

The Effectiveness of Client-Centered Occupational Therapy Intervention for Caregivers of Children With Cerebral Palsy

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Introduction

Cerebral palsy (CP) is defined as a lifelong but non-progressive neurological disorder resulting from a lesion in the immature brain (Mutch et al., 1992). The primary motor impairments seen in children with CP are frequently accompanied by sensory, perceptual, cognitive, and communicative limitations. These deficits in sensory, perceptual, and motor systems, which directly affect the individual's performance components, significantly limit the child's independence in activities of daily living (ADLs) and their occupational performance. These difficulties in participation necessitate a constant caregiver for the child to maintain their daily routines (Patel et al., 2020).

Although caregiving is a natural part of being a parent, this role takes on a different dimension in the presence of functional limitations and a continuous need for support in ADLs. This intensive, lifelong process can cause parents to postpone their personal needs and dedicate less time to their interests. This situation makes it difficult for caregivers to maintain their daily life roles, thereby negatively affecting their occupational balance (Ahanotu et al., 2018; Hayles et al., 2015; Liu et al., 2023).

Occupational balance is defined as having the right amount of occupation and sufficient variety among occupations of different characteristics within an individual's occupational pattern, and it is influenced by each individual's subjective experience. It consists of three dimensions: occupational areas, occupations with different characteristics, and time use (Wagman et al., 2012). This balance is achieved through the harmonious interaction of these three dimensions (Duer et al., 2015). When this balance is disrupted, individuals may experience difficulties in organizing and maintaining their daily activities, which may in turn lead to problems in occupational performance (Kwon & Kim, 2023).

Occupational performance is defined as a multidimensional concept that encompasses the ability to choose, organize, and perform meaningful activities appropriate for an individual's age and gender, as well as the satisfaction derived from these activities. Occupational satisfaction, on the other hand, refers to the level of fulfillment an individual derives from daily activities (Baum & Law, 1997). Consequently, both occupational performance issues and low

levels of occupational satisfaction are reported among caregivers of children with CP (Ahmadi Kahjoogh et al., 2019).

All these limitations and disruptions in occupational balance, performance, and satisfaction create an increasingly growing caregiver burden in the lives of caregivers. Caregiver burden is defined as the state of physical, psychological, and social pressure and burnout experienced by parents due to the combination of the rigorous follow-up of rehabilitation processes, the child's health problems, household chores, and out-of-home responsibilities (Ahanotu et al., 2018; Hayles et al., 2015; Liu et al., 2023). Difficulties in maintaining ADLs and the increase in caregiver burden can form a mutually reinforcing process. Therefore, it is crucial to support caregivers not only from a psychosocial perspective but also in the context of organizing and maintaining ADLs and the satisfaction derived from these activities.

When intervention studies aimed at caregivers of children with neurodevelopmental conditions such as autism spectrum disorder, Down syndrome, and CP are examined, it is seen that various approaches have been developed to support caregivers' ADLs, psychosocial well-being, and caregiver burden (Al-Farsi et al., 2022; Watling et al., 2023). Particularly in conditions requiring long-term care, such as CP, it is reported that caregivers may struggle to maintain balance in their ADLs, and this situation is associated with their quality of life. In this context, Botella et al. (2025), in their occupational therapy intervention study, reported that caregivers achieved a more balanced distribution among activities of different characteristics in their lives, and this was associated with increased levels of occupational balance (Prieto-Botella et al., 2025). Kahjoogh et al. (2019), on the other hand, emphasized that occupation-based occupational therapy interventions improved caregivers' skills in organizing and maintaining activities, thereby increasing their occupational performance. In the same study, it was also shown that the intervention contributed to the strengthening of occupational satisfaction by increasing the fulfillment caregivers derived from daily activities (Ahmadi Kahjoogh et al., 2019). Furthermore, client-centered occupational therapy interventions are also reported to have reducing effects on the caregiver burden arising from the caregiving process (Kwon & Kim, 2023; Prieto-Botella et al., 2025; Qaracheh et al., 2025).

