Journal of
Modern Rehabilitation

July 2023, Volume 17, Number 3

Case Report

Effectiveness of Cognitive Orientation to Daily Occupational Performance in Parkinson's Disease: A Case Report

Atefeh Taheri[1], Seyedeh Tahmineh Mousavi[1*], Hamid Dalvand[1], Amir Almasi-Hashiani[2]

1. Department of Occupational Therapy, School of Rehabilitation, Tehran University of Medical Sciences, Tehran, Iran.
2. Department of Epidemiology, School of Health, Arak University of Medical Sciences, Arak, Iran.

Use your device to scan and read the article online

Citation: Taheri A, Mousavi ST, Dalvand H, Almasi-Hashiani A. Effectiveness of Cognitive Orientation to Daily Occupational Performance in Parkinson's Disease: A Case Report. Journal of Modern Rehabilitation. 2023; 17(3):343-348.

https://doi.org/10.18502/jmr.v17i3.13075

Article info:
Received: 15 Sep 2021
Accepted: 28 Nov 2021
Available Online: 01 Jul 2023

Keywords:
Cognitive orientation to daily occupational performance (CO-OP); Parkinson's disease

ABSTRACT

Introduction: Parkinson's disease is a chronic progressive neurodegenerative disorder causing impaired motor function and various non-motor symptoms. One of the most common problems in Parkinson's patients is occupational performance problems. The cognitive orientation to daily occupational performance (CO-OP) is one of the client-centered and problem-solving approaches in occupational therapy evaluations and interventions. This study aims to determine the effectiveness of the CO-OP approach on perceived satisfaction and occupational performance in a 62-year-old woman with Parkinson's disease.

Case Description: The client was a 62-year-old woman with moderate cognitive impairment, stage 3 on the Hoehn and Yahr scale, and signs of depression. In our case study, the outcome measures were the Canadian occupational performance measure (COPM), functional independence measure (FIM), Montreal cognitive assessment (MOCA), and Beck depression inventory-II (BDI-II). We administered the CO-OP intervention for six weeks. Sessions were performed twice a week for one hour per session.

Results: The results indicate that the CO-OP intervention improves the client's satisfaction, occupational performance, and functional independence. Although the results from this single case cannot be generalized, the findings suggest that CO-OP intervention may help improve satisfaction and occupational performance in adults with Parkinson's disease. Further investigation is necessary.

Conclusion: These results suggest that CO-OP can be a valuable occupational therapy interventions for individuals with Parkinson's disease. We recommend that occupational therapists consider using this approach in their practice to improve the occupational performance of their patients with Parkinson's disease.

*** Corresponding Author:**
Seyedeh Tahmineh Mousavi, Assistant Professor.
Address: *Department of Occupational Therapy, School of Rehabilitation, Tehran University of Medical Sciences, Tehran, Iran.*
Tel: *+98 (912) 4130454*
E-mail: *tmousavi@sina.tums.ac.ir*

Copyright © 2023 Tehran University of Medical Sciences. Published by Tehran University of Medical Sciences
This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International license(https://creativecommons.org/licenses/by-nc/4.0/).
Noncommercial uses of the work are permitted, provided the original work is properly cited.

1. Introduction

Parkinson's disease (PD) is a chronic, progressive neurodegenerative disease characterized by motor and non-motor symptoms. The disease is more common in older persons and significantly affects patients, families, and caregivers [1]. Parkinson's disease is the second most common neurodegenerative disease, affecting approximately more than 5 million worldwide [2]. In Iran, there are between 150,000 and 160,000 patients with Parkinson's disease; approximately 91 out of 90,000 people are affected by this disease [3]. This disease is characterized by the loss of dopaminergic neurons in the substantianigra (SN) [4]. The most common features of PD are neurological motor symptoms [5, 6]. However, non-motor features are also common and contribute significantly to the overall effect of PD [7]. With the progression of both motor and non-motor symptoms, the disease is associated with substantial consequences, such as the decreased ability to perform activities of daily livings (ADLs) and quality of life (QoL) [8]. The problems in performing ADLs tasks are prevalent in individuals with PD. The ability to perform ADLs is crucial to maintain a good QoL [9]. ADLs impairment has been shown closely linked to health-related QoL issues [10]. Although growing evidence shows supporting rehabilitation interventions for persons with PD, little research has been published on the effectiveness of cognitive rehabilitation on occupational performance [11]. A few research has been conducted on the application of cognitive orientation to daily occupational performance (CO-OP) in adults with PD [11]. PD clients have problems with occupational performance [12]. CO-OP intervention is a cognitive-based, client-centered, and performance-based approach developed by Polatajko and colleagues in the early 1990s [13]. The effectiveness of CO-OP has been reported in children [14, 15]. The literature on the use of the CO-OP in adult populations has demonstrated that the CO-OP can be a valuable intervention for achieving self-selected occupational performance goals [16]. These findings support the potential of CO-OP to use in other disorders, such as PD. This study aimed to describe the effectiveness of CO-OP intervention in a single-case study with PD and to inform future research by providing a description of the process and outcomes.

