Ann Med Res

Current issue list available at AnnMedRes

Annals of Medical Research

journal page: www.annalsmedres.org

The relationship between positive mental health and activities of daily living in patients with stroke

Elif Ok[a,*], Inci Kisa[b], Elif Ates[c], Birgul Ozkan[d]

[a] *Baskent University, Faculty of Health Sciences, Department of Nursing, Ankara, Türkiye*
[b] *Ilker Celikcan Physical Therapy and Rehabilitation Hospital, Bursa, Türkiye*
[c] *Istanbul University, Faculty of Health Sciences, Department of Nursing, Istanbul, Türkiye*
[d] *Ankara Yildirim Beyazit University, Faculty of Health Sciences, Department of Nursing, Ankara, Türkiye*

ARTICLE INFO

Keywords:
Stroke
Activities of daily living
Positive mental health

Received: Apr 18, 2022
Accepted: Feb 02, 2023
Available Online: 27.02.2023

DOI:
10.5455/annalsmedres.2022.04.132

Abstract

Aim: Dependency occurs at various rates in the activities of daily living (ADL) of patients after stroke. Many factors can affect the level of dependence in ADL. The aim of this study is to determine the relationship between positive mental health and ADLs of individuals after stroke.

Materials and Methods: This descriptive and correlational study was conducted in the Physical Therapy and Rehabilitation Hospital between May and November 2021. The sample of the study consisted of 84 patients hospitalized for post-stroke rehabilitation. Data were collected through face-to-face interviews with Personal information form, Positive Mental Health Scale, Barthel Activities of Daily Living Index and Instrumental Activities of Daily Living Scale.

Results: It was determined that the mean age of the participants was 61.47±9.43 years, 60.7% were male, 88.1% were married, 77.4% were primary school graduates and 48.8% were retired. It was found that 89.3% of the participants were followed up with the diagnosis of hemiplegia, were diagnosed 31.40±40.27 months ago on average. A positive correlation was found between the Barthel ADL and Instrumental ADL scores of the patients and their positive mental health, prosocial attitude, interpersonal relations and autonomy.

Conclusion: It was determined that the patients participating in the study were moderately dependent on ADL according to the Barthel ADL and Instrumental ADL indexes. Our study findings show that with the improvement of mental health, an improvement can be achieved in the daily living activities of the patients. Interventions that support autonomy, improve interpersonal relationships, and enable patients to discover areas where they can help others can be recommended in stroke patients.

Introduction

Stroke is an important worldwide public health problem characterized by its high incidence, mortality, morbidity, recurrence rate and high burden of care. Stroke is the second leading cause of death globally and, the primary cause of long-term disability [1]. About 15 million people have a stroke in the world annually, 5 million people die due to stroke, and 5 million people suffer permanent damage [2]. Turkey cardiovascular disease prevention and control program 2015-2020 report states that 24.7% of deaths in the country are caused by cerebrovascular diseases [3]. An estimated 1.5 million increase in stroke survivors is expected by 2025 in Europe [4]. In Turkey; according to the Ministry of Health report regarding Home Health Services in 2012, 50% of stroke patients recover or are discharged with mild limitations, 20% die in hospital and 30% need care in their daily work due to serious or permanent damage [5].

Post-stroke functions may be impaired mildly, moderately or severely, permanently or temporarily [6]. The independence level of individual is the most affected function when a stroke occurs. After a stroke, problems may occur in bodily functions such as muscle strength, energy, and, memory, and in activities of daily living (ADL) such as speaking, moving, dressing, self-care, sleeping, and eating. In addition, there may be a decrease in the level of participation in activities such as doing the housework and preparing meals for oneself [7]. Moreover, changes in the thought process of individuals after stroke, significantly affect their ability to perform ADLs. Unhappiness and restlessness are observed in individuals not able to express

*Corresponding author:
Email address: elifok7@gmail.com (Elif Ok)

themselves and, dependent on ADL [8].

ADL levels of individuals after stroke are a key factor in stroke rehabilitation, and also related to psychological problems [9]. Approximately one-third of patients after stroke are experience psychological problems shortly after the onset of the disease [10]. Research in this area has mainly focused on depression and anxiety in stroke patients [11].

