

# Translation and validation study for the stroke self-efficacy questionnaire in stroke survivors

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## Abstract

**Background:** Self-efficacy has been shown to play an important role in rehabilitation outcomes of stroke patients.

**Aim:** This study aimed to determine the validity and reliability of a Turkish translation of the Stroke Self-Efficacy Questionnaire.

**Methods:** This methodological study was conducted in a private acute stroke unit in İstanbul, Turkey. After obtaining the Institutional Review Board's approval and site consent, a translated version of the 13-item Likert-type scaled questions was tested for language and content validity. A pilot study with 10 patients was followed by recruitment of 130 stroke patient participants, with 50 patients retested after 3 weeks.

**Results:** The Stroke Self-Efficacy Questionnaire—Turkish had excellent content validity index and face validity index scores. Confirmatory factor analysis findings revealed a single factor structure that offered good model suitability. Cronbach alpha was 0.93 for the scale and its subgroups. There was no statistically significant difference between the items according to test-retest scores ( $P > 0.05$ ), and a reliability index was over 0.80.

**Conclusion:** The Turkish version of the Stroke Self-Efficacy Questionnaire is a valid and reliable tool, recommended for use in clinical rehabilitation and stroke self-management/self-efficacy interventions.

## KEYWORDS

questionnaires, rehabilitation, self-efficacy, stroke

## SUMMARY STATEMENT

What is already known about this topic?

- Self-efficacy is defined as an individual's belief in their ability to succeed in specific situations and their ability to control their motivation and behaviour in these situations
- Increasing self-efficacy for stroke patients can have a positive effect on recovery.

What this paper adds?

- The validity and reliability of this Turkish translation of the Stroke Self Efficacy Questionnaire were tested on Turkish-speaking patients with stroke and found to be acceptable.

The implications of this study:

- This new version of the scale is useable for Turkish stroke populations and may also be useful for Turkish-speaking patients with stroke in other countries.

- Including this instrument in rehabilitation programs for Turkish-speaking groups could help determine factors affecting self-efficacy in stroke patients to guide rehabilitation teams and achieve better patient outcomes.

## 1 | INTRODUCTION

Stroke is a disease process which disrupts blood flow and results in impairment of the central nervous system (Duraski, Denby, Danzy, & Sullivan, 2012; Karadakovan, 2011; Torbey & S. M., 2013). According to the American Heart Association Heart Disease and Stroke Statistics Report, the prevalence of stroke will increase 20.5% by 2030 (Mozaffarian et al., 2016; WHO, 2014). Stroke is a major cause of long-term disability worldwide (WHO, 2017). In Turkey, according to a 2015 Health Ministry report, cerebrovascular diseases are the second most common cause of death in every age group (Sağlık Bakanlığı,

2015). Other than high death rates (Duraski et al., 2012; Durra & Tülek, 2012; WHO, 2017), stroke also causes mobility, speech and language, swallowing, vision, sensation, and cognitive impairments (Langhorne, Bernhardt, & Kwakkel, 2011; Torbey & S. M., 2013) which lower quality of life (King, 1996; Motl, McAuley, Wynn, Sandroff, & Suh, 2013; Robinson-Smith, 2002; Topçu & Bölüktaş, 2012), and patients need support from others. Well-organized rehabilitation programs exist, and stroke survivors are often referred to these. There are a lot of challenges to achieve the positive outcomes possible from rehabilitation programs (Langhorne et al., 2011; Langhorne, Coupar, & Pollock, 2009; Stroke Unit Trialists' Collaboration, 1997; Trialists'Collaboration, 1997). In order to have good rehabilitation program outcomes, it is important to have well-organized and structured programs as well as patient/family members' motivation and willingness to engage with such programs (Jones, Partridge, & Reid, 2008). Self-efficacy, defined as an individual's belief in their ability to achieve control and succeed in specific situations (Aksayan & Gözüm, 2002; Lewin, Jöbges, & Werheid, 2013), can play an important role in this.

