



Effect of Creative Movement and Occupational Therapy as a Community-Based Rehabilitation Program for Post Stroke Elderly at Puskesmas Gresik

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ABSTRACT

Background: Stroke remains a leading cause of disability among older adults, often resulting in impaired motor abilities and a diminished quality of life. This study aimed to evaluate the impact of combining Creative Movement Therapy (CMT) and Occupational Therapy (OT) on motor function and quality of life among post-stroke elderly individuals in Gresik District, Indonesia.

Methods: A quasi-experimental study with a pretest–posttest control group design was conducted from August to September 2025 at Puskesmas Alun-Alun Gresik. The control group (n = 35) received conventional rehabilitation, while the intervention group (n = 35) participated in combined CMT and OT sessions for four weeks, lasting 45–60 minutes each. Motor function was assessed using the *Fugl-Meyer Assessment* (FMA), and quality of life was measured using the *Stroke-Specific Quality of Life* (SS-QOL) scale.

Results: Participants in the intervention group achieved significantly higher mean ranks for both FMA (46.00) and SS-QOL (43.61) compared to the control group (25.00 and 27.39, respectively; $p < 0.05$).

Conclusion: The integration of Creative Movement Therapy and Occupational Therapy provides an effective, community-based rehabilitation strategy that holistically enhances motor function and overall quality of life among post-stroke elderly individuals.

Keywords: Post-stroke elderly; Creative movement therapy; Occupational therapy; Motor function; Quality of life; Community-based rehabilitation

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Introduction

Stroke remains the second leading cause of death and disability among older adults worldwide, often resulting in long-term motor impairments, reduced independence, and a decline in quality of life.^{1,2} The inability to perform activities of daily living (ADL) independently contributes to a high level of dependence and decreased well-being among post-stroke elderly.^{3,4}

According to the World Health Organization (WHO), stroke results in roughly 5.5 million fatalities annually, with about 13.7 million new diagnoses occurring each year.⁵ Stroke was the primary contributor to both mortality and disability among older adults in Indonesia in 2023, affecting 8.3 individuals per 1,000. East Java saw over 1,218 instances of stroke in 2020, which climbed to over 1,357 in 2021; the Gresik Regency had the second-highest case count, following Surabaya City.^{3,6} Research indicates that older individuals who have experienced a stroke often face a diminished quality of life, as evidenced by a rate of 40.8% (Toglia et al., 2018).⁷ A separate investigation similarly reveals that the elderly demographic constitutes the majority of stroke survivors struggling with a low quality of life, accounting for 67.7%.⁸ These findings underscore the critical requirement for impactful rehabilitation approaches that can be readily applied within local primary care facilities and community healthcare environments.

In Indonesia, typical stroke rehabilitation focuses mainly on physical improvements, but frequently overlooks the mental and social components crucial for successful recovery, according to Gultom's research in 2021.⁹ Research by Moon et al. in 2022 indicates that Occupational Therapy (OT) can help people regain their abilities and live more independently by improving their daily living skills, whereas Creative Movement Therapy (CMT) combines artistic elements, rhythmic motions, and physical expression to activate brain connections and foster better emotional health.^{10,11} Earlier research efforts have focused on CMT largely in individuals dealing with mental health issues, while the integration of

CMT alongside OT in rehabilitating elderly stroke survivors remains an area that has not been extensively investigated.

Integrating CMT and OT offers a more comprehensive rehabilitation approach that simultaneously addresses physical, cognitive, and psychosocial aspects of recovery. The dynamic nature of CMT can enhance motor engagement and motivation during therapy sessions, while OT provides structured skill training to improve daily functioning. This combination is expected to yield greater improvements in motor function and quality of life compared to conventional single-modality therapies.

This research is designed to examine how motor skills and life satisfaction are affected when Creative Movement Therapy is used together with Occupational Therapy for older adults who have had a stroke at the Gresik Community Health Center. This research offers new support for a comprehensive recovery strategy in local communities, bringing together physical and emotional support to improve results for stroke survivors in basic healthcare environments.

Methods

This study used a quasi-experimental design with a pretest–posttest control group approach, conducted from August to September 2025. The research was carried out in the working areas of Puskesmas Alun-Alun and Puskesmas Manyar, Gresik Regency, Indonesia. Data were collected before (pretest) and after (posttest) the intervention.

