Original Article

DOI: 10.14235/bas.galenos.2020.4152
Bezmialem Science 2022;10(1):81-7

Adaptation and Psychometric Testing of the Turkish Caregiving Competence Scale

Bakım Verme Yeterliliği Ölçeği'nin Türkçe Uyarlaması ve Psikometrik Olarak Test Edilmesi

Yasemin DEMİR AVCI, Sebahat GÖZÜM

Akdeniz University Faculty of Nursing, Department of Public Health Nursing, Antalya, Turkey

ABSTRACT

Objective: This study aimed to adapt the Turkish version and assess the cultural and psychometric properties of the Caregiving Competence Scale (CCS).

Methods: CCS-Turkish form (CCS-TR) was tested in a sample of 337 family caregivers of patients who had a stroke. The explanatory and confirmatory factor analyses were carried out for construct validity. The item-total score correlations, Cronbach's Alpha value, and split-half test were calculated for reliability. The score on the scale was 4-16 points.

Results: The mean age of the caregivers was found to be 47.48 ± 14.52 years, whereas the mean age of patients who had a stroke was 70.34±12.04 years. According to expert opinion, the content validity index score of the scale was 0.83. The result of the confirmatory factor analysis revealed that the single-factor structure revealed a good fit. The Cronbach's Alpha value was 0.83, whereas the split-half reliability value was r: 0.82. The total score of the scale was determined as 11.5±1.74.

Conclusion: This study revealed high validity and reliability values of the CCS-TR, which suggests that the scale can be safely used. The presence of CCS in different languages is an advantage for conducting comparative studies.

Keywords: Caregiving competence, caregiver, validity, and reliability, Turkish

ÖZ

Amaç: Bu çalışmanın amacı Bakım Verme Yeterliliği Ölçeği'nin (BVYÖ) Türkçe'ye uyarlanması ile kültürel ve psikometrik özelliklerinin değerlendirilmesidir.

Yöntemler: BVYÖ-Türkçe formu (BVYÖ-TF) inmeli hastalara bakım veren 337 aile üyesinden oluşan bir örneklemde test edildi. Yapı geçerliliği için açıklayıcı ve doğrulayıcı faktör analizi yapılmıştır. Güvenilirlik için, madde-toplam puan korelasyonları, Cronbach Alpha değeri ve iki yarı testi hesaplandı. Ölçek puanı 4-16 puandır.

Bulgular: Bakım veren aile üyelerinin yaş ortalamasının 47,48±14,52 ve inmeli hastalarının yaş ortalamasının ise 70,34±12,04 olduğu bulunmuştur. Uzman görüşleri doğrultusunda ölçeğin kapsam geçerlilik indeks puanı (S-CVI) 0,83'tür. Doğrulayıcı faktör analizi sonucunda, tek faktörlü yapının iyi bir uyum sağladığı görülmüştür. Cronbach Alpha değeri 0,83 iken, iki yarı güvenirlilik değerinin r=0,82 olduğu belirtilmiştir. Ölçeğin toplam puanı 11,5±1,74 bulunmuştur.

Sonuç: Çalışmada BVYÖ-TF'nin geçerlik ve güvenirlik değerlerinin yüksek olduğu bulunmuştur. Ölçeğin güvenle kullanılabileceği ortaya konulmuştur BVYÖ'nün farklı dillerde mevcut olması karşılaştırmalı çalışmalar yapmak için avantaj sağlamıştır.

Anahtar Sözcükler: Bakım verme yeterliliği, bakım veren, geçerlilik ve güvenirlilik, Türkçe

Address for Correspondence: Yasemin DEMİR AVCI, Akdeniz University Faculty of Nursing, Department of Public Health Nursing, Antalya, Turkey
E-mail: yasemin0747@hotmail.com **ORCID ID:** orcid.org/0000-0002-0576-5948

Cite this article as: Demir Avcı Y, Gözüm S. Adaptation and Psychometric Testing of the Turkish Caregiving Competence Scale. Bezmialem Science 2022;10(1):81-7

Received: 06.02.2020
Accepted: 02.12.2020

Introduction

The members of a family undertake the primary responsibility for long-term care of the individuals having a stroke. The family members undertaking the caregiving responsibility during the hospitalization period also continue to contribute to complex caregiving processes (1). Home-based healthcare services have rapidly developed in Turkey in recent years. Additionally, procedures, such as changing the catheter or wound care, may be performed in a home environment (2). However, the care is dominantly provided by the families; therefore, families should be competent for caregiving. Financial support that is given by the state to the family members and the provision of some of the materials that are necessary for the patient may contribute to the competency of caregivers even if insufficient.