Bandura used the term "self-efficacy" for the first time in 1982, but the concept has been used since the 1950s. In 1950, the Health Belief Model was developed, focusing on the relationship of a person's beliefs and behaviours. The importance of perceived self-efficacy has been discussed as part of any model where motivation plays a part (Bandura, 1982). The Health Promotion Model, developed by Pender in 1987 and based on Bandura's social learning theory, is commonly used to determine the health care improvement behaviours and factors that affect health. Pender defined 3 main health improvement concepts, listing the concept of self-efficacy under cognitive factors (Ay, 2008; Pender, Walker, Sechrist, & Frank-Stromborg, 1990). The concept emphasizes that a person's perception of self-efficacy is very important for taking the initiative to improve health care behaviours (Aksayan & Gözüm, 2002). The health action process approach and protection motivation theory also emphasize the importance of self-efficacy.

There are many studies on increasing self-efficacy for stroke patients and its positive effects during recovery. Jones and Riazhi analysed 22 studies in which they found a person's perception of self-efficacy has positive outcomes on depression, quality of life, daily activities, and physical functions after a stroke (Jones & Riazhi, 2011). Other studies of stroke patients with high levels of self-efficacy have indicated a decrease in depression symptoms (Aben, Busschbach, Ponds, & Ribbers, 2008; Jones et al., 2008; Korpershoek, van der Bijl, & Hafsteinsdóttir, 2011; Lewin et al., 2013), an improvement in functional skills (Tito Vincent-Onabajo, Kime Lawan, Yoonus Oyeyemi, & Kolapo Hamzat, 2012), mobility, activities of daily living and quality of life (Jones et al., 2008; Korpershoek et al., 2011), and a decrease in the number of fall incidents (Andersson, Kamwendo, & Appelros, 2008; Jones et al., 2008). Self-efficacy clearly plays an important role in achieving better patient outcomes.

The Stroke Self-Efficacy Questionnaire (SSEQ) was developed by Jones et al. in 2008 to determine the level of self-efficacy in stroke patients during recovery. The SSEQ is a 13-item scale for determining stroke-specific measurements of stroke survivors' daily functional activities and self-management levels. The SSEQ has demonstrated a

high internal consistency with Cronbach's  $\alpha$  of 0.90 (Jones et al., 2008). The SSEQ was developed in English, and there has been no validated Turkish version. There are no studies in Turkey which focus on stroke survivors' self-efficacy; the aim of this study was, therefore, to examine the reliability and validity of a translated Turkish version of the SSEQ (SSEQ-T) among Turkish stroke survivors.

## 2 | METHODS

This study was designed as a methodological study. The population of the study contains Turkish-speaking stroke patients sampled in an acute stroke unit in Istanbul. Data were collected between June and August 2015.

### 2.1 | Sample

In instrument validity and reliability studies, it is recommended that a minimum of 10 people should be included for each item (Akgül, 1997; Dixon, 2013; Tavşancıl, 2005). This research was conducted with 130 patients because the SSEQ-T has 13 items.

Inclusion criteria for the participants included (1) aged 18 years or above, (2) clinically diagnosed with haemorrhagic or ischaemic stroke, (3) discharged from the hospital within 2 weeks and living at home, and (4) able to understand and read Turkish. Exclusion criteria were (1) diagnosed with transient ischemic attack, (2) having dysphasia or aphasia, and (3) cognitive impairment or mental illnesses. According to the inclusion criteria of the study, 130 patients who gave consent to participate in the study filled out the SSEQ-T; 50 patients agreed to be interviewed to complete the scale a second time for reliability testing.

To determine the scale's face and content validity index, the scale was sent to 10 experts to get their opinion on the scale, and a pilot study was conducted with 10 stroke patients (Tavşancıl, 2005).

### 2.2 | Instruments

The data were collected using a demographic form and the 13-item SSEQ. The socio-demographic form consisted of 7 questions on gender, age, educational and marital status, illness, living conditions, and caregiving.

#### 2.2.1 | The Stroke Self-Efficacy Questionnaire (SSEQ)

The SSEQ measures stroke survivors' daily functional activities and self-management. The original SSEQ scale's reliability and validity were completed by Jones et al. (2008). An 11-point scale (0 "not at all confident" to 10 "very confident") is calculated, providing a score range between 0 and 130 points. Riazhi, Aspden, and Jones (2014) used Rasch analysis for the SSEQ and scored each item on a 4-point scale (0 "not at all confident" to 3 "very confident") (Riazhi et al., 2014). The 4-point scale should be used in exactly the same way as the 10-point scale (providing a score range 0–39) (Riazhi et al., 2014). A higher score indicates a higher self-efficacy. The SSEQ Cronbach alpha was 0.90, and Falls Efficacy Scale was  $r = 0.803$ ,  $P < 0.001$ . In the original study, researchers determined the scale comprised a single factor using factor analysis. Furthermore, "the final 13-item Stroke Self-Efficacy

Questionnaire was found to have good face validity" (Jones et al., 2008). In this study, the 4-point scale was used for collecting data.