A review of the literature on intervention studies for caregivers of children with CP reveals the application of various intervention types, such as lifestyle redesign-based approaches, psychosocial support programs, education and counseling interventions, and programs aimed at improving stress management and coping skills (Dambi et al., 2016; Irwin et al., 2019; Sheng

et al., 2019). However, it is noteworthy that a significant portion of these interventions is focused on psychosocial support and education, while client-centered and occupation-focused interventions directly addressing the organization of daily occupations remain limited. In addition, interventions explicitly structured according to the three dimensions of occupational balance are scarce, and existing approaches often do not systematically integrate these dimensions into intervention design. Accordingly, there is a need for studies examining the effects of client-centered occupational therapy interventions on occupational balance, occupational performance, occupational satisfaction, and caregiver burden among caregivers of children with CP. Therefore, this study aims to examine the effectiveness of a client-centered occupational therapy intervention, systematically structured around occupational areas, occupations with different characteristics, and time use, on occupational balance, occupational performance, occupational satisfaction, and caregiver burden among caregivers of children with CP.

Method

Study Design

This study was a single-center, two-arm, single-blind, parallel group randomized controlled trial conducted among caregivers of children with CP. The study protocol was approved by local ethics committee. Written informed consent was obtained from all participants prior to the study. The study was performed between October 2024 and March 2025.

Participants

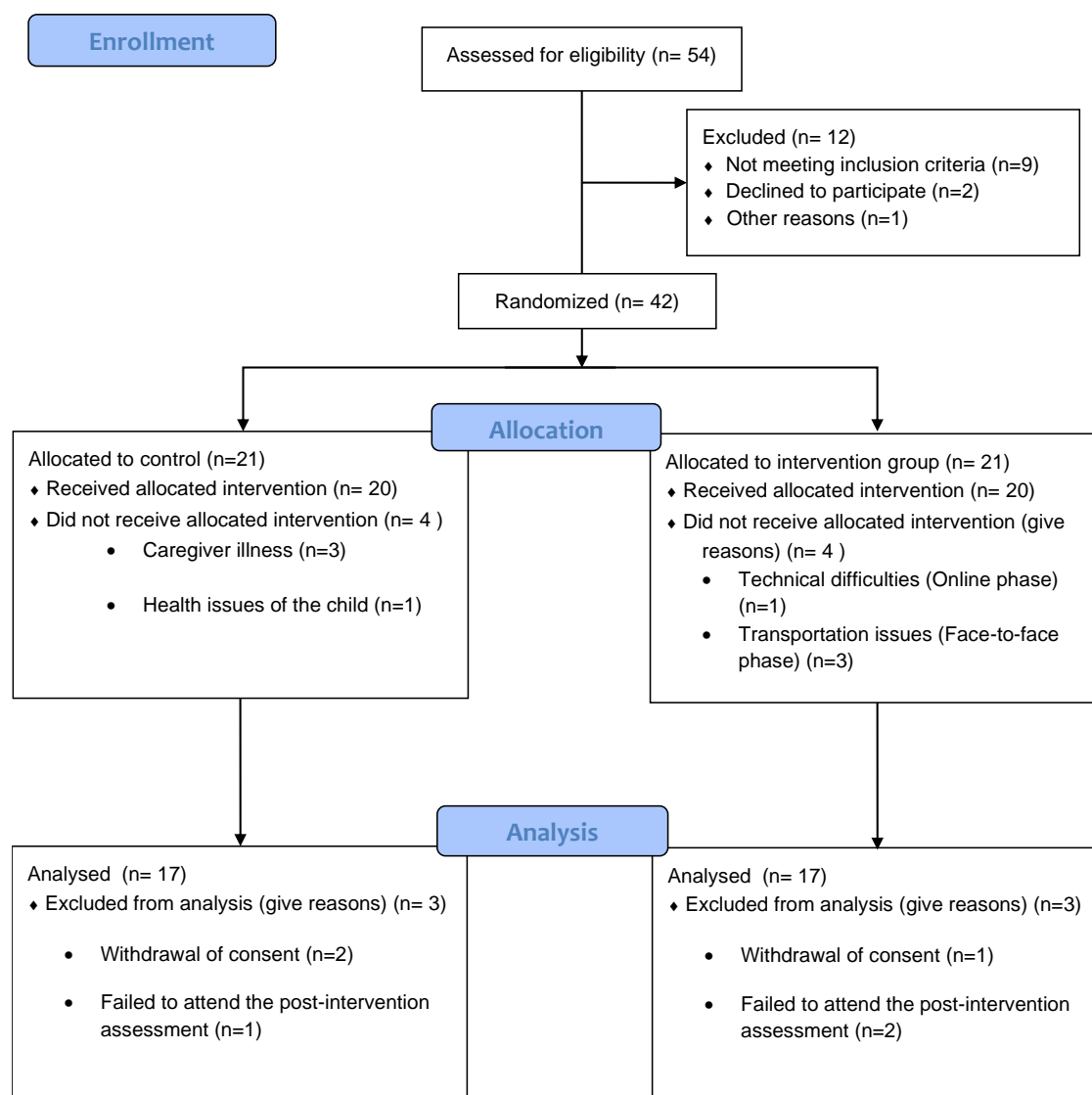
The sample size was calculated based on a power analysis conducted with 80% power and a 5% error rate as 34. A total of 54 caregivers were initially assessed for eligibility; however, 12 were excluded based on the exclusion criteria or other reasons. Consequently, 42 caregivers were initially included in the study. The inclusion criteria for caregivers were: (1) being the primary caregiver of a child with diplegic CP, (2) having access to a device with internet connectivity, (3) being capable of following verbal and written instructions, (4) volunteering to participate in the study, (5) scoring ≤ 5 in the Performance and Satisfaction dimensions of the Canadian Occupational Performance Measure (COPM) and/or scoring ≤ 16 on the Occupational Balance Questionnaire (OBQ11), and (6) scoring ≥ 21 on the Burden Interview (BI). Caregivers were excluded if they: (1) had previously received professional services or interventions specifically designed for caregivers, or (2) had a neurological, psychiatric, or chronic condition, such as multiple sclerosis, schizophrenia, or diabetes; and (3) were using