2. Case Description

Ms. M, a 62-year-old woman, lived in a house with her husband, son, and a maid. She had a high school diploma. She complained of small hand tremors, stiffness in her body, and a few functional limitations (decreased handwriting size). In July 2014, she was referred to a neurologist; after diagnostic tests, she was diagnosed with early-stage idiopathic Parkinson's disease. Her initial assessments indicated that she had moderate cognitive impairment, stage 3 on the Hoehn and Yahr scale, decreased mobility (using a cane for ambulation), and signs of depression based on Beck depression inventory-II test results. She avoided seeing her friends and spent most of her time at home. She hired a full-time maid to do her housework as she was not independent with ADLs. She was taken Asentra-100 mg for her depression for two years but was not currently used during the intervention, Norstor-250 mg was taken every 3 hours and no changes were reported in her medicine. She did not use other interventions simultaneously with our intervention.

In our case study, the outcome measures were the Canadian occupational performance measure (COPM) to assess client outcomes in the areas of self-care, productivity, and leisure. COPM is designed to help occupational therapists set occupational performance goals [17] and functional independence measures (FIM) to determine independence for self-care. FIM is one of the most widely used measurements in rehabilitation to assess dependence and independence in performing ADL tasks [18]. Montreal cognitive assessment (MOCA) to assess different cognitive domains was developed as a tool to screen patients who present with mild cognitive complaints [19] and the Beck depression inventory-II (BDI-II) to assess depression change. The BDI-II measures the presence and severity of depression in psychiatric clients and other populations [20]. We administered the CO-OP intervention for 6 weeks, twice a week, and for one hour for each session. All intervention sessions were conducted by a trained occupational therapist at the client's home.

Ms. M attended two sessions before the intervention. The first session lasted one hour and was used to orient the client with the CO-OP approach, check her prerequisites, and perform the FIM, MOCA, and BDI-II tests. In the second session, Ms. M and the therapist selected three goals using COPM and rated the importance and performance of each of the three goals as the main intervention targets. The participant was taught the CO-OP approach and the global cognitive strategy (goal–plan–do–check) in the next step. The participant first identified a goal, then was guided by a therapist to discover a plan to attain it, executed it, and finally checked if it worked. Only the first goal is discussed here.

Table 1. Baseline, post-intervention, and follow-up scores for self-selected goals

Goals	Baseline		Post-intervention		Follow Up	
	COPM-P	COPM-S	COPM-P	COPM-S	COPM-P	COPM-S
Wearing scarf	5	5	7	7	6	6
Working with phone	3	3	5	5	4	4
Cooking	2	2	7	8	3	3

Abbreviations: COPM: Canadian occupational performance measure; COPM-P: COPM performance; COPM-S: COPM satisfaction.

Table 2. Baseline, post-intervention, and follow-up scores for FIM, MOCA, and BDI-II

Instrument	Baseline	Post-intervention	Follow-up
FIM	90	105	104
MOCA	18	18	18
BDI-II	42	40	42

Abbreviations: FIM: Functional independence measure; MOCA: Montreal cognitive assessment; BDI-II: Beck depression inventory-II.