## 2.3 | Data analysis

### 2.3.1 | Step 1: Language, content validity, and face validity

First, the researcher communicated with the original author via e-mail to obtain consent to use the scale. The main author suggested that the 2014 version of the scale be used (Riazi et al., 2014). The scale was translated into Turkish by 2 academically qualified bilingual experts. The researcher examined the translated versions and made a consensus version draft instrument. This draft translated scale was sent to 2 different bilingual experts to be back-translated to English. The SSEQ had been reviewed by 8 nurse academics and 2 nurses with great experience working with stroke patients. They rated the relevance of each item (Aksayan & Gözüm, 2002; Beaton, Bombardier, Guillemin, & Ferraz, 2000).

The Content Validity Index (CVI) provides an expert judgement of the items and was calculated as the percentage of items with a rating of 3 or above. It confirms that the measurement includes an adequate and representative set of items which reflect the content that the questionnaire aims to examine and also whether the items are relevant to the construct (McElroy & Esterhuizen, 2017; Sekaran & Bougie, 2010). Davis' method was used to evaluate the experts' reports (Davis, 1992). Literature indicates a score of 0.80 CVI as a criterion for validity (Lynn, 1986; McElroy & Esterhuizen, 2017; Sealy et al., 2016). All of the items on the SSEQ were scored based on a 4-point Likert scale (1 = "not relevant" to 4 = "very relevant and succinct").

Face validity is described as reflecting the extent to which a measure looks valid as a measurement of the concept (Hardesty & Bearden, 2004; Sekaran & Bougie, 2010). Face validity is also used for clarity and unambiguity of an instrument's items, to determine if the items are easy to understand (McElroy & Esterhuizen, 2017). For determining face validity, the responses of 10 experts and 10 pilot study patients were evaluated. Both groups evaluated the scale using criteria "clearly representative", "somewhat representative," and "not representative" of the construct of interest.

### 2.3.2 | Step 2: Reliability

CVI and confirmatory factor analysis (CFA) were used to determine the SSEQ-T's content validity (Lynn, 1986). CFA is a multivariate statistical procedure to specify a model, signifying which variables load on which factors and their correlation (Ay, 2008; Tatlidil, 1996). After completing the CFA, the hypothesis question was tested: "Is the underlying factor structure of the SSEQ-T one-dimensional and representing a single factor?" In this study according to CFA, goodness of fit index (GFI), comparative fit index (CFI), Tucker-Lewis index (TLI), normed fit index (NFI), chi-square value to degrees of freedom (CMIN/df), and root mean square error of approximation (RMSEA) tests were used to evaluate the models.

To evaluate the SSEQ-T psychometric characteristics in our sample, we first examined floor and ceiling effects. These effects were calculated using the proportions of the sample that had the lowest and highest possible scores. Floor and ceiling effects were considered if it showed that >15% of patients achieved the floor effect (0/39 point

scores) or ceiling effect (39/39 point score) (Lim et al., 2015; Turner, Ersek, & Kemp, 2005).

The internal consistency of measures reveals the homogeneity of these items in the measurement of the construct (Sekaran & Bougie, 2010). In this study, Cronbach alpha was used to determine scale reliability and internal consistency. To determine that the scale has reliability, Cronbach alpha needs to be between  $0.80 \leq \alpha < 1.00$  (Aksayan & Gözüm, 2002; Polit & Beck, 2013; Sekaran & Bougie, 2010).