Today, mental health does not only mean the absence of psychopathology, but it has become important to systematically investigate the factors associated with positive characteristics such as mental health and mental well-being, hope and optimism [12]. The purpose of positive psychology is to recognize and develop individuals. Instead of focusing on the weaknesses and pathologies of the human being, it focuses on the positive features and re-evaluates what is right and what can be improved [12].

Both external (social support) and internal factors (hope, resilience and self-efficacy) affecting positive psychology have been frequently investigated in patients with chronic conditions and have been shown to help change the impact of psychological distress on an individual [9]. It has been determined that these factors have a significant effect on coping with stress and mental well-being in patients (for example, cancer and HIV patients) [13-15]. However, limited research has been presented on the effect of these factors on the psychological distress of individuals diagnosed with stroke. In this study, it was aimed to determine the relationship between positive mental health and ADLs of individuals after stroke.

Materials and Methods

Type of study and sampling

This descriptive and correlational study was conducted in the Physical Therapy and Rehabilitation Hospital between May and November 2021. Patients hospitalized for post-stroke rehabilitation and met the inclusion criteria were included in the study. The correlation was found between resilience and ADL was at the level of r=0.23 in the study of Wang et al. 2019 [9], and α=0.05 error level for this study, with a test power of (1-β) = 0.80, the required total sample size was determined as at least 82 people. The sample of the study consisted of 84 patients hospitalized during the specified dates. The inclusion criteria for the research were as follows: patients aged 18 years old or over, hospitalized for post-stroke rehabilitation, able to answer the questions and, agreed to participate in the study. Patients in the acute phase after stroke were excluded from the study.

Data collection tools

Data were collected through face-to-face interviews with Personel Information Form, Positive Mental Health Scale, Barthel Activities of Daily Living Index, and Instrumental Activities of Daily Living Scale. During data collection on daily living activities indices, support was received from patient relatives and/or nurses. The primary variables of the study were the patients' activity of daily living and positive mental health scores.

Ethical considerations

Before starting the research, ethics committee approval was obtained from the ethics committee of Ankara Yildirim Beyazit University (16.04.2021-31) and institutional approval was obtained from the relevant institution. Written and verbal consents were obtained from the patients who were invited to participate in the study after being informed.

Personal information form

There are 12 items in this form questioning the sociodemographic and treatment-related characteristics of the patients.

Positive mental health scale

It was developed by Lluch (1999) to describe the conceptual model of positive mental health and to evaluate positive mental health [16]. The scale, which consists of thirty-nine items in six sub-dimensions (Personal Satisfaction, Prosocial Attitude, Self-control, Autonomy, Problem-solving, Interpersonal Relationship Skills), is a four-point Likert type. Its Turkish adaptation, validity and reliability study was carried out by Teke and Baysan Arabacı (2018). The total score to be obtained from the scale ranges between 39 and 156. The scale does not have a cut-off point, but higher score indicates positive mental health [12]. In the current study, the Cronbach alpha coefficient of the scale was found as 0.86.

Barthel activities of daily living index

It was developed by Mahoney and Barthel in 1965 [17]. The Turkish adaptation of the index was performed by Küçükdeveci et al. (2003). The scale evaluates 10 different activities of daily living, starting from 0 up to 15 points with 5 points increments according to the scope of the item. The main purpose of this scale is to determine the dependency level of the patient in performing ADLs. The minimum and maximum total score of the scale is 0 and 100 points, respectively. The higher score indicates higher independency level of patient. (0-20 points fully dependent, 21-61 points highly dependent, 62-90 points moderately dependent, 91-99 points mildly dependent, 100 points fully independent) [18]. In this study, the Cronbach alpha coefficient of the scale was found as 0.93.

Instrumental activities of daily living scale

It was developed by Lawton and Brody in 1969 [19] and, adapted into Turkish by Işık et al (2020). The scale aims to evaluate the independence level of the individual in activity areas such as using the phone, travelling by transportation vehicles, shopping, preparing meals, doing daily chores, doing laundry, managing medications and, handling financial issues. The answers given to each of the eight items in the scale are scored as 0 (unable or partially able) or 1 (able to do) point. The total score ranges from 0 (low functioning, dependent) to 8 (high functioning, independent) points [20]. In this study, the Cronbach alpha coefficient of the scale was found as 0.81.

