general, MBI for PWP aim to encourage individuals to independently self-manage and adapt to the challenges created by their condition.

Although there is good evidence for MBI in PWP, there is still heterogeneity in study designs and methodologies (duration, contact hours with instructor, instructor competence, content, duration of various practices, and treatment delivery type [web-based or in-person]). Additionally, clinical scales may not capture the lived experience of PWP after mindfulness training. Therefore, there is a need to conduct more comprehensive qualitative studies focused on the effect of MBI on patients' daily life.

# Pet-Assisted Therapies

Animal-assisted therapy is a personalized intervention for neurological conditions that involves various animals, such as dogs, cats, and horses[91–94] and has shown statistically significant improvements in mood, cognition, mobility, and quality of life.[95] The Parkinson's Foundation has provided service dogs to assist patients with freezing episodes, initiating movement, preventing falls, and building confidence safely.

# Art and Music

Wellness benefits also may be achieved through engagement with music and art. Studies have demonstrated that music and singing can improve Parkinson's gait speed, stride length, balance, and freezing by optimizing rhythmic cueing.[96–98] Art therapy for PD includes activities like drawing, painting, and clay manipulation. By stimulating both motor skills and visuospatial processing, it addresses often overlooked deficits such as contrast sensitivity, color discrimination, conjugate eye movements, and visual–cognitive skills.[96–98] Art therapy allows patients to express their emotions and to tell their story nonverbally, promoting emotional well-being and enhancing quality of life.[99–101]

## Social Engagement

It is well known that PWP are more susceptible to social isolation and loneliness given their older age, the stigma of chronic illness, and potentially embarrassing symptomatology that may cause social withdrawal.[102] Loneliness itself is a risk factor for developing PD[103] and has been associated with worsened PD severity and quality of life,[102] with worsening of the non-motor features depression, anxiety, apathy, cognition, fatigue, and sleep.[102] There has been a push to increase awareness of the consequences of social isolation and to implement screening questions to identify patients at risk.[104] Clinicians could then prescribe bespoke social connections through potential link workers, social workers, support group leaders, and others.[105]

Three spheres of connection have been identified: (1) intimate/emotional; (2) relational/social; and (3) collective. The first sphere can be achieved with the intimate connection of a marriage or close family members while the second sphere relates to social engagement with close friends. The third sphere can be achieved by belonging to a group with a shared sense of purpose, such as a PD support group, book club, group exercise classes, or religious service. Happily married people can still be lonely if they lack a circle of friends or a community with a shared sense of identity. Therefore, an optimal social prescription incorporates all three spheres of connection, emphasizes quality of contact over quantity, and is used in combination with exercise and other lifestyle measures.[102] Connecting with others through online or in-person forums to share experiences and learn from others can be very therapeutic and is one of the greatest needs that have been identified by PWP.[7]

Cognitive behavioral therapy is another intervention with strong evidence in combating loneliness.[106] Cognitive restructuring as part of CBT allows people to reframe feelings of loneliness, regain self-agency, and target perceptual biases that make them prone to isolation. Telehealth mindfulness-based CBT for depression and anxiety had mixed results in RCTs, but did improve quality of life.[107,108]

Additionally, social support can be used to help adherence to an intervention. Program design elements found to facilitate adherence included: opportunities for social engagement and in-person offerings linked to higher levels of interventionist support, performative feedback, and social reinforcement.[37]

## Meaning in Life/Sense of Purpose

The concept of meaningfulness is central to the wellness model and is fully consonant with the biopsychosocial framework of health. Within this integrative lens, purpose and personal significance constitute core psychological and social determinants that can influence biological trajectories. Meaning and purpose have been connected to improved general health,[109] higher quality of life among older adults[110] and people with chronic conditions,[111] and decreased mortality.[112] In patients with chronic neurologic conditions, meaning is associated with slower rates of physical decline[113]; in Alzheimer's disease and post-stroke patients, it is linked to slower cognitive decline and disease progression[113,114]; and in PWP, it is inversely associated with apathy.[115] Additionally, stressful life events, such as being diagnosed with PD, can be experienced as a threat to one's identity or meaning in life, which may negatively impact positive health behaviors and coping strategies.[116] Despite the research describing the health benefits of meaning in life and maintaining personal identity, interventions to support a sense of meaning and identity in PWP are conspicuously absent.