**TABLE 1** Statistical methods used in validity and reliability analysis

Validity study	Reliability study
Language validity	Floor and ceiling effects
Face validity	Internal consistency
Content validity confirmatory factor analysis	Item-total point analysis Test-retest reliability index

**TABLE 2** Demographics of participants (n = 130)

Characteristics	n (%100)	SSEQ Total Score	SD	P Value
<i>Gender</i>				
Men	60 (46.2)	25.7	11.1	0.09
Women	70 (53.8)	28.7	9.1	
<i>Age</i>				
45.00	15 (11.5)	33.1	6.3	
46.00–55.00	14 (10.8)	26.9	10.5	0.001*
56.00 – 65.00	29 (22.3)	30.4	6.4	
66.00–75.00	40 (30.8)	27.6	10.6	
76.00+	32 (24.6)	21.7	11.3	
<i>Chronic disease</i>				
Yes	87 (80)	26.4	10.3	0.11
No	42 (20)	29.5	9.6	
<i>Educational level</i>				
No qualification/illiterate	21 (16.2)	29.0	8.6	
Lower secondary	85 (65.4)	26.8	10.7	0.45
Upper secondary	16 (12.3)	28.5	9.3	
Bachelor's/ master	8 (6.2)	26.7	10.8	
<i>Marital status</i>				
Married	89 (63.8)	28.6	8.7	
Single	7 (5.4)	29.0	13.3	0.09
Widow	34 (30.8)	24.3	11.5	
<i>Living conditions</i>				
Living alone	4 (3.8)	34.5	1.0	
Living with spouses	23 (17.7)	28.5	8.4	
Spouses and children	62 (42.3)	29.1	8.5	0.001*
Living with family	3 (2.3)	37.3	1.5	
Other (friends, rest home..)	38 (33.8)	22.4	11.4	
<i>Caregiving</i>				
Themselves	5 (3.8)	34.4	0.8	
Spouses	24 (18.5)	28.6	8.4	0.002*
Spouses and children	52 (40)	29.4	8.5	
Father and mother	3 (2.3)	37.0	1.7	
Caregivers	44 (33.8)	22.7	11.9	

Abbreviations: SD, standard deviation; SSEQ, Stroke Self-Efficacy Questionnaire.

\*P < 0.05.

The ability of a measure to remain the same over time means that the measurement is stable and has low vulnerability to change in different situations (Sekaran & Bougie, 2010). Test-retest analyses were done to evaluate the constancy and consistency of the scale over time. For re-test analysis, 50 patients who agreed to be interviewed a second time were included. The literature has indicated that the sample should consist of a minimum of 30 participants, and the retest is advised to be performed 2 to 6 weeks apart (Aktürk & Acemoğlu, 2010; Tavşancıl, 2005). Retest of SSEQ-T was conducted on 50 patients after 2 to 3 weeks.

Data analyses are summarized in Table 1. Statistical analyses were performed using IBM SPSS Statistics 22, but all CFAs were conducted with AMOS version 23.

## 2.4 | Ethical considerations

This study was approved by the Koç University Institutional Review Boards (IRBs) (No: 2015.165.IRB2.062, Date:23.06.2015) and is consistent with the principles outlined in the Declaration of Helsinki.

## 3 | RESULTS

### 3.1 | Language, content validity, and face validity results

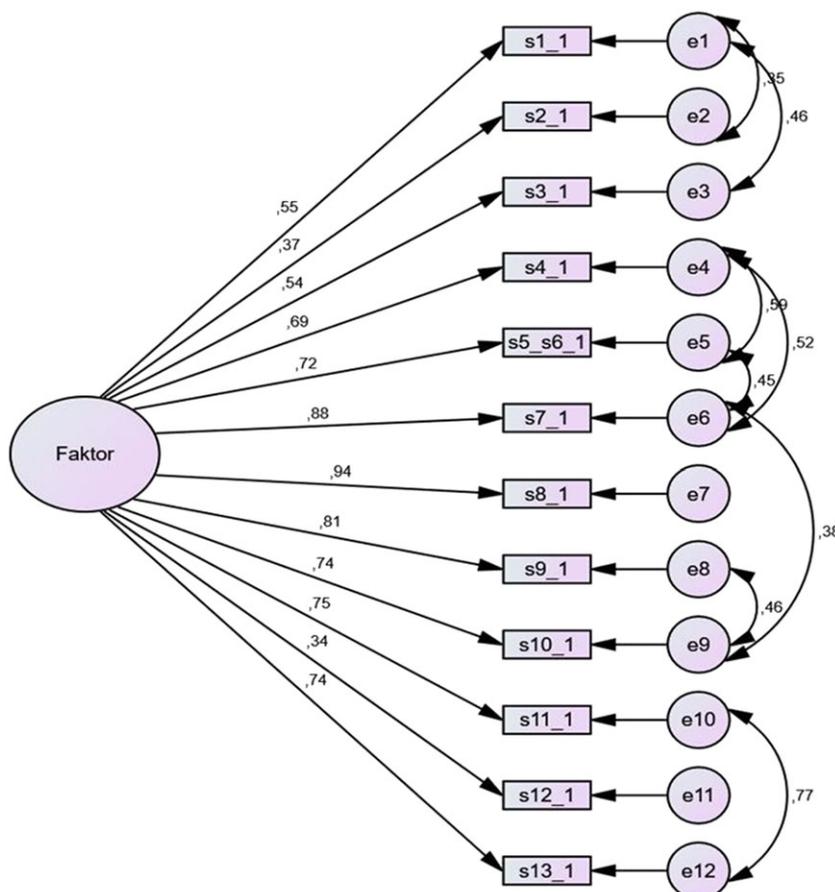
The expert opinions on the self-efficacy scale for stroke patients produced a calculated CVI of 0.96. The questionnaire demonstrated

