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Holistic Approach In Stroke Patients: A Clinical Trial

Abdulvahap Kaya¹, Ali Timuçin Atayoglu^{2,3}*

- 1 Pendik Medipol Hospital, Department of Physical Medicine and Rehabilitation
- 2 Istanbul Medipol University, Institute of Health Sciences, Department of Traditional and Complementary Medicine, Istanbul, TR
- 3 Istanbul Medipol University, International School of Medicine, Department of Family Medicine, Istanbul, TR

* Corresponding Author Ali Timuçin Atayoglu E-mail: atatayoglu@medipol.edu.tr

ABSTRACT

Objective: This study aimed to explore the holistic relationship between personality types, coping attitudes, physical functioning, and cognitive levels in individuals diagnosed with stroke.

Material and Methods: The research employed a single-group design and included 25 stroke patients underwent a comprehensive assessment. Physical function was assessed using the Berg Balance Scale and Timed Up and Go Tests, and cognitive levels were measured with the Montreal Cognitive Assessment Scale, coping strategies were evaluated through the COPE-R Coping Attitudes Evaluation Scale, and personality types were determined using the Enneagram Scale.

Results: Berg and TUG scores of the participants show a significant difference according to chronic disease status (p=0.024, and p=0.048, respectively). However, MOCA and coping scores of the participants do not differ significantly according to the chronic disease status (p>0.05). The participants' MOCA, Berg, TUG, and COPE-R scores do not differ significantly according to enneagram (p>0.05).

Conclusion: This study underscores the interplay between cognitive and physical functioning in stroke survivors, highlighting the potential impact of cognitive levels on physical capabilities. Surprisingly, coping attitudes and personality types did not significantly influence cognitive or physical function.

Keywords: Coping attitudes, Berg Balance Scale, Enneagram Personality Scale, Stroke, Timed Get-Up-and-Go Test, Holistic

INTRODUCTION

In the realm of healthcare and rehabilitation, a holistic approach to managing individuals' well-being has emerged as a cornerstone of effective care (1). Holistic management encompasses a comprehensive perspective that takes into account biological, social, psychosocial, and spiritual aspects, recognizing the intricate interplay between these facets in an individual's health and recovery (2). This approach is particularly pertinent when addressing complex and multifaceted conditions like stroke, which often exacts a profound toll on physical, psychological, and social functions, impairing an individual's capacity to engage in daily activities (3). Moreover, stroke survivors face a heightened risk of chronic diseases, a burden that can significantly affect their quality of life (4).

While biology may lay the foundation for our physiological makeup, our unique personality governs our behavioral and emotional responses to life's challenges (5). The distinct ways in which individuals navigate and adapt to these challenges have been captured by the concept of "personality." This is particularly relevant when dealing with the aftermath of a life-altering event like stroke. Conversely, coping serves as a critical psychological construct in understanding how individuals confront and manage the stressors they encounter (6). Coping encompasses the cognitive and behavioral strategies people employ to address the demands placed upon them by internal or external stressors (7). These strategies are akin to an organized response aimed at achieving specific goals or solving problems.

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Cognitive abilities, such as memory, attention, perception, speech, visual-spatial adaptability, and psychomotor skills, constitute the foundational cognitive skills required to process information and navigate life's complexities (8). However, stroke survivors frequently experience a decline in physical and cognitive functions post-rehabilitation, with a pronounced risk of social isolation and depression (9). Among the common impairments seen post-stroke are gait disorders, which can profoundly impact an individual's daily life performance and functional recovery (10).