medications (e.g., sedatives, antidepressants, or potent analgesics) that could interfere with their functional performance or study participation.

The inclusion criteria for children were: (1) being between the ages of 4 and 18 years, (2) classification at Level IV or above on the Gross Motor Function Classification System (GMFCS), (3) Level III or above on the Manual Ability Classification System (MACS), (4) Level II or above on the Communication Function Classification System (CFCFS), and (5) Level III or above on the Eating and Drinking Ability Classification System (EDACS). Exclusion criteria for children included: (1) having an additional neurological diagnosis alongside CP, such as hydrocephalus or epilepsy.

The 48 eligible caregivers were randomly assigned to the intervention ($n = 24$) or control group ($n = 24$). Fourteen participants (7 from each group) did not complete the study, resulting in a final sample of 34 caregivers (17 per group). Detailed participant flow is presented in Figure 1.

Figure 1. CONSORT Flow Diagram



Procedure

The intervention group received a client-centered occupational therapy program consisting of eight weekly individual sessions, each lasting an average of 45 minutes. The first four sessions were conducted online and focused on theoretical content, whereas the last four sessions were carried out face-to-face at the Occupational Therapy Department of a public university, emphasizing practical application. The control group received a single-session intervention focused on awareness of occupational balance and life patterns, with a mean duration of 45 minutes. Participants in the control group did not receive ongoing follow-up during the

intervention period; however, they were offered access to the intervention after the completion of the study.

All outcome assessments (pre-test and post-test) were conducted by Author 2 who was not involved in delivering the intervention and was blinded to group allocation. Assessments were conducted through face-to-face interviews. Before randomization, all participants completed the Sociodemographic Information Form, OBQ11-T, COPM, and BI. Following baseline assessments, participants were randomly assigned to the intervention and control groups using a computer-generated randomization sequence. Assessments were conducted at baseline (pre-intervention) and immediately after the 8-week intervention period (post-intervention).

Measurements

Sociodemographic Information Form

Sociodemographic data pertaining to the caregivers and children were collected using a form developed by the researchers. Age, gender, type of CP, level of GMFCS, MACS, CFCS, and EDACS were recorded for children with CP. Age, gender, marital status, educational status, employment status, chronic diseases, and place of residence were recorded for all caregivers.

