ORIGINAL ARTICLE

THE EFFECT OF FEAR OF FALLING OF OLDER STROKE SURVIVORS ON THEIR SELF-EFFICACY AND QUALITY OF LIFE: A CROSS-SECTIONAL STUDY

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Abstract

Introduction: The study was conducted to examine the effect of fear of falling on self-efficacy and quality of life in older stroke survivors.

Methods: A descriptive cross-sectional study design was used. One hundred and twenty-one older adults who had had a stroke and admitted to hospital between March and December 2021 were included. Data were collected using the Sociodemographic Characteristics Form, Stroke Specific Quality of Life Scale, Tinetti Falls Efficacy Scale, Stroke Self-Efficacy Questionnaire, Barthel Activities of Daily Living Index, and Standardized Mini Mental Test. Descriptive statistics, numbers, percentages, means, Pearson correlation analysis, and simple linear regression analysis were used.

Results: The mean age of participants was 74.19±6.66 years, Tinetti Falls Efficacy score was 47.67±17.38, Stroke Self Efficacy Questionnaire score was 22.49±7.64, and Stroke Specific Quality of Life Scale score was 3.13 ± 0.68. A statistically significant negative correlation was found between fear of falling and self-efficacy (r:-0.849; $p < 0.001$) and fear of falling and quality of life (r:-0.846; $p < 0.001$). The simple linear regression analysis indicates that Tinetti Falls Efficacy Scale had a statistically significant effect on Stroke Self Efficacy Questionnaire ($p < 0.001$). Tinetti Falls Efficacy Scale had a significant effect on Stroke Specific Quality of Life Scale ($p < 0.001$).

Conclusion: Fear of falling in older stroke survivors significantly affects their self-efficacy and quality of life. It is recommended that fear of falling should be evaluated in detail and comprehensively in older stroke survivors.

Keywords: Aged; Fear; Self Efficacy; Stroke; Quality of Life.

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INTRODUCTION

It is well known that improving self-efficacy and quality of life (QoL) levels is essential in the rehabilitation process of individuals who have had a stroke (1-3). Self-efficacy is a broad concept and a behavioural determinant. The perceived capacity of an individual who has had a stroke to perform a task also affects functional independence by affecting their performance of that task (4). A recent study reported that stroke survivors' participation in physical rehabilitation was affected by self-efficacy and that stroke survivors with high self-efficacy had faster motor development and increased mobility performance (2). It is known that high self-efficacy in stroke survivors improves the QoL, increases confidence in self-management, enables recovery, and supports rehabilitation (3). In addition, Ogwumike et al. (2021) reported that functional independence and exercise self-efficacy are the main determinants of QoL after stroke (4). QoL is an important concept in the stroke rehabilitation process. QoL is defined as the individual's perceptions, goals, expectations, standards, and concerns regarding their position in life in the context of the culture and value system in which they live (5).

In the stroke rehabilitation process, the concept of fear of falling (FoF) has become increasingly important, as have those of self-efficacy and QoL. It is well known that individuals who have had a stroke have a significantly higher incidence of falling and FoF than those who have not (6). The rehabilitation process is adversely affected in individuals whose activities are restricted due to FoF (7). Kamide et al. (2021) stated that self-efficacy decreases due to falls, and new falls may occur (8). It has been reported that the FoF seen in elderly individuals is a predictor of their QoL. FoF increases when an individual's physical functions are limited, and the presence of FoF decreases QoL and self-efficacy levels (9). Although the relationship between FoF and self-efficacy and QoL is known, more research is needed to reveal how strong the relationship is. In addition, although stroke is not an ageing problem, it has an increasing incidence with age (10), and no study has yet determined the effect of FoF on self-efficacy and QoL in older stroke survivors. With the aim of raising awareness of this issue, the present research was conducted to determine the effect of FoF on the QoL and self-efficacy of older adults who have had a stroke.

MATERIALS AND METHOD

A descriptive cross-sectional study design was used. Data were collected in face-to-face interview with individuals who had had a stroke and admitted to the neurology outpatient clinic of a university hospital between March and December 2021. The study was reported in accordance with the STROBE (The Strengthening the Reporting of Observational Studies in Epidemiology) checklist: cross-sectional studies (available at www.strobe-statement.org).

Sample

The sample consisted of individuals who met the inclusion criteria (over 65 years of age, Turkish-speaking, literate, having an ischaemic stroke, having a place and time orientation, having no aphasia, having a Standardized Mini-Mental Test Score above 24 and a Barthel Activities of Daily Living Index of 62 points and above). Due to the nature of the outpatient clinic where the data were collected, only elderly individuals with ischaemic stroke were included in the study. The sample comprised 121 individuals with older stroke survivors who voluntarily agreed to participate in the study. In the calculation of the sample size, the lowest regression coefficient was taken as 0.25 in order to obtain the highest sample size. The calculation made in the G-Power 3.1.9.4 programme (regression coefficient of 0.25, type I error based on 0.05, type II error (power) 0.80) indicated a sample size of 81. Individuals who were bed- and wheelchair-dependent, had severe vision

and hearing problems, and were experiencing an acute situation that would affect self-efficacy and QoL during the data collection process were not included in the study. As a result of the post hoc analysis, the power of the study was found to be 97% in the regression analysis performed with one independent variable in the G-power 3.1.9.4 programme, the effect size was found to be d = 0.15, the significance level was less than 0.05, and the sample number was 121.