Understanding how stroke survivors cope with the multifaceted challenges posed by their condition is pivotal for crafting effective rehabilitation strategies. Coping attitudes can significantly shape a survivor's post-stroke journey, influencing their motivation, adherence to treatment plans, and ultimately, their recovery outcomes. Additionally, personality types, as assessed by the Enneagram Scale, offer a unique lens through which to understand how stroke survivors approach their recovery process. Different personality types may exhibit distinct responses to adversity, impacting their engagement with rehabilitation efforts, their resilience in the face of setbacks, and their adaptability to changes in their physical and cognitive abilities. In light of these considerations, there is a clear need for research that investigates the relationship between coping attitudes, personality types, cognitive functioning, and physical capabilities in stroke survivors. While numerous studies have explored cognitive and physical aspects in individuals with stroke, there is a noticeable gap in the literature concerning the interplay between coping attitudes and personality types in this population.

The primary objective of this study is to comprehensively evaluate the personality types, coping attitudes, cognitive levels, and physical functioning of individuals diagnosed with stroke. Furthermore, this research aims to delve into the intricate relationships among these parameters, shedding light on how coping and personality intertwine with cognitive and physical aspects in the post-stroke context. This investigation promises to offer valuable insights into tailoring rehabilitation programs that align more closely with the unique psychological needs and preferences of stroke survivors, ultimately enhancing their overall recovery and quality of life.

MATERIAL and METHODs

Study Design and Participants:

This study employed a single-group correlation design and included individuals with stroke who met specific criteria (at June 2021-March 2022). The participants were between the ages of 40 and 90 and selected from patients receiving follow-up and treatment at Istanbul Medipol University SUAM Pendik Hospital. The inclusion criteria encompassed individuals who had been diagnosed with a first-time stroke, scored 3, 4, or 5 according to the Functional Ambulation Classification, were at least three months post-stroke, could read and write, and did not have any other neurological disorders, communication deficits (including hearing, vision, and speech loss), orthopedic deficiencies that might influence assessment results, significant mental impairment, or a diagnosis of dementia or Alzheimer's disease.

Inclusion Criteria for Volunteers:

- Functional Ambulation Categories (FAC) score of 3 to 5..
- First-time stroke diagnosis.
- Age between 40 and 90 years.
- At least three months post-stroke.
- Ability to read and write.

Exclusion Criteria for Volunteers:

- Diagnosis of dementia or Alzheimer's disease.
- Additional orthopedic issues.
- Communication problems.
- Hearing or visual impairments.
- Significant mental impairment: Scoring less than 15 on the Montreal Cognitive Assessment Test.

Data Collection:

- Sociodemographic and Clinical Evaluation Forms: Sociodemographic data, including age, gender, height, weight, disease duration, chronic conditions, smoking and alcohol use, educational status, use of assistive devices, and the affected side of the body, were collected.
- Assessment Tools: The following assessments were performed:

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- Enneagram Personality Scale: This scale, based on the Enneagram theory, categorizes personality types into nine numbers, each corresponding to different emotional, mental, or instinctual centers. This study used the Turkish version of the 9-factor, 27-item Enneagram Personality Scale (12).
- **Coping Attitudes Rating Scale (COPE-R):** This 5-factor, 32-item scale assesses coping attitudes, using a 4-point Likert-type scoring system. Higher scores indicate a higher level of coping attitude (13).
- Montreal Cognitive Assessment Scale (MoCA): MoCA was used to assess cognitive and attentional/executive functions. It consists of eight cognitive domains, and a score of 21 and above was considered normal (14).
- **Timed Up and Go (TUG) Test:** TUG is a clinical measurement for assessing functional mobility, balance, and fall risk. It measures the time taken for a subject to rise from a chair, walk 3 meters, turn, walk back to the chair, and sit down. A higher score (15).
- **Berg Balance Scale (Berg)** It is used to objectively determine a patient's ability (or inability) to safely balance during a series of predetermined tasks. It is a 14 item list with each item consisting of a five-point ordinal scale ranging from 0 to 4, with 0 indicating the lowest level of function and 4 the highest level of function and takes approximately 20 minutes to complete. It does not include the assessment of gait. (16)

Data Analysis:

The collected data were analyzed to investigate the relationships between personality types, coping attitudes, cognitive function, and physical functioning in individuals diagnosed with stroke. Statistical analyses were conducted to determine the significance of these relationships and draw meaningful conclusions regarding the rehabilitation of stroke survivors.