Statistical analysis

SPSS 22.00 for Windows package program was used for data analysis. For descriptive statistics, mean and standard deviation (X ± SD), number (n) percent (%) representation was used. The difference between two independent variables was analyzed with the Mann Whitney U test and, correlational analyzes with the Spearman correlation test. All analyzes were evaluated within the 95% confidence interval. P value under 0.05 was considered as "statistically significant".

Results

The sociodemographic and disease-related characteristics of the participants were presented in Table 1. It was determined that the mean age of the participants was 61.47±9.43 years, 60.7% were male, 88.1% were married, 77.4% were primary school graduates and, 48.8% were retired. It was found that 89.3% of the participants were followed up with the diagnosis of hemiplegia, were diagnosed 31.40±40.27 months ago on average, and were in the rehabilitation process for an average of 42.85±22.59 days. It was determined that 35.7% of them had at least one chronic disease and the most common chronic disease was Hypertension (HT) with 45.96%.

Table 1. Sociodemographic and disease-related characteristics of participants (n=84).

Characteristics		X±SD	Min-Max
Age		61.47±9.43	35-78
Rehabilitation Period/Day		42.85±22.59	30-120
Age of Onset of the Disease/ Month		31.40±40.27	2-180
Number of Tablets Per Day		6.51±2.99	0-13
		n	%
Gender	Female	33	39.3
	Male	51	60.7
Marital Status	Single	10	11.9
	Married	74	88.1
Education Status	Literate	6	7.1
	Primary Education	65	77.4
	High School	6	7.1
	University	7	8.3
Working Status	Housewife	30	35.7
	Retired	41	48.8
	Not Working	13	15.5
Diagnosis	Hemiplegia	75	89.3
	Paraplegia	3	3.6
	Tetraplegia	4	4.8
	Hemiparesis	2	2.4
Presence of Chronic Diseases	No	14	16.7
	1	30	35.7
	2	26	31
	3	14	16.7
Chronic Diseases*	Diabetes Mellitus	39	31.45
	Hypertension	57	45.96
	Heart Disease	22	17.74
	Other (Cancer, Rheumatic Diseases)	6	4.83
Family Relationships After Illness	Strengthened	25	29.8
	Not Changed	44	52.4
	Weakened	15	17.9
Smoking	Yes	19	22.6
	No	65	77.4

*n was folded X ± SD: Mean ± Standard Deviation Min: minimum Max: maximum.

Table 2. Barthel ADL, Instrumental ADL and Positive Mental Health Sub-Dimensions and total score averages of the participants.

Scales	X ± SD	Min- Max
Instrumental ADL	3.86±2.25	0-8
Barthel ADL	73.04± 23.81	5-100
Personal Satisfaction	14.77±5.79	8-29
Prosocial Attitude	7.20±1.97	5-12
Self-control	7.94±3.17	5-18
Autonomy	9.51±3.77	5-20
Problem-solving	11.88±3.29	9-22
Interpersonal Relationship Skills	13.46±4.48	7-24
Positive Mental Health Total Score	64.98±15.67	40-110

X ± SD: Mean ± Standard Deviation.

The participants' Barthel ADL, Instrumental ADL and positive mental health sub-dimensions and mean total scores were presented in Table 2. The mean total scores of the participants obtained from Barthel ADL, Instrumental ADL and, positive mental health scale were 73.04± 23.81, 3.86±2.25, and 64.98±15.67, respectively. It was determined that 72.6% of the participants were moderately, severely or fully dependent after stroke (Bartel ADL $\leq$ 90 points).

The difference between the mean scores of Barthel ADL, Instrumental ADL and positive mental health scale was evaluated according to the sociodemographic characteristics of the participants (Table 3). Among the sociodemographic characteristics, a significant difference was found between married and single patients in the mean scores of Barthel ADL, prosocial attitude and, positive mental health total score. It was determined that those who were married had higher mean score of Barthel ADL, and lower mean score of prosocial attitude and positive mental health scale.