Fulfilling the care required for individuals who are dependent on daily life activities due to stroke is a long and difficult process. Incidents that are suddenly and unexpectedly experienced, like stroke, are difficult to be adopted by patients and caregivers (3). The caregivers trying to adopt caregiving state to the individual who had a stroke experience intense stress between their responsibilities and daily life activities. Within this context, acquiring the caregiving competency for the family or informal caregivers and acceleration, as well as support for process adaptation, are very critical issues (4). The researchers have stated that the negative experiences and caregiving burden on the family members undertaking the primary responsibility for caregiving to the bedbound individuals may be decreased by support and consultancy (5,6). Caregiving competency should be evaluated to determine the training requirements of individuals undertaking the caregiving responsibility (3). Preparation of training events is considered to be provided as a result of caregivers' assessment in a planned manner and through the effective requirements to resolve the problems and meet the requirements (7). Family member preparations for the caregiving process and gaining the required skills and competencies are important for effective process management (4,7).

Valid, reliable, and feasible measurement tools are needed to determine the competency of the family or informal caregivers in patient safety and care surveillance. Scholten et al. (4) has noted that 96 measurement tools were used to evaluate the caregivers, and the number of the items in such tools varied between 4 and 37. Few measurement tools were found to measure the competency of the family caregiver in Turkey (8-10). Various measurement tools that assess the caregivers are reported in the literature; however, the Caregiving Competence scale (CCS) has been used in many studies since it included four items, with a single dimension that is easy to understand, and available in three different languages. Availability of CCS in English (11), Swedish (12), and Chinese (13) versions ease the process of international comparison.

The caregiver's feeling of self-competent affects his/her behavior toward the patient. The CCS developed by Pearlin et al. (11) was used in many studies to evaluate caregiver competency. The CCA was used to measure the levels of caregiving competence perceived by caregivers of patient groups, such as patients with stroke, Alzheimer's, cancer, and dementia, in the literature (14-17).

A study that measures the competency of caregivers applied 6 weeks and 90 min of group training to the caregivers of patients with Alzheimer's. The study revealed an increased competency level of the caregivers and possibly educational and group discussions on various issues that are found difficult by the caregivers (14). Another study stated that psychoeducation that is given to caregivers increased their competency level and problem-solving abilities (15). A study conducted by Quinn et al. (16) with caregivers of patients with dementia revealed that the competency level of the caregivers was low and found a relationship between life quality and satisfaction and caregiver competency.

This study aimed to adapt the Turkish version and assess the cultural and psychometric properties of CCS, as well as assess its compatibility with the Turkish culture and compare it with the translated versions in other languages.

Methods

Design

This study used a methodological design. The universe of the present methodological research consists of all caregivers that refer to neurology clinic and stroke polyclinic of a university hospital between December 1, 2017, and February 10, 2018. The sample included 377 caregivers who met the inclusion criteria. In the literature, different opinions are reported on sample size related to scale studies, wherein 20 participants are recommended per item; however, the number of adequate sample size is expressed as "50: very poor, 100: poor, 200: fair, 300: good, 500: very good, and 1000: excellent" to perform factor analysis (18). Therefore, the sample size of 400 was targeted and the data of 377 participants (participant rate of 94%) who agree to participate were evaluated. Additionally, Kaiser-Meyer Olkin and Bartletts' test indicated that our sample was enough for factor analysis.

Inclusion criteria were as follows:

- To be the primary caregiver of patients who had a stroke
- Dependency level of the patient at 2, 3, and 4 according to Modified Rankin scale (19,20)
- Literate caregiver
- Having no communication problem
- Contribution request of the caregiver to the study

Data Collection tools

CCS-Turkish Form (CCS-TR)

Pearlin et al. (11) developed the CCS consisting of four questions. The Likert-type scale was structured as "not sufficient at all" as 1, "slightly sufficient" as 2, "sufficient" as 3, and "very sufficient" as 4. The lowest score was 4 and the highest score was 16. An increased score on the scale meant an increased caregiving competency (11).