Even without established interventions, clinicians can encourage their patients to participate in meaningful daily activities. Engagement in meaningful occupation is considered an innate need and an important determinant of health and wellness.[117] PWP may spend significant time in sedentary behaviors or physical inactivity, therefore, jeopardizing individually and culturally meaningful participation in self-care, domestic tasks, work, religious responsibilities, caring roles, hobbies, and leisure activities.[118–121] Both general daily activity counts (non-exercise) and vigorous exercise independently affect health outcomes of people with PD.[120]

To optimize an individual's motivation and ability to maintain, adapt, or reengage in valued daily activities and roles, it is important to address physical, psychosocial, and environmental factors.[121,122] Routinely encouraging individuals to "stand up," "sit less," and "move more" promotes overall health and well-being.[120] However, adaptations to a person's specific context may be needed, and the provision of more personalized advice and strategies from health professionals can significantly improve the effectiveness of these recommendations. The complexities of PD with dementia, mood, apathy, and advancing motor disability must also be factored in.

## Sexual Health

Sexual health is a key aspect of wellness. Although often overlooked clinically, it is a basic right for PWP to have intimate relationships and to participate in pleasurable and safe erotic activities. Most motor and non-motor symptoms in PD negatively affect sexual health, leading to sexual dysfunction among many PWP (between 35% and 75%).[123,124] Issues with erectile dysfunction and impaired mobility may hamper the ability to caress, to move into a sexual position, or to perform rhythmic movement and can result in female sexual pain or inability to reach orgasm.

Sexual health influences quality of life and contributes to wellness in five aspects: (1) physical health—through exercise and cardiac exertion; (2) mental health—touching, caressing, getting aroused, and reaching orgasm all can reduce anxiety and depression; (3) emotional—intimacy enhances emotional closeness, reduces feeling of isolation, and maintains a sense of normalcy; (4) self-esteem and body image—positive intimate experiences can empower PWP and boost their self-esteem to counteract stigma; and (5) coping with relationship challenges—quality of relationship can be enhanced through open communication and optimizing sexual health and intimacy.

Addressing sexual issues early through open discussions with healthcare providers can improve sexual wellness for PWP. Holistic, interdisciplinary, proactive care that starts early in disease are key.[125,126] Clinicians should get educated on how to manage a "sex talk" with both men and women living with PD and intentionally initiate discussions about sexual health concerns because PWP will not share these concerns unless asked.[123,126]

## General Health

The wellness prescription also encompasses critical aspects of overall health, including vision, hearing, gut, bone, and oral health. These areas are essential to maintaining functional independence, preventing complications, and enhancing the quality of life for people with PD.

The "Chaudhuri-Mostyn Dashboard" is a tool that prompts clinicians to inquire about multiple enablers of wellness during clinical visits.[8] The dashboard encompasses five "vitals," including motor symptoms, non-motor symptoms, gut/vision/oral health, bone health, and comorbidity/co-medications. An international survey showed these issues are frequently not discussed in the clinic. The dashboard helps ensure that care is comprehensive, proactive, and tailored to the unique needs of each patient, facilitating a more holistic approach to managing PD. Ideally, this type of dashboard model could be made freely available through

an app that can be accessed on smartphones by both patients and clinicians throughout the world.

## Self-Management

In the context of wellness, self-management plays a crucial role, empowering individuals with PD to take an active role in their own care, enhance their quality of life, and better manage the progression of their condition. Although there is no agreed-on definition of self-management, core self-management skills include problem solving, decision-making, resource utilization, formation of a patient/healthcare provider partnership, and taking action.

Self-management interventions are structured approaches that can be facilitated by healthcare providers, patient support groups, and other organizations. They can range from information and training programs to social, psychological, and lifestyle interventions, such as self-guided physical exercise regimes, training in psychological strategies, social support, and provision of lifestyle advice, and may include modifications of pharmacological and other medical treatments within healthcare-compliant boundaries.[127] The aim is to improve overall physical, cognitive, mental, and social function, adjusting to changes in disease manifestations and personal circumstances, to facilitate choices, and to provide an experience of thriving with self-efficacy and social connection. Several such initiatives are currently underway.[128–132] However, there are a number of potential barriers to adherence to and determinants of effectiveness of self-management, including stigma toward PD (that impacts self-esteem and identity), personal beliefs, attitudes, and expectations, along with the demands of the intervention, worsening disease symptoms, personal/time obligations, accessibility (cost, location, etc.) and safety concerns.[37]

Despite the increasing interest in the topic of self-management in PD, there are insufficient high-quality RCTs to draw firm conclusions on the effectiveness of self-management interventions in this population.

## Culturally Competent Care

The wellness model and biopsychosocial framework approach emphasizes the individual's environment and culture context as key components in treatment, including aspects such as gender,[133] race and ethnicity, language, culture (including family-specific culture and dietary patterns), socioeconomic status, sexual orientation, religious/spiritual affiliation, and disabilities. Individual personality aspects and patient choice also play an important role and are key aspects of personalized medicine delivery.[37] For example, in some cultures or individuals, spirituality is an important aspect of coping with disease.

