Review Article

Parkinson's Disease and Its Impact on Quality of Life

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ABSTRACT

Background: Parkinson's disease (PD) is a progressive neurodegenerative disorder which significantly impacts on the quality of life (QoL) of affected individuals. All the components of QoL (physical functioning, psychosocial, cognitive, and environmental) can be affected by the symptoms of Parkinson's disease, side effects of treatment, and sociocultural factors.
Methodology: This study is a literature review of the quality of life in patients with Parkinson's disease. Excerpta Medica database (EMBASE), Medical Literature Analysis and Retrieval System Online (MEDLINE), Public Medline (PUBMED), Health Inter-Network Access to Research Initiative (HINARI) and Google Scholar databases were searched and scholarly articles on Parkinson's disease and QoL were reviewed for the purpose of the study.
Results: Parkinson's disease is primarily caused by the loss of dopaminergic neurons in the substantia nigra which result in motor and non-motor symptoms (such as cognitive function) with profound negative impact on the QoL. Also, with progression of the disease, and worsening of symptoms, an attendant decline has been observed in the QoL of patients with Parkinson's disease. Family and social support is crucial in the management of the condition.
Conclusion: PD significantly impacts on the QoL of patients and should be assessed for. Recognition of challenges in the lives of patients with PD is important in their management in addition to drug therapy. Family and social support including occupational and financial support are relevant in management.

Keywords: Neurodegenerative disorder, Parkinson's Disease, Quality of Life, Cognition, Physical Functioning.

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INTRODUCTION

Parkinson's disease (PD) is a progressive neurodegenerative disorder with significant impacts on the quality of life (QoL) of affected individuals. All the components of QoL (physical, psychological, social, and environmental) can be affected by the symptoms of Parkinson's disease, side effects of treatment, and sociocultural factors. Parkinson's disease is primarily caused by the loss of dopaminergic neurons in the substantia nigra which result in motor and non-motor symptoms with profound negative impact on the QoL.[1-4] PD has a prevalence of 1-2 per 1,000 with increment in age above 60 years reaching about 4% in the elderly population.[2-4] PD occurs in the young, though rare, and may be familial Affecting multiple family members in which case it's usually associated with genetic predisposition.[5-7] The condition is characterized by motor dysfunctions such as resting

tremors, rigidity, bradykinesia, gait freezing and postural reflex abnormalities as well as non-motor dysfunction such as cognitive decline, depression, anxiety, sleep disturbance and fatigue which impact negatively on the QoL.[1,2,3,8]. The objective of the study was to review the range of factors that negatively impact the quality of life of patients with Parkinson's disease. A narrative literature review was adopted for the purpose of this study.

DISCUSSION

For research purposes there are validated tools for use in objectively measuring the QoL in Parkinson's disease. These include the Parkinson's Disease Questionnaire (PDQ-39)[10] and/ or its shorter version (PDQ-8),[11] which assess domains such as mobility, activities of daily living (ADL), emotional well-being, stigma, social support, cognition, communication, and bodily discomfort.[10-12]

Physical and functional impacts on quality of life

Parkinson's Disease (PD) significantly impacts an individual's quality of life through a range of physical and functional challenges. The degeneration of dopaminergic neurons in the substantia nigra, a hallmark of PD, leads to a variety of motor symptoms that directly impair daily activities and overall well-being[13]. These physical manifestations include bradykinesia (slowness of movement), rigidity (stiffness), tremor, and postural instability, which collectively hinder mobility, balance, and coordination[13]. Consequently, individuals with PD often experience difficulties with fundamental tasks such as walking, dressing, eating, and writing, leading to a loss of independence and increased reliance on caregivers. Beyond motor symptoms, PD also presents significant non-motor impacts, which can be equally or even more debilitating. These include fatigue, pain, sleep disturbances, autonomic dysfunction (e.g., constipation, orthostatic hypotension), and neuropsychiatric symptoms such as depression, anxiety, and cognitive impairment.[14] The combination of these physical and functional limitations, coupled with the progressive nature of the disease, can severely diminish an individual's ability to participate in social activities, maintain employment, and engage in hobbies, ultimately leading to a reduced quality of life and increased social isolation.[14]