Figure 1. Scree plot for CCS-TR (N=337)

Furthermore, some caregiver and patient characteristics, such as age, gender, and marital status, as well as the income level of the family, kinship with the patient, gender, age of the patient, stroke type, dependency grade, and other chronic diseases, were examined.

Data Collection Method

Written consent of the caregivers was obtained to conduct the research. Furthermore, the questionnaires were completed through personal interviews with the caregivers in the neurology clinic and stroke polyclinic of the university hospital. The data were collected in the stroke polyclinic for 1 week and in the neurology clinic when the researcher was available. The questionnaire was filled through face-to-face interviews of caregivers who met the inclusion criteria by the researcher. The data were collected in an available separate room.

The Adaptation of the Scale and Its Translation

The translation process included a translation panel, opinions of experts, re-translation, and pilot implementation. The independent professional translation was performed by 2 independent translators, 1 neurologist, 2 nurses, and 1 academician who understands and speaks both languages (Turkish-English). The ten experts' opinion stage of the scale was performed by eight professors from the department of nursing, a nurse from the neurology clinic, and an instructor from the Department of Foreign Languages. Re-translation was performed by an instructor from Foreign Languages Department through expert opinions.

CCS-TR was tried as a pilot implementation for comprehensibility and caregivers of 30 patients who had a stroke. Minor revisions were made to avoid any changes in the meaning after the preliminary evaluation. The minor revision was reported to one of the authors, Sample S. J., who developed the CCS via e-mail (e-mail date: 22.03.2018), and his consent was obtained.

Data Analysis

The data were analyzed using the Statistical Package for the Social Sciences (SPSS) (Statistical Package for Social Science) 23.0 program. A normality test was performed before statistical analysis. Cronbach Alpha and Split Half Reliability were used for validity and reliability; Kaiser-Meyer Olkin (KMO) and Barlett test for explanatory factor analysis was done in the SPSS program. The Linear structural relations 8.71 package program was used for confirmatory factor analysis. The item-total score correlation and Cronbach Alpha and Split Half Reliability were performed for the reliability of the scale. The test-re-test method was not appropriate for the scale. Therefore, two half reliability method was implemented. The Independent Samples t-test in binary groups was used to analyze the demographic features in CCS-TR scores. The one-way analysis of variance was used in more than two groups.

Ethics

Consent was obtained from the scale developer before initiating the research. Written consents from the Ethical Committee of the University Hospital (01/06/2017-10/07) and of the hospital, where the research was carried out, were obtained. Informed consent was signed by the caregivers who volunteered to participate in the study.

Results

The mean age of the caregivers was 47.48±14.52 years, whereas in patients who have stroke was 70.34±12.04 years. Among the caregivers, 75.7% (n=255) were female and 60.8% (n=205) were male. Married caregivers consisted of 83.1% of all participants; 49.8% (n=168) of them were elementary school graduates and had lower educational levels; and 25.2% (n=85) were unemployed. Almost half of the patients were parents of the caregivers (47.8%, n=308). The majority of patients who had a stroke were diagnosed with ischemic stroke (91.4%, n = 308). The most common concomitant chronic disease of patients who had a stroke was hypertension by 40.4% (n=136) (Table 1).

Content Validity

Each item was evaluated by 10 specialists as "not adequate" as 1, "slightly adequate" as 2, "very adequate" as 3, and "very adequate" as 4. Content Validity index (CVI) of the scale was 0.83. CVI values of the items were determined as 0.07, 0.06, 0.08, and 0.09, respectively.