RESULTs

The current study delves into the intricate interplay between personality types, coping attitudes, cognitive level, and physical function among individuals diagnosed with stroke. The evaluation performed on 25 patients treated at Istanbul Medipol University SUAM (Health Applications Research Centre) Pendik Hospital, all meeting the stringent criteria for inclusion in our study. These criteria ensured that the participants were unequivocally diagnosed with stroke through a medical board report. The assessment tools used in our research included the Enneagram Personality Questionnaire, Coping Attitudes Scale, Montreal Cognitive Assessment Scale, Berg Balance Scale, and Timed Up and Go Test, all administered during two separate sessions. The findings regarding the socio-demographic characteristics of the patients participating in the study are demonstrated in Table 1.

Table 2 illustrates the relationship of enneagram personality types with cognitive function, physical function, and coping attitudes. The participants' MOCA, Berg, TUG, and COPE scores do not differ significantly according to enneagram (p>0.05).

Table 3 demonstrates the correlation analysis between MOCA, Berg, TUG, and COPE-R. When the correlation analyses between MOCA, Berg, TUG, COPE-R scores were examined; r=0.73 positive correlation was found between Berg and MOCA (p<0.001), r=-0.484 negative correlation between TUG and MOCA (p=0.036), r=-0.862 negative correlation between TUG and Berg (p<0.001). Correlation relationships between other variables were not statistically significant (p>0.05).

Table 4 shows the impact of MOCA on Berg and TUG. The regression analysis performed to determine the cause and effect relationship between MOCA and Berg and TUG was found significant (F=19.366; p<0.001). The total change in Berg level is explained by MOCA at a rate of 50.5%, and the total change in TUG level is explained by MOCA at a rate of 18.9% (R²=0.189). MOCA increases the Berg level (β =0.930) and decreases the TUG level (β =-0.620).

Table 5 provides differentiation of MOCA, Berg, TUG, and COPE-R scales according to chronic disease status. MOCA scores of the participants according to gender show a significant difference (t(17)=-2.990 p=0.008). MOCA scores of men (x =27.000) were higher than MOCA scores of women (x =19.857). Berg scores of the participants show a significant difference according to chronic disease status (t(17)=-2.476; p=0.024). According to the chronic disease status of the patients, TUG scores show a significant difference (t(17)=2.112; p=0.048). MOCA, coping scores of the participants do not differ significantly according to the chronic disease status (p>0.05).

Table 1: Socio-demographic information of participants.

Socio-Demographic	Frequency	Percentage
Data	(n)	(%)
Gender	_	
Woman	7	36.8
Man	12	63.2
Affected Side		
Right	11	57.9
Left	8	42.1
Chronic Illness		
Yes	10	52.6
No	9	47.4
Family History of Stroke		
Yes	1	5.3
No	18	94.7
Cigarette Use		
Yes	4	21.1
No	15	78.9
Education Status		
Primary School	7	36.8
Secondary School	3	15.8
High School	3	15.8
University	6	31.6
Auxiliary Device Use		
Yes	1	5.3
No	18	94.7

Table 2: Relationship of enneagram personality types with cognitive function, physical function, and coping attitudes.

	Group	n	Mean±SD	F	р
	Emotion Centre	7	21.000±6.831		
MOCA	Instinct Centre	8	26.375±4.373	1.904	0.181
	Mind Centre	4	26.250±6.185		
	Emotion Centre	7	47.571±8.264		
Berg	Instinct Centre	8	54.125±1.959	2.253	0.137
	Mind Centre	4	46.250±11.442		
TUG	Emotion Centre	7	14.000±6.532		
	Instinct Centre	8	11.250±3.808	1.510	0.251
	Mind Centre	4	19.250±13.50		
COPE-R	Emotion Centre	7	80.714±8.636		
	Instinct Centre	8	84.500±10.337	0.718	0.503
	Mind Centre	4	87.500±8.185		

One-way Analysis of Variance

(n: Number of people, Mean: Mean, SD: Standard deviation, Min: Minimum, Max: Maximum, MOCA: Montreal Cognitive Assessment Scale, TUG: Timed Up-and-Go Test, COPE-R: Coping Attitudes to Stress Scale, F: Frequency, P<0.005)

Table 3: Correlation analysis between MOCA, Berg, TUG, and COPE-R.