The vital goals identified by the participant include wearing a scarf, using the phone, and cooking. To address the first goal, she first chose a scarf among her favorites. She put the scarf on her tight to wear. The dynamic performance analysis (DPA) revealed breakdowns, including not setting up the scarf properly, difficulty finding behind and in front of the scarf, inability to find the right two corners to fold the scarf, difficulty wearing the scarf, folding the scarf behind, inability to tie the scarf, excess time to complete the task, tiredness while doing work, and need to repeat to find answers of questions. The domain-specific strategies identified by the participant during the treatment of this goal include spreading the scarf appropriately, the side of the scarf that is more colorful is the front side of the scarf, selecting the two opposite corners, raising the shoulder too much, using a mirror to check performance, use a pin instead of a tying knot, take a break when frustrated and write strategies as reminders. Finally, the participant acquired the first goal. In the same way, she successfully achieved the other two goals. The participant completed 12 CO-OP sessions. After the intervention, the pre-test measures were reassessed by an occupational therapist with a bachelor's degree and 5 years of experience. Follow-up testing was performed after one month. Table 1 presents the baseline, post-intervention, and follow-up COPM scores for each of her goals. The client showed improvement in satisfaction and her performance on three goals immediately after the intervention. However, no change was observed in the follow-up phase [21]. Table 2 presents baseline, post-intervention, and follow-up scores for FIM, MOCA, and BDI-II. The FIM scores were changed from 90 to 105 after intervention and 104 in the follow-up. At the beginning of the study, FIM total score was 90, indicating that the participant required minimal assistance with most basic ADLs and physical assistance to perform selected ADLs tasks. At the end of the study, FIM total score was 105, which showed that the participant required supervision on her basic ADLs tasks and only verbal support to perform selected ADLs tasks. Her BDI-II score was 42 at baseline, 40 after the intervention, and 42 in the follow-up. No changes were reported for MOCA scores.

3. Discussion

The present study was conducted to identify the effectiveness of a client-centered and an occupational-based intervention; namely CO-OP, in a client with PD. It is possible to use a single case study to describe this approach in detail. Ms. M reported improvements in three goals on both performance and performance satisfaction. Changes in FIM scores similarly showed improvements in functional independence. These findings support earlier research with other populations suggesting the CO-OP may improve performance on client-chosen

goals [16, 22, 23]. Polatajko and colleagues (2011) conducted two case studies to investigate the use of the CO-OP approach in adults after a stroke. The results showed that this approach leads to improvement in daily occupational performance in people with stroke and recommends further research in this area [22]. Akbarfahimi and colleagues (2019) conducted a review study. This study was conducted to determine the studies that used the CO-OP approach in adults with neurological conditions. The results of this study showed that this approach effectively improved the performance and satisfaction of participants. It was suggested that this study be conducted in other groups such as multiple sclerosis (MS) and Parkinson's disease [16].

And in another case study that investigated the effect of CO-OP on ADL, CO-OP improved all ADL's measures [24]. In this present study, participant scores in FIM and COPM showed improvement. It may be due to the nature of CO-OP, a performance-based and client-centered intervention that encourages the client's involvement [13, 25]. The other reason may be the efficacy of the in-home environment as our intervention took place in a client's home.

No change was observed in the follow-up phase on performance and satisfaction. One potential explanation for this lack of efficacy may be the presence of depression which is described as one of the common neuropsychiatric features in PD is depression. Research shows that depression in PD adversely impacts ADLs [26]. Ms. M may not be involved in different activities to fully process her learning between post and follow-up testing. And it is possible the participant was more aware of her deficits, resulting in lower scores in the follow-up phase on performance and satisfaction. For the participant, MOCA did not improve after CO-OP. This may be due to depression. Some research suggests that depression may be associated with cognitive dysfunction and affect the onset and course of cognitive dysfunction. Several studies have shown that depressive symptoms precede cognitive dysfunction [27, 28]. Further research is needed to investigate the impact of depression and goal achievement on the CO-OP approach.

The primary limitation of this study is a generalization. The results of the study cannot be generalized to a larger population. A second notable limitation is related to researcher bias and her opinions that influenced the study results. Another limitation is the absence of a control group to provide a standard reference for comparing our results. It is suggested to repeat the study with a larger sample size.

4. Conclusion

This study showed that CO-OP may help improve occupational performance perception, perceived satisfaction, and ADLs. In this client, further study needs to determine the effectiveness of CO-OP in adults with Parkinson's disease.

Ethical Considerations

All ethical principles were considered in this article. Ethical considerations for this study were considered in all research procedures. First, the researcher gained approval from TUMS' Ethical Board Committee, which addressed all risks and rights to participants and provided a consent form before the study. The researcher described the purpose of the study and the risks and benefits for the participant. Participation in the study was completely voluntary.