Construct Validity

The exploratory factor analysis revealed that 66.675% variance of the scale is at a single dimension. Variance analysis KMO of 0.81 indicated that the sample size was very good and the significance of the Bartlett test showed that the data was adequate for factor analysis (χ^2=491.133; p=0.000). No rotation was performed since the scale had a single-factor structure (Figure 1). Excellent compliance of the single-factor structure was found as a result of confirmatory factor analysis [root mean square error of approximation (RMSEA) =0.00, normed fit index =1.00, comparative fit index (CFI) =1.00, incremental fit index =0.00, relative fit index =0.99, goodness of fit index (GFI) =1.00, and adjusted goodness of fit index =0.99] (Table

Table 1. Demographic characteristics of family caregivers and patients who had a stroke (N=337)

Characteristic	Mean ± SD or n (%)	
	Caregivers	Stroke patients
Age ($\bar{X}$ ± SD)	47.48±14.52	70.34±12.04
Gender		
Caregiver, female	255 (75.7)	205 (60.8)
Stroke patient, male		
Marital status		
Married	280 (83.1)	
Single	57 (16.9)	
Educational level		
Primary or less	168 (49.8)	
Secondary	57 (16.9)	
Tertiary or above	112 (33.3)	
Employment status		
(being employed)	85 (25.2)	
Type of stroke		
Ischemic		308 (91.4)
Hemorrhagic		29 (8.6)
Relatives of the family		
Father-mother		161 (47.8)
Spouse		89 (26.4)
Children		17 (5.0)
Sibling		15 (4.5)
Others		55 (16.3)
Most prevalent health problems		
Hypertension		136 (40.4)
Diabetes		24 (7.0)
Hypertension and diabetes		101 (30.0)
Others		76 (22.6)
Modified Rankin scale (0-5)		
2 (Slight disability)		62 (18.4)
3 (Moderate disability)		119 (35.3)
4 (Moderately severe disability)		156 (46.3)

SD: Standard deviation

Table 2. Confirmatory factor analysis of CCS-TR

Index of compliance	Abbreviation	Caregiving competence scale	Excellent compliance limit*
Degrees of freedom	Df	2	-
P value	P	0.54	0.05≤ p ≤1
Chi-square/ degrees of freedom	χ^2/df	1.22/2 =0.61	Should be smaller than χ^2/df =3 or lower
Root mean square error of approximation	RMSEA	0.00	=0.000 and <0.050
Normed fit index	NFI	1.00	0.95 and over
Comparative fit index	CFI	1.00	0.97 and over
inceremental fit index	IFI	1.00	0.95 and over
Relative fit index	RFI	0.99	0.95 and over
Goodness of fit index	GFI	1.00	0.90 and over
Adjusted goodness of fit index	AGFI	0.99	0.90 and over

*Excellent compliance limits were determined according to (25).

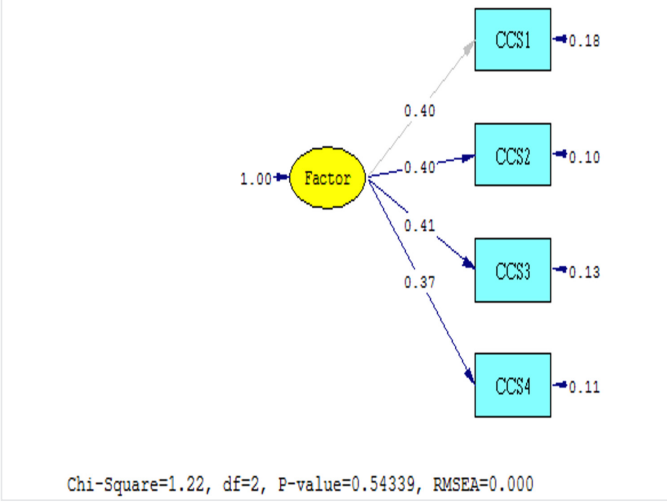

Figure 1. Factor loading for CCS-TR (N=337)

2, Figure 2).

Reliability

Corrected item-total correlation values of the scale were 0.620, 0.698, 0.666, and 0.659 (Table 3). The Cronbach Alpha value was 0.83. The value of the two-half reliability was r=0.82.