excellent content validity. According to the evaluation of expert and pilot study groups, the SSEQ-T showed strong face validity. Due to the expert opinions, a Turkish version of the SSEQ-T was finalized. Ten people similar to the study population were pre-tested. As a result, all the items were agreed to be comprehensible, and nothing was revised from the SSEQ-T.

The sample consisted of 130 patients; 30.8% were aged between 66 and 75 years; 53.8% were female; 80% were diagnosed with acute ischaemic stroke; 63.8% were married; and 42.3% were living with their spouses and children. Substantial proportions of participants were both recipients and providers of care for other members of their families; 66.9% had chronic illnesses. The participants' SSEQ-T results are shown in Table 2. Statistically significantly greater self-efficacy levels were found in stroke patients under the age of 45 years who lived with and were cared for by their families.

### 3.2 | Reliability results

According to the CFA, 13 items were analysed and found to comprise a single factor model. The values for variables 8, 7, and 9 were superior to those of variables 12 and 2, but the remaining variable indexes were all between 0.50 and 0.80 (Figure 1). Indices of model fit determined the fit of the model: the GFI, CFI, NFI, and TLI have cut-off scores of good fit >0.95 and adequate fit >0.85 to 0.90; RMSEA has cut-off scores of good fit <0.05 and adequate fit <0.08–0.10; for CMIN/df good fit is <2.0 (Hu & Bentler, 1999; Schermelleh-Engel, Moosbrugger, & Müller, 2003; Stott et al., 2017). Our model fit summary is shown in Table 3.



**FIGURE 1** Single factor confirmatory factor analysis

**TABLE 3** Goodness-of-fit indexes in the measurement models

Model Fit Summary	CFI	NFI	TLI	RMSEA	CMIN/df	GFI
Chi-square: 67.55, df = 46 (*P = 0.021)	0.96	0.89	0.95	0.09	1.46	0.96

Abbreviations: CFI, comparative fit index; CMIN/df, chi-square value to degrees of freedom; GFI, good fit index; NFI, normed fit index; RMSEA, root mean square error of approximation; TLI, Tucker-Lewis index.

\*P < 0.05.

The scale showed minimal floor effects (0.7%) and ceiling effects (6.1%) in this sample. The reliability test Cronbach alpha value was found to be 0.93 for 13 items. The value is higher than 0.80 which means for 13 items the scale and the sample has inter-reliability. On average, the study participants scored in the mid-range on the SSQE-T with a mean score of 27.45 (SD = 9.8) on the 4-point scale.

The results of the scale needed to be coherent with repeated tests (Aksayan & Gözüm, 2002). The 13 items of the SSQE-T's Pearson correlation results indicated significant positive correlations between the variables' test and retest results ( $r = 0.78-0.94$ ). The correlation ratio is generally higher than 0.80 ( $r = 0.78-0.94$ ). This indicated a positive, significant and strong relationship between the scale test and retest variable scores; in addition, non-significant findings were found through paired t tests, confirming the similarity (Polit, Beck, & Owen, 2007; Tavşancıl, 2005) (Table 4). The highest score of the SSEQ-T is 3; this sample's mean score was 2.1.