Compliance with ethical guidelines

All procedures performed in this study were by the ethical standards of the Research Committee of Tehran University of Medical Sciences.

Funding

This research was supported by the Research Committee of Tehran University of Medical Sciences (Project ID: IR.TUMS.FNM.REC.1399.140).

Authors' contributions

All authors equally contributed to preparing this article.

Conflict of interest

The authors declared no conflict of interest.

Acknowledgments

The authors would like to thank the participant for her cooperation and sharing her experiences with us.

References

[1] DeMaagd G, Philip A. Parkinson's disease and its management: Part 1: Disease entity, risk factors, pathophysiology, clinical presentation, and diagnosis. P & T : A Peer-Reviewed Journal for Formulary Management. 2015; 40(8):504-32. [PMID]

[2] Sherer TB, Chowdhury S, Peabody K, Brooks DW. Overcoming obstacles in Parkinson's disease. Movement Disorders : Official Journal of the Movement Disorder Society. 2012; 27(13):1606-11. [DOI:10.1002/mds.25260] [PMID]

[3] Ramazani E, Fereidoni M, Tayarani-Najjaran Z. [Non-steroidal anti-inflammatory drugs (NSAIDs) action in Parkinson's disease (Persian)]. Iranian Journal of Physiology and Pharmacology. 2019; 2(4):261-49. [Link]

[4] Dickson DW, Braak H, Duda JE, Duyckaerts C, Gasser T, Halliday GM, et al. Neuropathological assessment of Parkinson's disease: Refining the diagnostic criteria. The Lancet Neurology. 2009; 8(12):1150-7. [DOI:10.1016/S1474-4422(09)70238-8] [PMID]

[5] Hughes AJ, Daniel SE, Kilford L, Lees AJ. Accuracy of clinical diagnosis of idiopathic Parkinson's disease: A clinico-pathological study of 100 cases. Journal of Neurology, Neurosurgery & Psychiatry. 1992; 55(3):181-4. [DOI:10.1136/jnnp.55.3.181] [PMID] [PMCID]

[6] Hadian M, Raji P, Abasi A, Hoseinabadi R, Baghestani A. Evaluation of the effect of vestibular exercises on dizziness and postural control in Parkinson patients. Journal of Modern Rehabilitation. 2018; 12(1):13-20. [DOI:10.32598/jmr.12.1.13]

[7] Pfeiffer RF. Non-motor symptoms in Parkinson's disease. Parkinsonism & Related Disorders. 2016; 22(Suppl 1):S119-22. [DOI:10.1016/j.parkreldis.2015.09.004] [PMID]

[8] Hagell P. Measuring activities of daily living in Parkinson's disease: On a road to nowhere and back again? Measurement. 2019; 132:109-24. [DOI:10.1016/j.measurement.2018.09.050]

[9] Hariz GM, Forsgren L. Activities of daily living and quality of life in persons with newly diagnosed Parkinson's disease according to subtype of disease, and in comparison to healthy controls. Acta Neurologica Scandinavica. 2011; 123(1):20-7. [DOI:10.1111/j.1600-0404.2010.01344.x] [PMID]

[10] Kuhlman GD, Flanigan JL, Sperling SA, Barrett MJ. Predictors of health-related quality of life in Parkinson's disease. Parkinsonism & Related Disorders. 2019; 65:86-90. [DOI:10.1016/j.parkreldis.2019.05.009] [PMID]

[11] Bryden Dueck C. Determining the applicability of the cognitive orientation to daily occupational performance (CO-OP) as a meta-cognitive rehabilitation strategy for individuals with cognitive impairment in parkinson's disease [MSc thesis]. Winnipeg: University of Manitoba; 2016. [Link]

[12] Gaudet P. Measuring the impact of Parkinson's disease: An occupational therapy perspective. Canadian Journal of Occupational Therapy. 2002; 69(2):104-13. [DOI:10.1177/000841740206900206] [PMID]

[13] Missiuna C, Mandich AD, Polatajko HJ, Malloy-Miller T. Cognitive orientation to daily occupational performance (CO-OP) part I-theoretical foundations. Physical & Occupational Therapy in Pediatrics. 2001; 20(2-3):69-81. [DOI:10.1080/J006v20n02_05]

[14] Ward A, Rodger S. The application of cognitive orientation to daily occupational performance (CO-OP) with children 5-7 years with developmental coordination disorder. British Journal of Occupational Therapy. 2004; 67(6):256-64. [DOI:10.1177/030802260406700604]