Table 3. Factor loading, item analysis, and item-total correlations for four items in the CCS-TR (N=337)

Caregiving competence scale item	Factor loading	Item mean (SD)	Corrected item-total correlation	Cronbach's alpha if item deleted
1. How much do you believe that you've learned how to deal with a very difficult situation?	0.842	2.76±0.58	0.620	0.807
2. How much do you feel that all in all, you are a good caregiver?	0.822	2.90±0.50	0.698	0.769
3. How competent do you feel?	0.816	2.84±0.54	0.666	0.782
4. How self-confidence do you feel?	0.785	3.04±0.49	0.659	0.787
Caregiving competence scale (X ± SD) (min-max, 4-16)		11.5±1.74		

min: Minimum, max: Maximum, SD: Standard deviation

Table 4. The Evaluation of the average definitive characteristics of caregiver score of the CCS-TR

		n	%	Mean	P
Gender	Female	255	75.7	7.65±1.72	>0.05
	Male	82	24.3	7.51±1.55	
Type of stroke	Ischemic	308	91.4	7.62±1.62	>0.05
	Hemorrhagic	29	8.6	7.58±2.30	
Marital status	Married	280	83.1	7.52±1.56	>0.05
	Single	57	16.9	8.07±2.16	
Previous experience of caregiving for patients	Yes	80	23.7	**8.03±1.70**	**<0.05***
	No	257	76.3	**7.48±1.66**	
Person providing support in terms of patient care	Available	236	70	7.61±1.69	>0.05
	None	101	30	7.63±1.67	
Person receiving care except for the patient	Available	46	13.6	7.78±1.54	>0.05
	None	291	86.4	7.59±1.71	
Patients dependence level Modified Rankin Scale (0-5)	Slight disability	62	18.4	**7.77±1.45**	**<0.05****
	Moderate disability	119	35.3	**7.92±1.70**	
	Moderately severe disability	156	46.3	**7.32±1.72**	
Employment status	Being employed	85	25.2	7.51±1.62	>0.05
	No	244	72.4	7.65±1.72	
	Retired	8	2.4	7.37±1.06	
Educational level	Primary or less	28	5.9	7.25±1.97	>0.05
	Primary	140	43.9	7.43±1.42	
	Secondary	57	16.9	7.54±1.47	
	Tertiary	66	19.6	8.12±1.96	
	Graduate and over	46	13.6	7.71±2.04	

*Independent samples t-Test, **One-way ANOVA/Tukey have used for post hoc analysis

The distribution of the effect of the descriptive characteristics of caregivers on the average score of the care competency scale was presented and revealed that previous experience of caregiving and level of dependence of the patient affected caregiver competency ($p<0.05$) (Table 4).

Discussion

CCS was adapted into the Turkish version linguistically and culturally appropriate. The validity of the content was performed in the compliance among specialist opinions after the translation process at the language adaptation phase of the measurement tool (19). The grade of scale comprehensibility and the measured qualifications between the specialists were similar to the Chinese version (12) (CVI =0.83). Scope validity values of the four items for I-CVI were 0.07 and 0.09 and were similar to the Chinese version values (13).

The Adaptation of the CCS was developed by Pearlin et al. (11) and adopted into English as well as Chinese and Swedish and into Turkish was found to be valid and reliable. The majority of participants were female, elementary school graduates, and

unemployed. Such profile was found to be similar to the profile of females, with low educational level, and unemployed in other countries (10,13). The validity and reliability of CCS in a group indicated that it can be used in a wider population. CCS was performed on caregivers of 337 patients who had a stroke, whereas the English version was implemented to caregivers of 326 patients with dementia by Perlin et al. (11) and Swedish and Chinese versions were performed on caregivers of 124 patients with cancer (12) and 118 patients who had a stroke (20), respectively. Multi-centered studies and comparative analyses may be carried out by confirming the validity and reliability of CCS.

The caregivers expressed the caregiving competency perceived in the scale. Two scoring types were found in the literature. Moreover, the original scale score was observed to vary between 4 and 16, and 0 and 12 in other scoring types. The average score of the CCS-TR was 11.5, Cheng et al. (20) at 12.5, and Cheng et al. (20) found the score as 12.3. Chan et al. (21) found such score as 11.4, whereas Henriksson et al. (12) detected a score of 6 with the lowest score compared with other studies. The reason was that scoring was performed according to 0 and 12.

Confirmatory factor analysis presented excellent compliance. Therefore, any modification is unnecessary (Figure 2). Factor analysis was similar to the study by Henriksson et al. (12). Despite the cultural difference, similar results have indicated that the problems of the caregivers are similar. The result has revealed that the need is universal and the perceived caregiving competence should be improved.