## 4 | DISCUSSION

In the study, the validity and reliability of the Stroke Self-Efficacy Questionnaire in Turkish are found to be suitable for Turkish stroke

populations. Demonstrating language validity and CVI scores, the Turkish version of the SSEQ was finalized. Correlations between test and re-test were calculated and found coherent with each other.

Our CFA findings revealed that the SSEQ-T has a single factor structure that offers a good model fit. Fit index results show that GFI, CFI, TLI, and CMIN/df have cut-off scores indicating good fit, and the NFI and RMSEA have cut off scores of adequate fit. Furthermore, we found minimal floor and ceiling effects. In the early study the SSEQ revealed a 1-factor solution (Jones et al., 2008). The latest version of the SSEQ, developed by Riazi et al in 2014, demonstrated 2 factors, named "self-management" and "activities". Items between 1 and 6 indicate the activity factor, items 7 to 13 the self-management factor. Researchers, however, determined that the 2-factor model did not show a good fit for data, but that it was better than a single-factor model (Riazi et al., 2014). The Chinese version also has 2 factors; however, item distribution differs from the original scale. Items 6 to 9 and 11 to 13 were named as "living with new challenges", and terms 1 to 5 are under the factor named "activity and exercise engagement" (Lo, Chang, & Chau, 2016). Factor differences between the original scale and the Chinese and Turkish versions are considered to result from family dynamics, cultural differences, and differences in social support and health care services.

In Turkey, instead of supporting patients to increase their level of independence, family members assume the role of caregivers, and this might have an effect on self-efficacy (Mollaoğlu, Özkan Tuncay, & Kars Fertelli, 2011). The relationship between the study population's characteristics and self-efficacy was analysed. Self-efficacy has been shown to be affected by many variables such as behavioural domains, culturally defined gender roles, family culture, and educational and socio-economic levels (Bandura, 1982; Scholz, Doña, Sud, & Schwarzer, 2002; Yıldırım & İlhan, 2010). Scholz et al. (2002), conducted a study in 25 countries and found a low correlation

**TABLE 4** SSQE-t test-retest reliability index

Variables	Test <sup>a</sup> x ( <sup>b</sup> SD)	Retest <sup>a</sup> x ( <sup>b</sup> SD)	t <sub>t</sub>	*P	<sup>d</sup> r	**P
Q1. Get yourself comfortable in bed every night.	2.59 (0.90)	2.65 (0.83)	-1.661	0.103	0.92	<0.001
Q2. Get yourself out of bed on your own even when you feel tired.	2.52 (1.04)	2.58 (1.01)	2.4	0.159	0.92	<0.001
Q3. Walk a few steps on your own on any surface inside your house.	2.53 (1.00)	2.59 (0.93)	-1.429	0.159	0.92	<0.001
Q4. Walk about your house to do most things you want.	2.52 (1.00)	2.59 (0.88)	2.4	0.058	0.93	<0.001
Q5. Walk safely outside on your own on any surface.	2.40 (1.12)	2.47 (1.05)	-1.429	0.168	0.89	<0.001
Q6. Use both your hands for eating your food.	2.47 (0.99)	2.61 (0.83)	2.2	0.102	0.92	<0.001
Q7. Dress and undress yourself even when you feel tired.	2.34 (1.18)	2.44 (1.04)	-1.941	0.051	0.91	<0.001
Q8. Prepare a meal you would like for yourself.	1.83 (1.37)	1.90 (1.40)	1.4	0.133	0.94	<0.001
Q9. Persevere to make progress from your stroke after discharge from therapy.	2.46 (0.90)	2.44 (0.82)	-1.4	0.766	0.85	<0.001
Q10. Do your own exercise programme every day.	2.48 (0.89)	2.46 (0.90)	2.3	0.533	0.87	<0.001
Q11. Cope with the frustration of not being able to do some things because of your stroke.	1.96 (0.83)	2.10 (0.88)	-3.28	0.058	0.78	<0.001
Q12. Continue to do most of the things you like to do before your stroke	1.84 (1.21)	1.90 (1.12)	1.3	0.159	0.94	<0.001
Q13. Keep getting faster at the tasks that have been slow since your stroke.	1.98 (0.89)	2.10 (0.90)	-1.999	0.599	0.79	<0.001

<sup>a</sup>x = mean score.

