

## Integrated Care for Aged Parkinson's Disease Patient: A Case Study

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### Abstract

Few research articles emphasizing on integrated care in Parkinson's disease with Malaysia context. Most of the researchers are focusing on the non-motor symptoms in integrated care. In this report, we were integrating the holistic treatment with a case study. Case Report: Mr. J, who had a known history of Parkinson's disease with severe motor symptoms. He showed tremendous improvement after integrated treatment was applied. More analytic research is needed in future to provide validation. Physiotherapy approaches: Balance training plays a vital role in reducing the risk of falls in individuals with PD. Evidence suggests that group exercises targeting mobility, coordination, and social interaction can positively impact individuals with PD. Stationary cycling, or pedaling, can have a positive impact on PD symptoms. Relaxation techniques, such as deep breathing, progressive muscle relaxation, and guided imagery have a high impact on patients. Evidence-based exercises targeting neck range of motion, neck muscle strengthening, and promotion of good posture. Conclusion: On the progression of the physiotherapy approaches and integrated care, Mr. J's performance in activities in daily living improved and he gained his confidence and independence.

### Keywords

Parkinson's disease, Aged, Integrated Care.

### Introduction

"Parkinson's disease" (PD) is a neurological disorder with clinical symptoms of rigidity, postural instability, bradykinesia, rest tremor, and a wide range of additional motor and non-motor symptoms. Age-related disorders like Parkinson disease are getting more attention from the scientific community as the world's population ages and lives longer. The fastest growing of these neurological illnesses, Parkinson disease, is currently the main cause of disability in the world (Jankovic and Tan, 2020). PD is still only well managed with symptomatic medications. From the

**Submission:** 18 August 2023; **Acceptance:** 13 September 2023



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premotor through the advanced disease stages, it is well understood that both motor and a wide range of non-motor symptoms contribute to the overall difficulties in Parkinson's disease.

This clinical representation of both motor and non-motor symptoms needs a personalised, comprehensive treatment strategy. This includes medical management (refined pharmacotherapy, deep brain stimulation) and non-pharmacological measures such as physiotherapy, occupational therapy, speech therapy, or psychotherapy, as well as education and support, all with the goal of improving patients' and carers' health-related quality of life (HRQoL) (Rajan et al., 2020). While ample evidence supports the notion that both age and the duration of PD, gauged in years post-onset of motor symptoms, influence its clinical manifestation, the underlying mechanisms and their repercussions remained shrouded in uncertainty. Moreover, an older age is linked to a heightened burden on non – Parkinson's disease-specific pathological processes, their correlation does not necessarily extend to the age at which PD first manifests (Raket et al., 2022).

Integrated care in management of PD is an approach that requires involvement of healthcare practitioners in treating PD patient holistically as whole by incorporating patient centred care. It is crucial for regular communication and collaboration between interdisciplinary teams to improve patient's well-being by adopting biopsychosocial model of care. Biopsychosocial model of Care (BPS) incorporates the thoughts, beliefs and behavior, and social factors interact with biological processes to understand and manage illness, impairment, and disability (Turabian, 2018).

## **Case Report**

The case report represents a comprehensive integrated care and management for Mr. J, a 70-year-old, retired Chinese male diagnosed with Parkinson's disease (PD) for the past 20 years, in addition to cervical spondylosis at the spine C5/6 level. The treatment plan focuses on improving balance and stability, addressing anxiety and depression symptoms, reducing rigidity associated with PD, managing cervical spondylosis symptoms, and enhancing independence in daily activities. Had reoccurrence of falls several times, and not given an importance by patient himself. Occasionally had freezing episodes while walking and shows mood swings on treating therapist and having difficulty to articulate his speech. He tends to be aggressive at times, and claims to stop taking Levodopa, past few years due to change of his behavior. The fear of falling was noticed when he had freezing of gait. Sometimes, he needs assistance with ambulation. Previously, he worked in a steel factory for the past 30 years.

## **Physiotherapy Treatments**

### ***Balance Training***

Balance training plays a vital role in reducing the risk of falls in individuals with PD. The physiotherapist assessed Mr. J and designed an individualized program to target specific areas of concern. Evidence-based exercises such as weight shifting, standing on foam pads, and challenging stability limits are utilized to improve stability and reduce falls risk. Additionally, dual-task

training, which involves performing activities while maintaining balance, helps enhance Mr. J's ability to perform daily activities safely.

### ***Group Therapy***

Group therapy sessions have been incorporated into the treatment plan to provide a supportive environment for Mr. J to engage in exercises, enhance social interaction, and learn coping strategies. Evidence suggests that group exercises targeting mobility, coordination, and social interaction can positively impact individuals with PD. Relaxation exercises, including deep breathing and mindfulness techniques, are integrated into group sessions to manage anxiety and stress. According to Kalyani et al., (2019) dance therapy as part of group therapy improves cognitive function and dual- task performance in individuals with PD.

### ***Pedaling***

Evidence indicates that stationary cycling, or pedaling, can have a positive impact on PD symptoms. The physiotherapist acknowledges the benefits of regular pedaling exercises for Mr. J, including improved cardiovascular fitness, coordination, and mental well-being. Based on exercises prescription the intensity and duration of pedaling sessions attain optimal benefits based on his abilities. Regular adherence to this exercise is encouraged to support symptom management and overall well-being. Ridgel et al. (2012) examined the effects of active-assisted cycling on tremor and bradykinesia in PD patients with high-cadence cycling improved tremor and bradykinesia, suggesting that active-assisted cycling may be beneficial for motor function in PD. Furthermore, pedaling with a cognitive task may be beneficial for training PD patients for dual-task challenges that improve their cognitive, balance and overall physical function (Pereira Pedro KP, et al., 2022).