Data Collection Tools

Data collection tools are described in Table 1 (11-16).

Analysis of Data

IBM SPSS Statistics Premium Academic Pack – Concurrent User V 25 was used to analyse the data. The data were analysed using descriptive statistics, number and percentage distributions, correlation

Table 1. Study Measures, Scoring, and Reliability

Measurement Tool	Number of Items	Description and (Example)	Scoring and Reliability
Sociodemographic Characteristics Form	11 items	It includes questions such as age, gender, marital status, date of diagnosis, chronic disease, and previous history of falling in older adults who have had a stroke.	-
Stroke-Specific Quality of Life (SS-QoL) (11)	48 items 8 sub-dimensions	It includes questions about activity, family and social aspects, energy, language, temperament, personality, thinking, and vision in the stroke survivor.	Likert type from 1-5. 1 = strongly agree 5 = strongly disagree Min-max: 1-5 (Cronbach's α: 0.97, in the current study: 0.97)
Tinetti Falls Efficacy Scale (T-FES) (12)	10 items	It evaluates the fear of falling experienced by individuals while performing activities of daily living.	Scoring from 1-10. 1 = I trust myself a lot 10 = I don't trust myself at all Min-max: 10-100 (Cronbach's α: 0.71, in the current study: 0.96)
Turkish version of the Stroke Self-Efficacy Questionnaire (T-SSEQ) (13)	13 items 2 sub-dimensions	It measures the self-efficacy judgments of stroke survivors in certain functional areas.	Likert type between 0-3. 0 = I don't trust myself at all 3 = I trust myself a lot Min-max: 0-39 (Cronbach's α activity 0.89, self-management 0.66, in the current study 0.95)
Barthel Activities of Daily Living Scale (BI) (14,15)	10 items	It consists of activity and self-management sub-dimensions.	Min-max: 0-100 The score of the item is between 5-15. (Cronbach's α: 0.93)
Standardized Mini Mental Test (SMMT) (16)	11 items	It determines the level of Independence in activities of daily living.	Min-max:0-30, For educated individuals, 22 points and below indicate cognitive impairment. (kappa value: 0.92)

analysis, and simple linear regression analysis. A value of $p < .05$ (95% confidence interval) was considered statistically significant.

Ethical Aspects of the Research

The necessary institutional permission and permission from the non-interventional research ethics committee (2021/10-14, 29.03.2021) were obtained for the implementation of the study and was conducted according to the World Medical Association Declaration of Helsinki. Participation in the research was voluntary, and written and verbal consent was obtained from the participants after they were informed of the purpose of the research.

RESULTS

The study participants' demographic characteristics were evaluated, and the results are given in Table 2. Descriptive statistics of the Stroke Self-Efficacy Questionnaire (T-SSEQ), the Stroke Specific Quality

Table 2. Distribution of Demographic Characteristics of Older Stroke Survivors (n=121)

Demographic Characteristics	n	%
Age (Min-Max / mean±SD)	65-92 / 74,19 ± 6,66	
Sex		
Female	52	43,0
Male	69	57,0
Marital status		
Married	79	65,3
Single	42	34,7
Educational status		
Primary education	91	75,2
High school	27	22,3
College-university	3	2,5
Diagnosis		
Less than 1 year	25	20,7
1-5 years	44	36,4
More than 5 years	52	43,0
Stroke frequency/number		
1 time	107	88,4
2 times	11	9,1
3 and more than 3	3	2,5
Getting help from someone for the care		
Yes	92	76,0
No	29	24,0
Having a chronic illness		
Yes	113	93,4
None	8	6,6
History of falling		
Yes	58	47,9
No	63	52,1
With whom he/she lives		
Lives alone	5	4,1
With his/her spouse	61	50,4
With spouse and children	16	13,2
With other relatives	39	32,2
Total	**121**	**100,0**

Table 3. The Effect of Fear of Falling on the Stroke Self-Efficacy and Quality of Life Scales of Stroke Survivors

	Stroke Self-Efficacy Scale								
	ß	**SH**	**Beta**	**t**	**p**	**F**	**Model (p)**	**R^2**	**Durbin-Watson**
Constant	40,302	1,079	-	37,344	0,000 [a]	308,107	0,000[a]	0,721	1,838
Fear of Falling	-0,374	0,021	-0,849	-17,553	0,000 [a]				
	Stroke-Specific Quality of Life Scale								
	ß	**SH**	**Beta**	**t**	**p**	**F**	**Model (p)**	**R^2**	**Durbin-Watson**
Constant	4,708	0,097	-	48,459	0,000 [a]	299,608	0,000 [a]	0,716	1,653
Fear of Falling	-0,033	0,002	-0,846	-17,309	0,000 [a]				

[a] p<0,001

of Life (SS-QOL), and the Tinetti Falls Efficacy Scale (T-FES) included in the study were evaluated. According to the results obtained, the mean T-SSEQ score of the older adults who had a stroke was 22.49 ± 7.64, the mean SS-QOL score was 3.13 ± 0.68, and the mean T-FES score was 47.67 ± 17.38.