A total of 70 post-stroke elderly participants were involved in this study. Respondents were divided into two groups based on their community health center to minimize contamination between participants. The intervention group consisted of 35 elderly individuals from puskesmas Alun – Alun Gresik. The intervention group received a combination of creative Movement Therapy (CMT) and Occupational Therapy (OT), while the control group included 35 elderly individuals from Puskesmas Manyar. Whereas the control group received conventional rehabilitation therapy routinely provided at the Puskesmas Manyar Gresik.

Sample were selected using purposive sampling based on inclusion and exclusion criteria. Inclusion criteria : elderly aged ≥ 60 years with a history of cerebrovascular accident (CVA), cooperative and able to mobilize independently or with minimal assistance. Exclusion criteria : elderly with severe psychological disorders (depression), deteriorating clinical conditions, or complications affecting mobility.

The intervention was administered for four consecutive weeks, once weekly, with each session lasting 45-60 minutes. The intervention group received a combination of Creative Movement Therapy (CMT) and Occupational Therapy (OT). CMT sessions involved rhythmic music, range-of-motion (ROM) movements, and expressive body movements to stimulate motor coordination and emotional engagement. OT sessions focused on daily activity training and fine motor exercises such as painting or object manipulation. The control

group received conventional therapy routinely provided by the Manyar Community Health Center, consisting of standard physical rehabilitation exercises.

Data collection was conducted through pretest and posttest using FMA and SS-QOL instruments. Data analysis included univariate analysis to describe respondent characteristics and bivariate analysis to test the effect of the intervention on the dependent variable. The statistical tests used were the Wilcoxon Signed-Rank Test to compare pretest and posttest Whitney U Test to compare between groups. The significance level used was $\alpha < 0.05$. If the p-value was $< \alpha$, then the null hypothesis (H_0) was rejected and the alternative hypothesis (H_a) was accepted, indicating a statistically significant difference.

Ethical approval was obtained from the Health Research Ethics Committee University of Jember, Faculty of Nursing (Approval No.355/UN25.1.14/KEPK/2025)

Result

Table 1. Distribution of Respondent Characteristics in the Intervention and Control Groups (n = 70)

Characteristics	Categories	Interventions	Control
Ages	Early elderly (46-55)	34.3%	22.9%
	Late Erderly (56-65)	51.4%	57.1%
	Elderly (>65)	14.3%	20.0%
Gender	Male	51.4%	51.4%
	Female	48.6%	48.6%
Education	Elementary School	8.6%	5.7%
	Junior High School	20.0%	42.9%
	Senior High School	48.6%	40.0%
	Bachelor Degree	22.9%	11.4%
Work	Entrepreneur	57.1%	34.3%
	Housewife	34.3%	54.3%
	Retire	8.6%	11.4%
Longterm Stroke	< 1 tahun	42.9%	28.6%
	> 1 Tahun	57.1%	71.4%

Table 1 presents the characteristics of the respondents. Most participants were in the late elderly category, accounting for 51.4% in the intervention group and 57.1% in the control group. The majority were male in both groups (51.4% each). Regarding education level, high

school graduates dominated the intervention group (48.6%), whereas the control group was mostly composed of junior high school graduates (42.9%). In terms of occupation, entrepreneurs were predominant in the intervention group (57.1%), while housewives constituted the majority in the control group (54.3%). Most respondents in both groups had

experienced a stroke for more than one year prior to the study period.

Table 2. Descriptive Analysis of Motor Function and Quality if Life in Elderly Stroke Survivors

Groups	Variable	Category	Pre-Test (%)	Post-Test (%)	P-value	
Interventions	Quality of life	Low	22 (62.9%)	7 (20.0%)	0.000	
		High	13 (37.1%)	28 (80.0%)		
	Motor Function	Light	13 (37.1%)	31 (88.6%)	0.000	
		Medium	22 (62.9%)	4 (11.4%)		
	Control	Quality of Life	Low	21 (60.0%)	20 (57.1%)	1.000
			High	14 (40.0%)	15 (42.9%)	
Motor function		Light	15 (42.9%)	15 (42.9%)	1.000	
		Medium	20 (57.1%)	20 (57.1%)		

Table 2 presents the comparison of pretest and posttest results between groups. A significant improvement was observed in both quality of life and motor function among participants in the intervention group. The proportion of respondents categorized as having a high quality of life increased from 37.1% before the intervention to 80.0% after the intervention (2000). Similarly, the proportion in the mild motor impairment category increased from 37.1% to 88.6% ($p = 0.000$). In contrast, the control group showed

no significant changes in either variable-quality of life remained relatively stable (40.0% pretest vs. 42.9% posttest), and motor function did not improve (42.9% in the mild category before and after intervention, $p = 1.000$). These findings indicate that the combined Creative Movement Therapy (CMT) and Occupational Therapy (OT) intervention had a statistically significant positive effect on improving both motor performance and quality of life in post-stroke elderly participants.