Finding culturally contextual support mechanisms that enhance and support health and well-being (eg, faith leaders) is part of the wellness approach and has recently been highlighted by WHO. Cultural context could be harnessed to help adherence, for example, a balance and mobility program had a high rate of adherence because of the cultural significance of its Irish dance components.[37] Music that is culturally resonant or family traditions can be a great way to engage the PWP to stay socially engaged.[37]

In understanding the cultural context that matters to the patient, traditional healing systems can be considered, as they are widely used even if their evidence base remains limited. Honoring these traditional systems allows for meeting people with PD where they are, respecting their cultural values, and ensuring more holistic, individualized care (Fig. 4).

## Ayurveda

Ayurveda is an officially recognized system of medicine that originated in South Asia thousands of years ago. It focuses on the principle that optimal health exists when the body, mind, and soul are balanced. Diseased and healthy states are determined by the interplay of three doshas, or constitutions: vata (air and ether), pitta (fire and water), and kapha (water and earth). When features such as body build, speech pattern, digestion, temperature preference, bowel habits, and emotional tendencies are unbalanced, lifestyle changes help restore harmony and promote healing.[134] Ayurvedic traditions including yoga, meditation, and mucuna pruriens (a levodopa-containing tropical legume often used in countries lacking access to carbidopa/levodopa drugs).

## Traditional Chinese Medicine

Traditional Chinese medicine (TCM) is a 2000-year-old East Asian healing tradition based on the concept that qi (life's vital force) and xue (blood) surge through the body. An imbalance in qi is thought to be caused by alterations in yin and yang. Restoring balance requires achieving equilibrium between one's internal organs and the external elements of earth, water, fire, wood, and metal.

TCM treatment uses three main components: acupuncture, tai chi or qigong, and herbal products. Acupuncture involves inserting thin needles into the body following meridians or energy circuits along which qi flows. In PD, RCTs studying acupuncture's effects on motor outcomes have yielded mixed results, but depression, anxiety, sleep, pain, fatigue, dysphagia, and quality of life have improved.[135–137] Trial methodology can be challenging, as occasionally even sham acupuncture can yield positive results. Tai chi is a Chinese martial art that combines deep breathing and disciplined movements to integrate balance, flexibility, and meditative awareness. Tai chi has strong evidence in improving postural stability, functional capacity, and fall frequency in PD.[137] Like tai chi, qigong also incorporates movement, breathing, posture, and meditation to enhance the flow of qi. Benefits in several contributors


FIG. 4. Culturally competent/enabled care (modified from Subramanian et al Touch Neurology)[4].

to sleep quality have been found following qigong intervention.[138]

# Conclusion

We propose a Parkinson's wellness prescription that can be used from diagnosis or possibly even in the prodromal/at-risk stage. This prescription includes some basic guidelines accessible for most PWP globally, even those in regions lacking in-person resources. These guidelines can be improved iteratively as evidence grows. All providers who are in contact with PWP can promote this approach, including primary care physicians and allied health professionals. Being proactive by engaging with the rest of the treatment network while waiting to connect with the movement disorders specialist can empower an individual diagnosed with or suspected to have PD to feel they are already doing something to help themselves, because it can sometimes take several years to be seen by a PD specialist, if one is available at all. Many individuals are being given data on their risk for developing PD through imaging, biopsy biomarkers, and genetic test results, without a sense of what they can do to alter their outcome. This early versus timely diagnosis or prodromal risk assignment can be a source of tremendous anxiety. A basic lifestyle prescription could proactively empower this population.

To most effectively implement this approach, additional resources are needed, including specialized training and education for healthcare providers and the creation of accessible, community-based resources for PWP. In places without in-person resources, virtual visits with neurologists and allied health professionals through telehealth platforms can effectively enhance access while avoiding the need for costly travel. Integrating and advocating for wellness into the care of PWP can involve patient

organizations, with the role each plays differing by country or region.

In PD, wellness is conceived as an integrated mind–body construct that encompasses motor and non-motor symptoms, psychological health, and comprehensive care, all embedded within social and cultural contexts that place the individual, empowered to shape their own lifestyle, at the center of the biopsychosocial model. A patient-centered approach with integrated multidisciplinary providers communicating well and supporting and engaging the patient and their family is aspirational.

# Author Roles

(1) Research project: A. Conception, B. Organization, C. Execution; (2) Statistical Analysis: A. Design, B. Execution, C. Review and Critique; (3) Manuscript Preparation: A. Writing of the First Draft, B. Review and Critique

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Data sharing not applicable to this article as no datasets were generated or analysed during the current study.■

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# APPENDIX

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