		MOCA	Berg	TUG	COPE-R
MOGA	r	1.000			
MOCA	р	0.000			
Deres	r	0.730**	1.000		
berg	р	0.000	0.000		
TUC	r	-0.484*	-0.862**	1.000	
TUG	р	0.036	0.000	0.000	
COPE-R	r	0.346	0.223	-0.290	1.000
	p	0.147	0.359	0.229	0.000

Table 4: Impact of MOCA on BERG and TUG.

Dependent Variable	Independent Variable	ß	Т	р	F	Model (p)	\mathbb{R}^2
Berg	Fixed MOCA	27.389 0.930	5.170 4.401	$0.000 \\ 0.000$	19.366	0.000	0.505
TUG	Fixed MOCA	29.052 -0.620	4.260 -2.278	0.001 0.036	5.190	0.036	0.189

(MOCA: Montreal Cognitive Assessment Scale, TUG: Timed Up-and-Go Test, F: Frequency, P<0.005, *<0.05, R: Regression)

Table 5: Differentiation of MOCA, Berg, TUG, and COPE-R scales according to chronic disease status.

Differentiation Status	Scales	Group	n	Mean±SD	t	р	sd
According to Chronic Disease	MOCA	There is	10	22.300±7.273	1 650	0.111	17
		None	9	26.667±3.317	-1.050		
	Berg	There is	10	46.400 ± 8.784	2 176	0.024	17
		None	9	54.111±3.296	-2.470		
	TUG	There is	10	17.200±9.016	2 1 1 2	0.048	17
		None	9	10.330 ± 3.873	2.112		17
	COPE-R	There is	10	85.300±9.967	0.772	0.451	17
		None	9	82.000±8.485		0.431	17

DISCUSSION

The study's findings, which examine the interplay between stroke, personality traits, and coping strategies, offer valuable insights into stroke rehabilitation's complex and multifaceted landscape (17-25). Mukherjee and colleagues (17) raised the intriguing proposition that post-stroke brain damage might be linked to profound changes in one's identity and personality. This hypothesis underscores the intricate web of interactions involving emotional, cognitive, and physical abilities, as well as shifts in social contexts and family dynamics. It suggests that strokes have far-reaching consequences that extend beyond the physical realm, emphasizing the need for holistic care and rehabilitation strategies that encompass recovery's psychological and social aspects. Nakaya et al.'s study (18) conducted in rural Japan found no significant relationship between specific personality traits, as assessed by the Eysenck personality questionnaire, and the risk of ischaemic heart disease and stroke. Although their study provided valuable insights, it also underscores the complexity of the relationship between personality and stroke risk. To truly comprehend the intricacies of this association, it is clear that more comprehensive research is warranted, particularly in diverse populations and settings.