Table 3. Analysis of the Effect of Combining Creative Movement Therapy (CMT) and Occupational Therapy (OT) on Elderly People After Stroke

Variable	Groups	Mean Rank	Sum of Ranks	Mann-Whitney	P-value
Quality of Life	Interventions	43.61	1526.50	328.500	0.001
	Control	27.39	958.50		
Motor function	Interventions	46.00	1610.00	245.000	0.000
	Control	25.00	875.00		

Table 3 presents the comparison of posttest results between the intervention and control groups. The analysis revealed significant differences in both quality of life (QOL) and motor function (FMA) variables. The mean QOL score in the intervention group was 43.61, higher than that of the control group (27.39), with a p-value of 0.001. Similarly, the mean motor function score was significantly higher in the intervention group (46.00) compared to the control group (25.00) ($p = 0.000$). These results indicate that the combination of Creative Movement Therapy (CMT) and Occupational Therapy (OT) had a significant positive effect on improving both quality of life and motor function among post-stroke elderly participants.

Discussion

A. Characteristics of Elderly People After Stroke

The results showed that most respondents in both groups were categorized as late elderly, with 51.4% in the intervention group and 57.1% in the control group. Both groups were dominated by male respondents (51.4%). Regarding education level, the majority of the intervention group had completed high school (48.6%), while the control group was dominated by junior high school graduates (42.9%). The majority of respondents had experienced stroke for more than one year (57.1% in the intervention group and 71.4% in the control group). In terms of occupation, most of the intervention group were self-employed (57.1%), while the control group was dominated by housewives (54.3%).

These characteristics illustrate that respondents were relatively homogeneous in terms of age and gender, providing a

comparable baseline for evaluating the intervention. The predominance of late elderly participants aligns with epidemiological data showing that degenerative changes increase vulnerability to motor decline post-stroke. Gender and education have been shown to influence rehabilitation outcomes—men often exhibit faster physical recovery, while individuals with higher education levels tend to demonstrate greater motivation and therapy adherence.^{12,13}

The duration since stroke onset (>1 year) suggests that most participants were in the chronic recovery phase, where consistent and engaging rehabilitation activities, such as CMT and OT can still yield meaningful improvements in function and well-being. The occupational background differences between groups (entrepreneurs vs housewives) may also influence activity levels and therapy participation. Overall, the relatively similar demographic and clinical characteristics between groups strengthen the internal validity of this study, although the chronic nature of stroke among participants may limit generalization to acute cases.

B. Descriptive Analysis of Motor Function and Quality of Life in Elderly Stroke Survivors

The results of this study demonstrated a significant improvement in motor function and quality of life among elderly stroke survivors who received a combination of Creative Movement Therapy (CMT) and Occupational Therapy (OT). The intervention group showed a shift from low to high quality of life and from moderate-severe to mild motor impairment, whereas no meaningful changes were observed in the control group. This confirms that the combined therapy contributed substantially to

the physical and psychosocial recovery of post-stroke elderly individuals.

These findings are consistent with previous research showing that multimodal rehabilitation-integrating creative, physical, and functional activities can optimize neuroplasticity and improve post-stroke recovery.¹⁴ The principle of neuroplasticity underlies this mechanism, whereby structured and meaningful activities stimulate the formation of new neural pathways, enhancing motor coordination and adaptability. The creative component in CMT promotes emotional expression and motivation, while OT provides structured practice of daily living skills. Together, these elements create a synergistic effect that supports both physical recovery and psychological well-being.

The observed improvement in quality of life reflects not only better physical function but also enhanced emotional stability and social interaction. Previous studies have shown that increased independence in activities of daily living (ADL) correlates with higher life satisfaction and self-efficacy among stroke survivors (Nugraha, 2022).¹⁵ This finding emphasizes that rehabilitation should not focus solely on motor recovery but also integrate activities that build confidence, engagement, and social participation among the elderly.

From a public health perspective, this study supports the development of community-based rehabilitation (CBR) programs in primary health care settings (Puskesmas). The combination of CMT and OT can be adapted as a low-cost, feasible intervention that promotes holistic recovery for post-stroke elderly in the community. Its implementation could enhance health service capacity at the community level, particularly in regions with limited access to specialized rehabilitation centers.