<sup>b</sup>SD = standard deviation.

t<sub>t</sub> = paired sample t.

<sup>d</sup>r = Pearson correlation coefficient.

\*P > 0.05. \*\*P < 0.05.

between age and self-efficacy (Scholz et al., 2002). There are different findings in the literature of the relationship between self-efficacy, gender, and age; however, capability is thought to decrease due to aging (Bandura, 1994). In Turkish culture, regardless of the self-efficacy levels of the elderly, it is believed that their needs should be taken care of by their family members such as their children and daughter/son-in-law (Eser, Saatli, Eser, Baydur, & Fidaner, 2010; Öztıp, Şener, & Güven, 2008). Our study indicated that stroke patients over age of 45 showed lower self-efficacy levels, and we linked this with the Turkish cultural customs of caring for the elderly.

Determining inter-reliability, the Cronbach alpha score needs to be between 0.80 and 1.00, and this specifies that the items are consistent with each other and reliable (Polit & Beck, 2013; Tavşancıl, 2005). The original scale's alpha score was 0.90 (Jones et al., 2008) and that of the Chinese version 0.92 (Lo et al., 2016). In the Turkish version, the Cronbach alpha was found to be higher than both the original and Chinese versions. Cronbach alpha changes between 0.92 and 0.93 on each item.

Test-retest analysis is used to prove the constancy of the test (Aksayan & Gözüm, 2002; Tavşancıl, 2005). In this study, there were no significant differences between tests, which was conducted on 50 patients at 2 to 3-week intervals, and the test-retest reliability score was found to be  $r = 0.80$ . This indicates a significant correlation and consistency between the tests (Polit & Beck, 2013; Tavşancıl, 2005).

Bandura published his social learning theory in 1982. In this theory, the relationship between self-motivation and self-efficacy is discussed (Bandura, 1982). Exercise habits, motivation, and physical functions, which are most important outcomes for stroke patients, are related to self-efficacy (Bandura, 1994; Jones & Riazı, 2011). Korpershoek et al.'s review indicated that self-efficacy has a positive impact on walking, climbing stairs, getting dressed, mobility in bed, and better physical movement capabilities on daily activities in and outside the house (Korpershoek et al., 2011). After a stroke, patients' self-efficacy levels affect their quality of life, daily activities, depression risk, and many other dynamics as well as their healing period (Jones & Riazı, 2011; Korpershoek et al., 2011; Lo et al., 2016; Robinson-Smith, 2002). Self-efficacy is therefore very important; however, there are very few studies of interventions for improving/increasing stroke survivors' self-efficacy levels. In Turkey, there is no study that focuses on investigating stroke patients' self-efficacy levels. Introducing the SSEQ-T scale to rehabilitation programs will have a strong impact on determining the factors affecting self-efficacy of stroke patients.

#### 4.1 | Limitations

This study was conducted in 1 centre, and the sample may not be representative; it is unclear if findings can be generalized to Turkey. Replication with a larger, representative, sample should provide stronger evidence. The sample comprised patients who had a stroke in the 6 months prior to the study. Outcomes can differ between patients in their first month of recovery or in their sixth. The scale can be used in all stroke patients, and it is highly recommended to use the scale in large groups.

## 5 | CONCLUSION

The Turkish translation of the Stroke Self-Efficacy Questionnaire was tested on Turkish stroke patients for validity and reliability and found useable for Turkish populations. The factor structures of the original scale and the Turkish version are compatible. In conclusion, the SSEQ-T can be used for stroke patients in Turkey.

This scale was developed especially for stroke patients. The complete scale and its subscales evaluate stroke patients' self-efficacy levels. The scale is easy to understand, and patients can use it easily. Results of this study aim to help determine the levels of self-efficacy for stroke patients and affecting factors, and to guide rehabilitation teams for better patient outcomes.

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### DECLARATION OF INTEREST STATEMENT

The authors declared no conflicts of interest with respect to the authorship and/or publication of this article.

### AUTHORSHIP STATEMENT

ST and SO contributed for the study design, ST and SO collected the data and analyzed the data. ST and SO for the manuscript preparation.

All listed authors meet the authorship criteria and that all authors are in agreement with the content of the manuscript.

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