The correlation analyzes between the participants' mean scores of Barthel ADL, Instrumental ADL and positive mental health scale were presented in Table 4. There was a negative, moderate, and statistically significant correlation between the mean scores of Barthel ADL, prosocial attitude and, positive mental health total scale. A weak, negative correlation was found between Barthel ADL and interpersonal relationship mean scores. There was a negative, moderate correlation between the participants' mean scores of Instrumental ADL, interpersonal relationship, and positive mental health scale. A negative and weak correlation was found between the mean scores of Instrumental ADL and prosocial attitude. Positive mental health

Table 3. Comparison of ADL and Positive Mental Health scores according to the sociodemographic characteristics of the participants.

	Barthel ADL	I- ADL	Personal Satisfaction	Prosocial Attitude	Self-control	Autonomy	Problem solving	Interpersonal Relationship	Skills Total Score of PMH
Married	82.50	4	12	7	7	8	11	13	61
Median (IQR)	(64.75-92)	(2-6)	(10-18)	(5-8)	(5-9)	(6-11)	(9-13)	(9.75-16)	(52.75-72)
Single	60.50	2	18.50	9	8	9	12.50	16	75
Median (IQR)	(19.5-77.5)	(1-4)	(11-24.5)	(7.5-11)	(6-12.25)	(5.75-17.5)	(10-15.5)	(10.75-18.5)	(64.5-87.75)
Z*	-2.425	-1.570	-1.913	-2.624	-1.221	-0.7116	-1.603	-1.442	-2.190
p	0.015	0.11	0.056	0.009	0.22	0.47	0.10	0.14	0.02

*Mann-Whitney U test PMH: Positive Mental Health, I- ADL: Instrumental Activities of Daily Living.

Table 4. The correlation analyzes between barthel ADL, instrumental ADL and positive mental health mean scores.

	*	Personal Satisfaction	Prosocial Attitude	Self-control	Autonomy	Problem-solving	Interpersonal Relationship Skills	Total Score of PMH
Barthel ADL	r	-0.16	-0.32	-0.14	-0.14	-0.19	-0.22	-0.30
	p	0.13	0.003	0.19	0.19	0.07	0.004	0.006
Instrumental ADL	r	-0.21	-0.28	-0.03	-0.20	-0.15	-0.36	-0.32
	p	0.053	0.01	0.78	0.06	0.18	0.001	0.003

*Spearman Correlation Analysis PMH: Positive Mental Health.

scores decreased as participants' Barthel ADL and Instrumental ADL scores increased.

Discussion

In this study, the relationship between ADL, Instrumental ADL, and positive mental health in stroke patients was investigated. It was determined that the patients participating in the study were moderately dependent on ADL according to the Barthel ADL and Instrumental ADL indexes. A correlation was found between the Barthel ADL and Instrumental ADL levels of the patients and their positive mental health. As independency level increases in ADL and Instrumental ADL, positive mental health also progresses positively, and vice versa.

Post-stroke recovery outcomes are heterogeneous, and it is estimated that 25% to 75% of 50 million stroke survivors worldwide need some assistance or are completely dependent on caregivers in activities of daily living [21]. It was found that 72.6% of the patients who participated in our study either needed help or were fully dependent in performing ADLs after stroke. It was determined that the participants were moderately dependent according to their Barthel ADL total score averages. It is seen that these values were similar to the rates found in studies conducted with patients who have had a stroke before [22-24].

Factors affecting functionality in post-stroke ADL include advanced age, level of neurological deficit [25], socioeconomic status, presence of recurrent and hemorrhagic stroke [26], time to start post-stroke rehabilitation, and intensity of rehabilitation [27], and also psychological problems such as depression [28] and anxiety [29]. Studies have reported that post-stroke depression and anxiety symptoms were seen at high rates and patients should be evaluated in terms of these symptoms [9, 22, 30].

Wang et al. (2019) found that social support, resilience, hope, and self-efficacy were effective on anxiety and depression symptoms. In our study, it was found that married patients were more independent and had more positive mental health in ADL [9]. In addition, living alone has been found to be one of the predictors of poor well-being after stroke [31]. Considering that married patients have more social support than single ones, our study findings are similar to the literature.