The novelty of this study lies in combining CMT and OT for post-stroke elderly within a community health center setting, which has not been widely explored in Indonesia. While previous studies focused on hospital-based or single-modality rehabilitation, this research demonstrates the effectiveness of an integrated, community-based approach that addresses both physical and psychosocial domains.

However, several limitations should be acknowledged. The short intervention duration (four weeks) may limit the assessment of long-term outcomes. The quasi-experimental design without randomization introduces potential selection bias, and the sample size, although sufficient for preliminary analysis, may not represent broader populations. In addition, this study did not measure intervention adherence objectively or control for potential confounders such as comorbidities and medication use. Future research should employ randomized controlled designs with longer intervention periods and explore the sustainability and scalability of community-based CMT-OT models.

Overall, the findings indicate that the integration of creative and functional therapies can serve as an innovative and effective community-level intervention to improve motor recovery and quality of life in post-stroke elderly populations.

C. Analysis of the Effect of Combining Creative (CMT) and Movement Therapy Occupational Therapy (OT) on Elderly People After Stroke

The results of this study show a significant difference between the intervention and control groups in terms of quality of life and motor function variables. The mean scores for both variables were higher in the intervention group than in the control group. This finding indicates that participants who received the combination of Creative Movement Therapy Occupational Therapy experienced greater improvement than those who did not receive any intervention. The difference is statistically significant, suggesting that the observed effects were not due to chance. Therefore, the intervention proved effective in improving both the physical and psychosocial aspects of elderly stroke survivors. These results reinforce the notion that a combination therapy approach yields tangible benefits in post-stroke rehabilitation.

This finding is consistent with recent research showing that intensive, exercise-based rehabilitation—whether using conventional or technology-assisted methods—can improve Fugl-Meyer Assessment (FMA) scores and enhance the quality of life of patients after

stroke and other neurological disorders.¹⁶ Furthermore, a recent meta-analysis indicated that technology-supported interventions not only enhance motor function but also positively affect psychosocial outcomes, such as self-confidence, social participation, and reduced depressive symptoms, ultimately contributing to overall quality of life.¹⁷

From a psychological and social standpoint, improvements in motor function play a crucial role in enhancing patient independence in performing daily activities. Greater independence leads to increased self-confidence, motivation, and social engagement. These dimensions are essential, as quality of life is determined not only by physical health but also by emotional satisfaction, social relationships, and participation in community life. Several recent studies confirm that comprehensive rehabilitation programs that integrate physical training with psychosocial support are more effective in improving the quality of life of stroke survivors.¹⁸

The researchers believe that the significant differences observed between the intervention and control groups provide strong evidence that the combination therapy approach is superior to the absence of intervention. This program not only enhances physical capacity but also positively influences individuals' perceptions of their own quality of life. Considering that elderly stroke survivors often experience complex limitations, a multidimensional intervention such as the combination of CMT and OT is highly relevant. Active engagement in interactive and meaningful activities helps to boost motivation and participation in the recovery process.

These findings provide a strong rationale for recommending the implementation of combined CMT-OT therapy in rehabilitation settings, both in medical facilities and at the community level. Therefore, this combination therapy should be considered as part of post-stroke rehabilitation protocols, particularly within community-based rehabilitation (CBR) programs at the primary healthcare level.

Conclusions

This study demonstrated that the combination of Creative Movement Therapy

(CMT) and Occupational Therapy (OT) significantly improved motor function and quality of life in post-stroke elderly individuals compared to those receiving standard care. The intervention group achieved higher Fugl-Meyer Assessment (FMA) and Stroke-Specific Quality of Life (SS-QOL) scores (mean ranks 46.00 and 43.61) than the control group (25.00 and 27.39; $p < 0.05$). These results suggest that multimodal therapy integrating physical, cognitive, and psychosocial stimulation enhances recovery and overall well-being among elderly stroke survivors.

However, the study is limited by its small sample size ($n=70$), short intervention duration (4 weeks), and non-randomized design. Future studies should employ randomized controlled trials with larger and more diverse samples to confirm long-term effects. From a public health perspective, integrating CMT-OT programs into community-based rehabilitation services, such as at Puskesmas, could improve post-stroke recovery, independence, and reduce disability burden among the elderly. Collaboration between healthcare professionals and family caregivers is essential to ensure sustainable implementation and continuity of rehabilitation care.

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