Cognitive impairment

About 20–50% of patients with Parkinson's develop Mild Cognitive Impairment (MCI), progressing to dementia in 30–80% of cases over time, leading to a sharp decline in judgment, memory, and executive function hence reducing QoL.[15,19] Studies have shown that cognitive dysfunction is a common non-motor symptom in individuals with PD, affecting a substantial number of patients, including Nigerians with the disease.[15,16,18] These cognitive changes can manifest as difficulties in attention, executive function (such as planning and problem-solving), processing speed, and visuospatial abilities.[15,19] For instance, the Community Screening Instrument for Dementia (CSID) has been utilized to assess the frequency, pattern, and predictors of cognitive impairments in PD patients, highlighting the diverse nature of these deficits.[15] Furthermore, tools like the Six-item Cognitive Impairment Test (6CIT) have been validated as screening tools for cognitive dysfunction, emphasizing the need for effective assessment in this population.[18] The progression of cognitive decline in PD can have a profound effect on the quality of life for patients and their caregivers, often imposing a greater burden than the motor symptoms of the disease.[19] This underscores the importance of understanding the multifaceted impact of Parkinson's disease on cognitive function for comprehensive patient care.

Sleep disturbances

Sleep disturbances are a pervasive and significant non-motor symptom in Parkinson's disease (PD), often having a considerable negative impact on patients' quality of life .[20] These disturbances are complex, arising from a combination of factors including the neuropathophysiological of PD itself, primary sleep disorders, co-occurring medical or psychiatric conditions, and the effects of anti-Parkinson's medications.[20] Common manifestations of sleep dysfunction in PD patients include insomnia, characterized by difficulty initiating or maintaining sleep, and excessive daytime sleepiness.[20] Other sleep issues frequently observed are sleep fragmentation, restless legs syndrome, and REM sleep behaviour disorder, where individuals physically act out their dreams.[20] The evaluation of these disturbances is crucial for effective management, though treatment strategies are still an area of ongoing research, often drawing on clinical experience and studies from

other geriatric populations.[20] Addressing sleep problems in PD is vital for improving overall well-being and mitigating the substantial burden they place on both patients and their caregivers.

Autonomic dysfunction

With involvement of the Autonomic nervous system, patient may develop symptoms like constipation, urinary incontinence, sialorrhea, orthostatic hypotension, and sexual dysfunction. The article "Autonomic Dysfunction" by Sánchez-Manso *et al.* makes a brief mention stating that "Other common manifestations are related to postural tachycardia syndrome (POTS) or changes seen with Parkinson disease and other parkinsonisms".[21] This indicates that autonomic dysfunction, particularly issues like POTS or other general autonomic changes, are observed in individuals with Parkinson's disease, all of which can impact negatively on the QoL.[21]

Depression and anxiety

The sad reality of living with a chronic progressive condition and the hormonal imbalance resulting from Parkinson's disease significantly increase the risk of Mental health disorders like depression and anxiety, not only does it affect the motor system, but significantly because of the high prevalence of non-motor symptoms such as depression and anxiety. As highlighted by Al-Khammash *et al*., these neuropsychiatric issues are extremely common in individuals with PD and can severely diminish their overall well-being.[1] A systematic review and meta-analysis by Zhao *et al.* further reinforces that depression and anxiety are prevalent and substantially contribute to a poorer quality of life in PD patients.[2] Garcia-Ruiz *et al*. emphasize that these mood disorders are not merely secondary reactions to the chronic illness but are integral aspects of the disease pathophysiology itself.[8] Therefore, effective management of depression and anxiety is a critical, yet often overlooked, component of holistic care for individuals living with Parkinson's disease, recognizing their significant impact on patient well-being beyond motor manifestations.[1,2,3,8]

Social and relational impacts

Overtime, patients with Parkinson's disease become dependent on relatives and caregivers both for their daily activities and financial obligations, often extending beyond the direct patient to their family and caregivers. As highlighted by Ogbimi *et al.* in their case report on Familial Early-Onset Parkinsonism, the socioeconomic impact of the disease is substantial, affecting the patient's independence and placing a considerable burden on caregivers[5]. The need for continuous care and the increasing disability associated with PD necessitate a significant adjustment in close relationships, leading to changes in family dynamics and roles. While Mehanna *et al*. focus on age cutoffs for Early Onset Parkinson's Disease,[6] implicitly, the earlier onset means a longer duration of impact on social and relational aspects, affecting careers, family planning, and peer relationships over a more extended period. The challenges posed by PD, including its motor and non-motor symptoms, can lead to social withdrawal, reduced participation in activities, and strains on interpersonal connections, underscoring the comprehensive social and relational support required for patients and their support networks.