The relationship between post-stroke mental disorders and mortality has been studied in many studies. It has been reported that one-third of patients have a mental disorder after stroke [32], and 30% of them experience poor well-being within the first 6 months after stroke [31]. It has been reported that the risk of mortality is higher in patients diagnosed with depression, anxiety, or any mental disorder after stroke [32-34]. In addition, it has been determined that the probability of suicide was high within 5 years after stroke, especially in young adults [35].

Considering that mental problems after stroke are as important as physical problems and affect the individual's life, the importance of improving mental health cannot be denied.

According to positive mental health, which states that mental health should include more than just the absence of any mental disorder, it is important to address and to support the developmental aspects of the individual [12]. Our study findings show that with the improvement of mental health, an improvement can be achieved in the daily living activities of the patients. In this study, a relationship was found between the areas of positive mental health, prosocial attitude, interpersonal relations and autonomy, and activities of daily living in stroke patients. In this context, interventions that support autonomy, improve in-

terpersonal relationships, and enable patients to discover areas where they can help others can be recommended in stroke patients.

Limitations

The limitations of this study are that this study was conducted in a single center and the patients included in the study were not evaluated by a clinician for their cognitive status.

Ethics approval

Ethics committee approval was obtained from Ankara Yildirim Beyazit University (16.04.2021-31) and institutional approval from the relevant institution before starting the research.