The situation to be considered in the evaluation of confirmatory factor analysis is the ratio of the chi-square value to the degree of freedom. Civelek (23) considers this ratio to be below 3 as a sign of perfect harmony. This value was found 0.61 in CCS-TR, which shows a perfect fit. The RMSEA value of the scales with confirmatory factor analysis should be close to or equal to 0, whereas the GFI and CFI values close to 1 increased the level of compliance. The CFI value of CCS-TR was 1.00, the GFI was 1.00, and the RMSEA was 0.00. Considering all these criteria, the adaptation study was successful according to the exploratory and confirmatory factor analyzes results of the scale (Table 2). This situation was similar to the original CCS (11) and Chinese (12) and Swedish (13) language versions.

Factor loads of items under a single-factor ranged between 0.785 and 0.842. Concurrently, the breaking point was examined on the screen plot, and the scale showed a single-factor structure from the breaking point (Figure 1). CCS-TR explained 66.675% of the variance of the single-factor structure. Orçun (24) stated the requirements of the variance that was explained in the measuring scale at 52% and over.

The Cronbach Alpha was frequently used to determine internal consistency in scale development studies. The Cronbach Alpha level varies between 0 and 1. The lowest score should be 0.70 and over in scale studies (25). The present study revealed a Cronbach Alpha of 0.83, which is sufficient. The Cronbach Alpha level in the original scale was 0.74, whereas Henriksson et al. (12) revealed it at 0.86 and Cheng et al. (13) at 0.81. The reliability values of the scale were found close to each other. The Cronbach Alpha value of the present study was determined as higher than the original value, due to the performance of the study in 1990. The healthcare system improvement within the years and increased options associated with the care and educational levels of the individuals may be related to the increased knowledge on competence concept by the caregivers.

Study Limitations

Our study revealed that the caregivers with previous experience of care in moderate disability of patients who had stroke increased the caregiver competency (Table 4). Contrarily, the moderate dependence of patients increased the caregiver competency. Another study that was conducted with caregivers of patients who had a stroke revealed that the ability of caregivers to deal with problems affected their competency (15). The study of Llanque et al. (14) noted that stress and fun affected the caregiving competency. The literature revealed that efforts made for caregivers of patient groups, such as stroke, Alzheimer, and dementia, increased the caregiver competency (14-16), whereas no increase in the caregiver competency was found in a randomized controlled study, where psychoeducation was applied to caregivers of patients with cancer in palliative care (17). This result could be due to the high mortality in patients with cancer and the duration and content of these efforts.

Conclusion

The validity and reliability values of the CCS-TR were similar to the English, Swedish, and Chinese versions. The validity and reliability values of the CCS-TR were high, which revealed its safety. The presence of CCS in different languages provided an advantage for conducting comparative studies, whereas the fact that the scale was a short and easy tool provided an advantage for its use in the field by healthcare professionals.

Ethics

Ethics Committee Approval: Association Declaration of Helsinki "Ethical Principles for Medical Research Involving Human Subjects," (protocol no: 10/07, date: 01.06.2017).

Informed Consent: The caregivers were informed about the study and their written consents were obtained.

Peer-review: Externally peer reviewed.

Authorship Contributions

Concept: Y.D.A., S.G., Design: Y.D.A., S.G., Data Collection or Processing: Y.D.A., Analysis or Interpretation: Y.D.A., S.G., Literature Search: Y.D.A., Writing: Y.D.A., S.G.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study received no financial support.