Occupational Balance Questionnaire 11-T (OBQ11-T)

Wagman and Ha°kansson (2014) developed the OBQ, a scale that measures self-rated occupational balance. The questionnaire had good internal consistency (Cronbach's alpha 0.936) and adequate test-retest reliability (Spearman's rho¼0.926 for total score) in healthy adults. The OBQ was designed to analyze both at-item level and as a summed total score (Wagman, & Ha°kansson, 2014). Ha°kansson et al. (2020) reported that the OBQ had good reliability (0.92), model fit, and measurement invariance across age and gender groups. Test-retest reliability of the OBQ11-T was 0.922, and Cronbach's alpha for OBQ11-T total score was 0.785. The scale consists of 11 items scored on a 4-point scale from 'strongly disagree' (scored 0) to 'strongly agree' (scored 3). The total score is obtained by summing the individual items and ranges from 0 to 33. Higher scores indicate higher occupational balance.

Canadian Occupational Performance Measure (COPM)

It is a semi-structured scale that helps to identify problematic areas of performance experienced by individuals and to measure their perceived *occupational performance* and *occupational*

satisfaction. This scale assesses the level of performance of self-care, productivity and leisure occupations and satisfaction with these performances as perceived by the individual. The importance of each occupation is measured on a 10-point scale (1 = not at all important, 10 = very important) according to the individual's perception. In the next step, the individual is asked to select five occupations that he/she considers most important and to rate separately his/her performance (1 = could not do it, 10 = could do it very well) and satisfaction (1 = not satisfied, 10 = very satisfied) in these occupations. Cronbach's alpha for COPM Turkish total score was 0.95.

Burden Interview (BI)

The scale was developed by Zarit, Reever, and Bach-Peterson in 1980 to assess the difficulties experienced by caregivers (93). It consists of 22 items, each scored on a scale from 0 to 4, yielding a total score ranging from 0 to 88. Scores between 0–22 indicate little or no caregiving burden, 21–40 indicate a moderate burden, 41–60 indicate a severe burden, and 61–88 indicate an excessive caregiving burden. Cronbach's alpha reliability coefficient was reported as 0.95.

Occupational Balance And Life Patterns Awareness Intervention

The control group received a single-session intervention focused on occupational balance and life pattern awareness, with a mean duration of 45 minutes. The session consisted of a brief psychoeducational presentation covering the concept of occupational balance, the distribution of ADLs, and the role of balanced routines in well-being. Participants were encouraged to reflect on their own daily routines; however, no individualized intervention strategies, goal setting, or structured follow-up were implemented.

Client-Centered Occupational Therapy Intervention

The intervention group received an 8-week, client-centered occupational therapy program consisting of one 45-minute individual session per week. The online sessions were delivered via web-based platforms (Google Meet, Zoom, and WhatsApp) according to participant preference, whereas face-to-face sessions took place at the Occupational Therapy Department of a public university.

The intervention's design was theoretically grounded in Wagman and Håkansson's three dimensions of occupational balance and adapted from Rini and Provident's lifestyle balance program. Although goals were individualized based on the COPM results, methodological standardization and intervention fidelity were rigorously maintained; the same therapist

administered all individual sessions using a structured protocol. In the intervention group, each new session began with feedback regarding time-use patterns since the previous session. Intervention fidelity was supported through the use of a standardized session framework and consistent session delivery across participants. Detailed session contents are presented in Table 1.

Session 1: Introduction and Awareness

Participants were informed about the overall structure and goals of the intervention program. Key concepts, including occupational balance, occupational performance, occupational satisfaction, and caregiver burden, were introduced in a simplified and individualized manner. Participants were encouraged to reflect on their daily routines and share their experiences. Initial awareness of imbalances in daily occupations was facilitated through guided discussion.

Session 2: Occupational Areas

The concepts of self-care, productivity, and leisure were explained. Based on COPM results, participants identified problematic occupational areas in their daily lives. Habit formation strategies (e.g., habit stacking, small habit approach) were introduced. The client-centered occupational monitoring form was introduced, and participants were asked to begin tracking their daily activities.