References

1. Benjamin EJ, Blaha MJ, Chiuve SE, et al. Heart disease and stroke statistics-2017 update: A report from the American Heart Association. Circulation. 2017;135(10): e146–e603.
2. WHO Global Status Report on Noncommunicable Diseases 2014.
3. Türkiye kalp ve damar hastalıkları önleme ve kontrol programı 2015-2020. Sağlık Bakanlığı Yayın No: 988, Ankara, 2015. https://tkd.org.tr/TKDData/Uploads/files/Turkiye-kalp-ve-damar-hastaliklari-onleme-ve-kontrol-programi.pdf.
4. Guo L, Liu Y, Zhu, Y, Wei, M. Identification of health behaviour clusters among people at high risk of stroke: A latent class profile analysis. J Adv Nurs. 2020; 76, 3039–3047.
5. Bilgili L, Gözüm S. İnmeli hastaların evde bakımı: bakım verenler için rehber. Dokuz Eylül Üniversitesi Hemşirelik Fakültesi Elektronik Dergisi. 2014; 7 (2).
6. Alankaya N. İnme sonrasi yeti yitimi ve rehabilitasyonda hemşirenin rolü. Yoğun Bakım Hemşireliği Dergisi. 2019; 23(3): 195-201.
7. Topçu S, Oğuz S. İnme sonrası öz etkililik ve yaşam kalitesi. Journal of Human Sciences. 2017;14(2): 1388-1396.
8. Koç A. (2012). İnme'de günlük yaşam aktiviteleri. Gülhane Tıp Derg. 2012; 54: 1-7.
9. Wang X, Shang S, Yang H, et al. Associations of psychological distress with positive psychological variables and activities of daily living among stroke patients: a cross-sectional study. BMC Psychiatry. 2019; 19: 381.
10. Hackett ML, Pickles K. Frequency of depression after stroke: an updated systematic review and meta-analysis of observational studies. Int J Stroke. 2014(Part I);9(8):1017–1025.
11. Van Mierlo ML, Schröder C, Van Heugten CM, et al. (2014). The influence of psychological factors on health-related quality of life after stroke: a systematic review. Int J Stroke. 2014;9(3):341–348.
12. Teke C, Baysan Arabacı L. Pozitif ruh sağlığı ölçeğinin Türkçe geçerlilik ve güvenilirliği. Anadolu Psikiyatri Derg. 2018;19(Özel sayı.1):21-28.
13. Wang ZY, Liu L, Shi M, Wang L. Exploring correlations between positive psychological resources and symptoms of psychological distress among hematological cancer patients: a cross-sectional study. Psychol Health Med. 2016; 21(5):571–82.
14. Sun W, Wu M, Qu P, Lu C, Wang L. Psychological well-being of people living with HIV/AIDS under the new epidemic characteristics in China and the risk factors: a population-based study. Int J Infect Dis. 2014; 28: 147–152.
15. Sui GY, Hu S, Sun W, et al. Prevalence and associated factors of depressive symptoms among Chinese male correctional officers. Int Arch Occup Environ Health, 2014; 87(4): 387–95.
16. Lluch-Canut T, Puig-Llobet M, Sánchez-Ortega A, et al. Assessing positive mental health in people with chronic physical health problems: correlations with socio-demographic variables and physical health status. BMC Public Health. 2013; 13(1):928.
17. Mahoney F, Barthel D. Functional evaluation: The Barthel Index. Md. State Med. J. 1965;14: 61–63.
18. Küçükdeveci AA, Yavuzer G, Tennant A, et al. Adaptation of the modified Barthel Index for use in physical medicine and rehabilitation in Turkey. Scand J Rehabil Med. 2003;2(2): 87-92.
19. Lawton MP, Brody EM. Assessment of older people: self-maintaining and instrumental activities of daily living. The Gerontologist. 1969; 9(3) Part 1: 179-186.
20. Isik EI, Yilmaz S, Uysal I, Basar S. Adaptation of the Lawton instrumental activities of daily living scale to Turkish: validity and reliability study. Ann Geriatr Med Res. 2020;24(1): 35.
21. Miller EL, Murray L, Richards L, et al. Comprehensive overview of nursing and interdisciplinary rehabilitation care of the stroke patient: a scientific statement from the American heart association. Stroke. 2010; 41: 2402-2448.
22. Haghgoo HA, Pazuki ES, Hosseini AS, Rassafiani M. Depression, activities of daily living and quality of life in patients with stroke. J. Neurol. Sci. 2013; 328(1-2): 87-91.
23. Süslü S, Şendir M. İnmeli Hastalarda Depresif Belirtilerin Sağlıkla İlişkili Yaşam Kalitesine Etkisi. Sağlık Bilimleri Üniversitesi Hemşirelik Dergisi. 2019; 1(1): 1-8.
24. Ayvat E, Kılınç M. İnmeli Hastalarda Fonksiyonel Denge Testlerinin Günlük Yaşam Aktiviteleri ile İlişkisinin İncelenmesi. Ergoterapi ve Rehabilitasyon Dergisi. 2020; 8(3): 215-220.
25. Kwakkel G, Kollen BJ. Predicting activities after stroke: what is clinically relevant?. Int J Stroke. 2013; 8(1): 25-32.
26. Pei L, Zang XY, Wang Y, et al. Factors associated with activities of daily living among the disabled elders with stroke. Int. J. Nurs. Sci. 2016; 3(1): 29-34.
27. Yagi M, Yasunaga H, Matsui H, et al. Impact of rehabilitation on outcomes in patients with ischemic stroke: a nationwide retrospective cohort study in Japan. Stroke. 2017; 48(3): 740-746.
28. Brown C, Hasson H, Thyselius V, Almborg AH. Post-stroke depression and functional independence: A conundrum. Acta Neurol. Scand. 2012; 126(1): 45-51.
29. Li W, Xiao WM, Chen YK, et al. Anxiety in patients with acute ischemic stroke: risk factors and effects on functional status. Front. Psychiatry. 2019; 10: 257.
30. Schöttke H, Giabbiconi CM. Post-stroke depression and post-stroke anxiety: prevalence and predictors. Int. Psychogeriatr. 2015; 27(11): 1805-1812.
31. Damsbo AG, Kraglund KL, Buttenschøn HN, et al. Predictors for wellbeing and characteristics of mental health after stroke. J Affect Disord. 2020; 264: 358-364.
32. Almeida OP, Xiao J. Mortality associated with incident mental health disorders after stroke. Aust N Z J Psychiatry. 2007; 41(3): 274-281.
33. Dossa A, Glickman ME, Berlowitz D. Association between mental health conditions and rehospitalization, mortality, and functional outcomes in patients with stroke following inpatient rehabilitation. BMC Health Serv. Res. 2011;11(1): 1-10.
34. Ghose SS, Williams LS, Swindle RW. Depression and other mental health diagnoses after stroke increase inpatient and outpatient medical utilization three years poststroke. Med care. 2005;1259-1264.
35. Pompili M, Venturini P, Lamis DA. et al. Suicide in stroke survivors: epidemiology and prevention. Drugs & Aging. 2015; 32(1): 21-29.