Social isolation

Parkinson's disease (PD) has a profound impact on social functioning, frequently leading to social isolation and withdrawal, which can significantly diminish a patient's quality of life.[22] This social withdrawal can be both voluntary and involuntary, often stemming from the interplay of various physical, cognitive, and psychiatric symptoms associated with PD, as well as the perceived stigma of the disease.[22] Motor symptoms like tremors, gait disturbances, and speech difficulties can make social interactions challenging and embarrassing, leading individuals to avoid social situations. Furthermore, non-motor symptoms such as depression, anxiety, and fatigue contribute significantly to reduced social engagement.[22] While Ogbimi *et al.* discuss familial early-onset parkinsonism and Mehanna *et al*. focus on age cutoffs for early-onset PD, Ahn *et al*. specifically highlight that individuals with PD may reduce their social activities due to these complex and debilitating effects, emphasizing the critical need to address social isolation in comprehensive PD care.[5,6,22]

Communication difficulties

As Parkinson's disease progresses, patient may develop hypophonia or slurring of speech which can hinder communication and contribute to loneliness and social isolation. As discussed by Prenger *et al*., individuals with PD

often experience disruptions in their ability to produce emotional facial expressions (known as facial masking) and emotional speech (dysarthria).[14] Beyond production, they also struggle with recognizing the verbal and nonverbal emotional cues of others. These impairments can lead to severe negative social consequences, including feelings of stigma, dehumanization, and loneliness. The communication challenges extend to difficulties in modulating facial expressions based on social context, impacting the ability to maintain positive social relationships. Ultimately, these "social symptoms" of PD, encompassing various communicative changes, can cause major disruptions to social functioning and significantly reduce a patient's quality of life, sometimes even more so than the more recognized motor or cognitive symptoms.[14]

Financial strain

The treatment of Parkinson's disease can be burdensome as it places significant financial costs on patients and relatives due to medications, physiotherapy and occupational therapy, and other indirect cost of the disease, primarily due to the chronic and progressive nature of the condition. Ogbimi *et al*., in their case report on familial early-onset parkinsonism, touch upon the "socioeconomic impact" of the disease, which inherently includes financial considerations, early onset can lead to a longer duration of disease, potentially increasing lifetime care costs and impacting earning potential.[5] Furthermore, while Ahn *et al*. primarily review social withdrawal in PD, they highlight that social withdrawal can be associated with various factors including physical, cognitive, and psychiatric symptoms.[22] These symptoms, in turn, can affect a patient's ability to maintain employment or engage in activities that contribute to household income, thereby indirectly leading to financial strain. The comprehensive burden of PD, encompassing both direct medical expenses and indirect costs such as lost wages and caregiver burden, inevitably results in considerable financial hardship for those affected.[5,22]

Treatment-related impacts on quality of life

While treatments can improve symptoms, the side effects of some of the medications can be challenging and can potentially reduce QoL. Levodopa is the gold standard for symptomatic treatment of PD, and it is highly effective in improving motor symptoms. This improvement in motor function can lead to a better quality of life in the short term. However, the long-term use of levodopa is associated with several complications that can adversely affect quality of life. These include the development of motor fluctuations, such as "wearing off" effects where the medication's benefits diminish before the next dose, and dyskinesias, which are involuntary, jerky movements.[24] These side effects can be quite disabling and significantly impact a patient's daily life and overall well-being. Additionally, common adverse effects of levodopa include nausea, dizziness, headache, and somnolence. In older patients, more severe central nervous system effects such as confusion, hallucinations, delusions, psychosis, and agitation can occur.[24] Abrupt withdrawal or dose reduction of levodopa also carries a risk of serious complications like parkinsonism hyperpyrexia syndrome.[24]

CONCLUSION

PD is a chronic neurodegenerative disease with significant impacts on the QoL of patients. The negative impact is multi-systemic as well as physical, and psychosocial impairment. While the physical symptoms encompass mostly the motor manifestations, studies have established that cognitive impairment is the most common non-motor manifestation. Recognition of challenges in the lives of patients with PD which impact on their QoL is important in their management in addition to drug therapy. Family and social support including occupational and financial support is relevant in management.

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