### ***Relaxation Exercises***

Relaxation techniques, such as deep breathing, progressive muscle relaxation, and guided imagery, are taught to Mr. J. These evidence-based techniques are effective in managing anxiety, reducing muscle tension, and improving overall mood. Regular practice of these exercises, both during therapy sessions and at home, enhances their effectiveness in promoting relaxation and well-being. The mindfulness meditation based complex exercise program (MMBCEP) has been proven to reduce depression and anxiety, improve cognitive and motor function in PD patients (Son & Choi, 2018).

### ***Cervical Spondylosis Management***

The treatment plan includes a thorough assessment of Mr. J's cervical spine mobility, strength, and posture. Based on the assessment findings, an individualized exercise program is developed to address cervical spondylosis symptoms. Evidence-based exercises targeting neck range of motion, neck muscle strengthening, and promotion of good posture. Additionally, educating Mr. J about ergonomic modifications at home, especially when he is sitting on couch and watching television, where postural control is neglected, and he adapts his posture in slouched posture. The ergonomic education helps minimize strain on the cervical spine.

### ***Progress Monitoring and Follow-up***

Regular progress monitoring and follow-up for 3 sessions per week and treatment duration for 1 hour 30 minutes, intervals between each physiotherapy intervention are essential for tracking Mr. J's improvements and addressing any concerns or challenges. The patient actively performs self-daily taught exercises including pedaling with stationary ergometer with supervision of his son after work for at least 30 minutes. The physiotherapist regularly assesses his balance, gait, tremor, and overall functional status. Evaluation of changes in anxiety, depression, and behavioral symptoms is also important, and vital signs measured before and after physical exercises. Collaboration with the healthcare team ensures a comprehensive and coordinated approach to Mr. J's care, optimizing treatment outcomes. Educating and supporting Mr. J's son in managing his father's condition at home contributes to the overall effectiveness of the treatment plan.

### **Discussion**

Mr. J had complicated-stage idiopathic Parkinson's Disease, present with Hoehn and Yahr Scale Stage 3, which is bilateral disease with moderate disability with impaired balance but able to walk independently. Early assessment found mild depression, decreased confidence in independent movement due to 3 months old falls, but reasonable strength and range of motion. His dropped head posture lead imbalance of upper back and neck musculature which contribute to cervical spondylosis (Tt et al., 2020). It is evident that he presents with Camptocormia, a stooped posture with flexion of the thoracolumbar spine often exaggerated with standing and disappear with supine lying (Lokk & Delbari, 2012). His treatment strategy intended to retain his function while boosting his confidence, social support, participation in community activities, strength, balance, and range of motion. The prolonged period of working in steel factory and exposure to metal particles for the past 30 years lead to development of free radicals and eventually, decrease antioxidants levels at substantia nigra (Pyatha et al., 2022).

The therapy plan includes balance training, group therapy, pedaling and relaxation exercises. Pain arises from cervical spondylosis was managed conservatively by educating neck exercises and pain management by using electro modalities and gentle stretching and effleurage at upper back region. Apart from that, weak balance and a slow Timed Up and Go test (TUG) time indicate Mr. J at high risk of falling. The freezing of gait and orthostatic hypotension also contribute to falls. His lack of confidence and fear of fall was a behavioral risk factors for falls that need to be addressed by treating healthcare practitioners and his family member.

After 16 weeks, the treatment interventions that address motor impairment, Mr. J underwent an interdisciplinary care approach at rehabilitation center near his vicinity. The objective now is maintenance, with periodic re-evaluation and therapy adjustments. Despite his complicated PD, evidence recommends interdisciplinary team engagement to promote communication between healthcare professionals and patients. This team may also comprise speech-language therapy, occupational therapy, social work, psychologist, and specialist nursing. Communication and swallowing issues addressed by a speech-language pathologist. Occupational therapy promotes ADLs and safer surroundings (eg. equipment). Finally, a psychologist can help

with coping skills and depressed symptoms. A social worker and a specialist nurse were not engaged in this case, although they may be vital for aging Parkinson's patient. A psychologist's engagement in Mr. J's therapy is critical due to his widespread depression symptoms. Each interdisciplinary team member worked together with patient to improve his wellbeing with integrated approaches with their personal goals. Aside from this, the strength training component of physiotherapy intervention has improved Mr. J's quality of life and confidence, and independence significantly. The improvement in motor symptoms encourages him to participate actively in social engagements and eases his depression symptoms.

### **Patient Perspective Informed Consent**

Mr. J cooperated well throughout his treatment sessions and followed the command accordingly. The informed consent gained from the patient.

### **Conclusion**

On the progression from the physiotherapy approaches and integrated care, Mr. J's performance in ADL's was improved and he gain his confidence, able to recover himself from non – motor symptoms such as depression and fear of falling. The PD sufferers require moderate palliative needs, but the services unavailable to most patients (Bloem et al., 2020). In Malaysia, palliative care services are limited due to grossly inadequate serving mainly in urban areas (Sivalingam *et al.*, 2021). In conclusion, there is a need for an implementation of palliative care services for aged neurodegenerative movement disorder individuals to benefits from integrated care to improve quality of life and reduce the burden of family member in term of financial and emotionally, managing aged PD individuals.

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