Session 3: Occupations with Different Characteristics

Participants explored different types of occupations, including physical, mental, social, and rest-related activities. Energy conservation techniques and joint protection strategies were introduced for physically demanding activities, while coping strategies were discussed for mentally demanding tasks. Participants generated individualized lists of activities under each category and developed a personalized “occupational menu” to support variety in daily occupations.

Session 4: Time Use

Participants were introduced to time management principles, including identifying time-consuming activities and inefficient routines. The use of the client-centered occupational monitoring form was structured in this session, and participants were asked to systematically record their daily activities and satisfaction levels. Based on these records, participants created a daily or weekly timeline to better understand their time use patterns.

Sessions 5–7: Monitoring of Client-Centered Occupational Therapy Intervention

During these sessions, participants implemented individualized weekly plans developed in earlier sessions. The client-centered occupational monitoring form was reviewed in each session to monitor adherence, evaluate time use patterns, and identify barriers. Problem-solving strategies were applied collaboratively to address difficulties in implementation. Alternative plans were developed when needed to support sustainability and feasibility.

Session 8: Termination and Future Planning

The final session focused on reviewing progress, goal attainment, and changes in daily occupational patterns. Participants reflected on gains in occupational balance, performance, and satisfaction. Strategies for maintaining newly established habits were discussed, and participants were provided with personalized plans to support long-term sustainability.

Table 1. Client-Centered Intervention Program

Session	Theme	Content
1	Introduction and Awareness	-Information about the overall process of the intervention program -A summary of the concepts of occupational balance, occupational performance, occupational satisfaction, and caregiver burden - Open discussion and sharing of feelings to clarify concepts
2	Occupational Areas	-Definition of self-care, productivity and leisure occupations -Habit stacking strategies of occupational areas -Use of tiny habits method - Task to practice the small habits method on preferred activities in COPM -Open discussion and sharing of feelings to clarify concepts
3	Occupations of Different Characteristics	-Joint protection and energy conservation techniques for physical occupations -Coping with stress management for mental occupations -Individual list for social occupations -Brainstorming of active and passive recreational activities for resting occupations - Introduction of the client-centered occupational monitoring form for daily activity tracking. -Creation of an ‘‘Occupational Menu’’ -Open discussion and sharing of feelings to clarify concepts
4	Time Use	-Time consumer -5 steps of time management -Time planning according to COPM results

			-Creation of a timeline -Structured use of the client-centered occupational monitoring form -Open discussion and sharing of feelings to clarify concepts
5-7	Monitoring of Client-Centered Occupational Therapy Intervention		-Monitoring implementation of the intervention program -Review and feedback based on the client-centered occupational monitoring form. -Alternative plans for participants who struggle with implementation
8	Termination and Future Planning		- Review of gains and goal attainment -Receiving feedback

Statistical Analysis

Data were analyzed with IBM SPSS (Statistical Package for Social Science) version 26.0 statistical software package program. The demographic data were analyzed using descriptive statistics. Normality of the data was analyzed using Shapiro-Wilk test. In the analysis of the pre-randomization OBQ11-T, COPM, and BI assessment results, the data were found to be statistically normally distributed, and parametric tests were preferred ($p>0.05$). An independent samples t-test was used to compare the groups in terms of the pre-intervention and post-intervention results. A paired samples t-test was used to compare the pre-intervention and post-intervention results of the control and intervention groups according to the OBQ11-T, COPM, and BI. A statistically significant difference was found between the COPM-Performance and COPM-Satisfaction dimensions in the initial assessment results of the control and intervention groups. Therefore, Analysis of Covariance (ANCOVA) was used to evaluate the effect of the intervention by controlling the differences between the pre-intervention and post-intervention results of the groups. Differences between the groups in terms of categorical variables were determined using the Fisher Exact test. Effect size was calculated using the Cohen's d test. In effect size (Cohen's d value) calculations, significance was achieved by calculating values less than 0.2 as a weak effect size, values between 0.5-0.8 as a medium effect size, and values greater than 0.8 as a high effect size. Statistical significance was accepted as $p<0.05$.