[15] Ghorbani N, Gharebaghy S, Rassafiani M, Akbarfahimi N, Havaei N. [What kinds of conditions is cognitive orientation to daily occupational performance used: A systematic review (Persian)]. Journal of Research in Rehabilitation Sciences. 2014; 10(4):581-98. [Link]

[16] Borujeni M, Hosseini SA, Akbarfahimi N, Ebrahimi E. Cognitive orientation to daily occupational performance approach in adults with neurological conditions: A scoping review. Medical journal of the Islamic Republic of Iran. 2019; 33(1):597-604. [DOI:10.47176/mjiri.33.99]

[17] Law M, Baptiste S, McColl M, Opzoomer A, Polatajko H, Pollock N. The Canadian occupational performance measure: An outcome measure for occupational therapy. Canadian Journal of Occupational Therapy. 1990; 57(2):82-7. [DOI:10.1177/000841749005700207] [PMID]

[18] Naghdi S, Ansari NN, Raji P, Shamili A, Amini M, Hasson S. Cross-cultural validation of the Persian version of the Functional Independence Measure for patients with stroke. Disability and Rehabilitation. 2016; 38(3):289-98. [DOI:10.3109/09638288.2015.1036173] [PMID]

[19] Nasreddine ZS, Phillips NA, Bédirian V, Charbonneau S, Whitehead V, Collin I, et al. The montreal cognitive assessment, MoCA: A brief screening tool for mild cognitive impairment. Journal of the American Geriatrics Society. 2005; 53(4):695-9. [DOI:10.1111/j.1532-5415.2005.53221.x] [PMID]

[20] Dozois DJ, Dobson KS, Ahnberg JL. A psychometric evaluation of the Beck Depression Inventory-II. Psychological Assessment. 1998; 10(2):83-9. [DOI:10.1037/1040-3590.10.2.83]

[21] Carswell A, McColl MA, Baptiste S, Law M, Polatajko H, Pollock N. The Canadian Occupational Performance Measure: A research and clinical literature review. Canadian Journal of Occupational Therapy. 2004; 71(4):210-22. [DOI:10.1177/000841740407100406] [PMID]

[22] Henshaw E, Polatajko H, McEwen S, Ryan JD, Baum CM. Cognitive approach to improving participation after stroke: Two case studies. American Journal of Occupational Therapy. 2011; 65(1):55-63. [DOI:10.5014/ajot.2011.09010] [PMID]

[23] Dawson DR, Gaya A, Hunt A, Levine B, Lemsky C, Polatajko HJ. Using the cognitive orientation to occupational performance (CO-OP) with adults with executive dysfunction following traumatic brain injury. Canadian Journal of Occupational Therapy. 2009; 76(2):115-27. [DOI:10.1177/000841740907600209] [PMID]

[24] Skidmore ER, Holm MB, Whyte EM, Dew MA, Dawson D, Becker JT. The feasibility of meta-cognitive strategy training in acute inpatient stroke rehabilitation: Case report. Neuropsychological Rehabilitation. 2011; 21(2):208-23. [DOI:10.1080/09602011.2011.552559] [PMID] [PMCID]

[25] Polatajko HJ, Mandich AD, Missiuna C, Miller LT, Macnab JJ, Malloy-Miller T, et al. Cognitive orientation to daily occupational performance (CO-OP) part III-the protocol in brief. Physical & Occupational Therapy in Pediatrics. 2001; 20(2-3):107-23. [DOI:10.1080/J006v20n02_07]

[26] Lawrence BJ, Gasson N, Kane R, Bucks RS, Loftus AM. Activities of daily living, depression, and quality of life in Parkinson's disease. PloS One. 2014; 9(7):e102294. [DOI:10.1371/journal.pone.0102294] [PMID] [PMCID]

[27] Jorm AF. Is depression a risk factor for dementia or cognitive decline? A review. Gerontology. 2000; 46(4):219-27. [DOI:10.1159/000022163] [PMID]

[28] Sachs-Ericsson N, Joiner T, Plant EA, Blazer DG. The influence of depression on cognitive decline in community-dwelling elderly persons. The American Journal of Geriatric Psychiatry. 2005; 13(5):402-8. [DOI:10.1097/00019442-200505000-00009] [PMID]