Gillespie and colleagues (19) aptly drew attention to the paucity of research on coping strategies among stroke survivors, highlighting a critical gap in our understanding of how these individuals adapt to the life-altering experience of having a stroke. This revelation raises the importance of conducting further research into coping mechanisms in this population, which may serve as a foundation for more effective psychological support and rehabilitation programs. The study's discovery of a positive association between certain coping strategies, such as "being outside and distraction," and anxiety resonates with broader models of anxiety disorders that emphasize escape and avoidance responses as pivotal factors in perpetuating fear (19). Given the prevalence of anxiety in stroke survivors, this insight underscores the significance of understanding and addressing coping strategies as a crucial aspect of post-stroke care. Moreover, the study's exploration of the link between physical ability and coping attitudes aligns with research by Donnellan et al. (20). Their findings suggest that functional disability may decrease coping attitudes, highlighting the potential role of physical rehabilitation in enhancing psychological well-being and adaptive coping in stroke survivors. However, the absence of a significant relationship between physical function and coping attitudes in this study raises intriguing questions about the factors influencing coping in this population, necessitating further investigation. Darlington et al.'s work (21) has shed light on the pivotal role of coping attitudes in shaping the quality of life for stroke patients in the first year after discharge. While this underscores the importance of addressing coping strategies early in the rehabilitation process, it also underscores the stability of these strategies over time, emphasizing the need for more nuanced interventions that adapt to evolving patient needs. The studies by Young Ahn et al. (22) and Simpson et al. (25) emphasizing the interrelatedness of various physical functions such as mobility, balance, and cognitive function emphasize the critical importance of these factors in falls among stroke survivors.

This understanding is particularly relevant given that stroke patients often experience falls, which can have serious consequences for their safety and overall well-being. This underscores the importance of tailored rehabilitation programs that focus on enhancing mobility, balance, and cognitive function to mitigate the risk of falls.

The current study comprehensively analysed the multifaceted relationship between stroke, personality traits, coping strategies, and physical and cognitive functioning. It has illuminated the intricate and nuanced dynamics that underlie stroke rehabilitation and recovery. The findings highlight the need for continued research to expand our understanding of these complex relationships and inform the development of more effective and personalized rehabilitation strategies for stroke survivors. This holistic approach to stroke care will improve the physical health, psychological well-being, and quality of life of those affected by stroke.

This study had several limitations. The relatively small sample size, influenced by the coronavirus epidemic's impact on patient recruitment during the study period, may have limited the robustness of the findings. The absence of a significant relationship between the Enneagram test and other assessments can be partly attributed to the limited number of participants. Additionally, the subjective nature of the coping skills and Enneagram tests, further exacerbated by their poststroke administration, could have introduced subjectivity and potential misrepresentation in patient responses. To address these limitations and increase the study's relevance, future research should consider expanding the participant pool, implementing strategies to reduce subjectivity, and exploring a more diverse range of patient demographics and factors in the context of stroke rehabilitation.

CONCLUSION

In this study, it was observed that in individuals diagnosed with stroke, cognitive activity was found to be lower than the maximum level. Among individuals diagnosed with stroke, those with high cognitive activity scored higher on the Berg Balance test, whereas those with lower cognitive activity took longer to complete the Timed Up and Go (TUG) test. This difference in cognitive activity was associated with a decrease in balance and physical activity levels, consequently increasing the likelihood of falls. Data obtained from the Berg Balance Scale, which measures balance activity, further supported the finding that balance activity was lower than the maximum level in individuals diagnosed with stroke. It was also revealed that the level of balance activity was inversely related to the completion time of the TUG test, with increased balance activity reducing the completion time and decreased balance activity prolonging it.

This study aimed to investigate the significance of coping attitudes and personality types in the context of stroke rehabilitation, shedding light on the intricate interplay between psychological factors and physical and cognitive function. While this study did not establish a significant relationship between personality scales, coping skills, and balance, physical, and cognitive activity levels, it underscores the need for a more tailored and effective approach to rehabilitation for stroke survivors.

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For individuals living with the aftermath of stroke, it is recommended that rehabilitation interventions be personalized and fine-tuned to address the individual's unique cognitive and physical needs. This approach can potentially enhance recovery outcomes and improve the quality of life for stroke survivors.

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Author Contributions: AK, ATA: designed and directed the study. Data collection, analysis and interpretation of results AK, ATA: wrote the final draft of the manuscript. Both authors reviewed the results and approved the final version of the manuscript.

Ethical approval: The present study was conducted in strict accordance with the principles outlined in the Declaration of Helsinki. Ethical approval for the study was obtained from the Ethics Committee of Istanbul Medipol University (Decision No: 655, Date:17.06.2021), and all participants provided informed consent before participating in the study.

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