There is a statistically significant negative and very strong relationship between the T-FES mean score and T-SSEQ (r:-0.849; $p < 0.001$) and between the T-FES mean score and SS-QOL (r:-0.846; $p < 0.001$). A simple linear regression analysis was conducted to investigate the effect of T-FES on T-SSEQ, and the results show that the established model is statistically significant ($F = 308,107$; $p < 0.001$). It was found that T-FES had a statistically significant 72% effect on T-SSEQ. A further simple linear regression analysis was performed to investigate the impact of T-FES on SS-QOL in older adult stroke survivors, and the results showed that the established model was statistically significant ($F = 299,608$; $p < 0.001$). It is seen that T-FES has a statistically significant 71% effect on SS-QOL in older stroke survivors (Table 3).

DISCUSSION

FoF

It was determined that the older stroke survivors included in the study had a moderate FoF, and nearly half had a previous history of falling. The FoF-related findings in this study are similar to those in the literature. Savcun et al. (2021) examined the relationship between balance and FoF in stroke patients and stated that stroke survivors with poor balance avoid activities and experience FoF (17). Fortini et al. (2021) stated that 40% of the participants in their study had a history of falling (18). Compared to the reported studies, it was observed that a slightly higher number of individuals in this study had FoF and a history of falling. The reason for this is thought to be that, unlike the other studies, the sample of this study consisted of older adults.

Self- Efficacy

Not only is FoF is common in individuals who have had a stroke, but it also triggers fear of moving (17).

In the literature, it is emphasised that self-efficacy is an important variable related to various factors, such as activities of daily living, perceived health status, and QoL after stroke (19,20). In our study, it was found that older adults who had had a stroke had a moderate self-efficacy perception.

Nott et al. (2021) studied the role of self-efficacy in stroke self-management and reported that stroke patients with high self-efficacy have higher occupational performance than those with low self-efficacy and that self-efficacy is a mediating variable in improving occupational performance (21). Although stroke self-management does not improve occupational performance in older adults who no longer work, it is thought that increasing an individual's level of self-efficacy will cause an increase in both their activities of daily living and their level of coping with the negativities experienced. In addition, it is thought that improvement of self-efficacy in older adults who have had a stroke will lead to a positive change in their cognitive and physical perceived health status.

QoL

In the current study, it was found that older adults who had had a stroke had a moderate QoL. Similar to our study, Ellepola et al. (2022) examined the relationship between QoL and physical activity in daily life in individuals with stroke. It was found that the QoL related to the sub-score of general health, pain, social functionality, and vitality was moderate (22). The limitations caused by stroke bring changes to the QoL of individuals. It is thought that determining the factors affecting the QoL of older adults who have had a stroke and implementing interventions to improve their behavioural and cognitive functions will contribute to their QoL.

FoF and Self-Efficacy

The current study found a significant negative and very strong relationship between the FoF scale mean score and the Stroke Self-Efficacy scale mean score of older adults who have had a stroke. Similarly, Sheikh and Hosseini (2022) examined the relationship between gait variability and fall self-efficacy in stroke survivors and stated that the self-efficacy of older adults who have had a stroke decreases due to FoF (6). In the literature, it has been stated that self-efficacy will decrease as a result of decreased mobility, and more FoF may be seen in individuals who have had a stroke (23). The finding of a relationship between FoF and self-efficacy was expected. At the same time, it is emphasised that self-efficacy is important in evaluating FoF, and the relationship between FoF and self-efficacy should be determined in patients with stroke survivors (17). As a result of this study, it is pointed out that FoF is an important variable in self-efficacy.

FoF and QoL

There is a significant and negative correlation between the mean score of the FoF scale and the mean score of the Stroke-Specific Quality of Life Scale of older adults who have had a stroke in this study. Park and Cho (2021) examined FoF and related factors during activities of daily living in chronic stroke patients and stated that the presence of FoF after a stroke would lead to a decrease in physical function, self-efficacy, activities of daily living, and QoL (24). Jönsson et al. (2021) reported that stroke survivors with a history of falling have less physical activity in daily life, are more dependent, and have a lower QoL and that there is a significant negative relationship between falls and QoL. It has been emphasised that individuals with stroke and FoF should be encouraged to participate in activities (25). As found by the current study, Jönsson et al. determined that FoF is an important variable in QoL (25).

CONCLUSION

The average score of FoF, self-efficacy, and QoL of older adults who have had a stroke is moderate. It was concluded that FoF in older adults who have

had a stroke is associated with, and significantly affects, self-efficacy and QoL. Rehabilitation services are essential for improving stroke survivors' independence and QoL. When these services are provided, it should not be forgotten that FoF is an important determinant of self-efficacy and QoL. It is predicted that raising awareness of the importance of evaluating FoF in older adults with stroke will prevent falls in this group and increase their self-efficacy and QoL.

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