References

1. Allum L, Connolly B, McKeown E. Meeting the needs of critical care patients after discharge home: A a qualitative exploratory study of patient perspectives. Nurs Crit Care 2018;23:316-23.
2. Lutz BJ, Young ME, Creasy KR, Martz C, Eisenbrandt L, Brunny JN, et al. Improving stroke caregiver readiness for transition from inpatient rehabilitation to home. Gerontologist 2017;57:880-9.
3. Wagachchige Muthucumarana M, Samarasinghe K, Elgán C. Caring for stroke survivors: Experiences of family caregivers in Sri Lanka - a qualitative study. Top Stroke Rehabil 2018;20:1-6.
4. Scholten EWM, Hillebregt CF, Ketelaar M, Visser-Meily JMA, Post MWM. Measures used to assess impact of providing care among informal caregivers of person with stroke, spinal cord injury, or amputation: a systematic review. Disabil Rehabil 2019;31:1-27.
5. Chio CY, Yi Lin YJ, Hsiao CY. Comparison of the quality of informal care of community-dwelling Taiwanese older people. J Nurs Res 2017;25:375-82.
6. Hu P, Yang Q, Kong L, Hu L, Zeng L. Relationship between the anxiety/depression and care burden of the major caregiver of stroke patients. Medicine (Baltimore) 2018;97:e12638.
7. Sakanashi S, Fujita K. Empowerment of family caregivers of adults and elderly persons: A concept analysis. Int J Nurs Pract 2017;23.
8. İnci FH, Erdem M. Validity and reliability of the burden interview and its adaptation to Turkish. Journal of Anatolia Nursing and Health Sciences 2010;11:85-95.
9. Cingil D, Gözüm S. Reliability and validity of family caregiving factors inventory for dependent older adults in Turkey. Dokuz Eylül University School of Nursing Electronic Journal 2008;1:5-18.
10. Karaman S, Karadakovan A. The study on the validity and reliability of preparedness for caregiving scale in family caregivers of stroke patients. Journal of Ege University Nursing Faculty 2015;31:1-1018.
11. Pearlin LI, Mullan, JT, Semple SJ, Skaff MM. Caregiving and the stress process: An overview of concepts and their measures. Gerontologist 1990;30:583-94.
12. Henriksson A, Andershed B, Benzein E, Arestedt K. Adaptation and psychometric evaluation of the Preparedness for Caregiving Scale, Caregiver Competence Scale and Rewards of Caregiving Scale in a sample of Swedish family members of patients with life-threatening illness. Palliat Med 2012;26:930-8.
13. Cheng HY, Chair SY, Chau JP. Psychometric evaluation of the caregiving competence scale among Chinese family caregivers. Rehabil Nurs 2017;42:157-63.
14. Llanque SM, Enriquez M, Cheng AL, Doty L, Brotto MA, Kelly PJ. Et al. The family series workshop: A community-based psychoeducational intervention. Am J Alzheimers Dis Other Demen 2015;30:573-83.
15. Cheng HY, Chair SY, Chau JPC. Effectiveness of a strength-oriented psychoeducation on caregiving competence, problem-solving abilities, psychosocial outcomes and physical health among family caregiver of stroke survivors: A randomised controlled trial. Int J Nurs Stud 2018;87:84-93.
16. Quinn C, Nelis SM, Martyr A, Morris RG, Victor C, Clare L. Caregiver influences on 'living well' for people with dementia: Findings from the IDEAL study. Aging Ment Health. 2020;24:1505-13.
17. Holm M, Årestedt K, Carlander I, Wengström Y, Öhlen J, Alvariza A. Characteristics of the family caregivers who did not benefit from a successful psychoeducational group intervention during palliative cancer care: A prospective correlational study. Cancer Nurs 2017;40:76-83.
18. Çokluk Ö, Şekercioğlu G, Büyüköztürk Ş. SPSS and LISREL applications of multivariate statistics for social sciences. Ankara:Pegem Akademi; 2018;177-206.
19. Van Swieten JC, Koudstaal PJ, Visser MC, Schouten HJ, van Gijn J. Interobserver agreement for the assessment of handicap in stroke patients. Stroke 1988;19:6.
20. Cheng HY, Chair SY, Chau JPC. Effectiveness of a strength-oriented psychoeducation on caregiving competence, problem-solving abilities, psychosocial outcomes and physical health among family caregiver of stroke survivors: A randomised controlled trial. Int J Nurs Stud 2018;87:84-93.
21. Chan EY, Glass G, Chua KC, Ali N, Lim WS. Relationship between mastery and caregiving competence in protecting against burden, anxiety and depression among caregivers of frail older adults. J Nutr Health Aging 2018;22:1238-45.
22. Powers WJ, Rabinstein AA, Ackerson T, Adeoye OM, Bambakidis NC, Becker K, et al. 2018 Guidelines for the early management of patients with acute ischemic stroke: A guideline for healthcare professionals from the American Heart Association/American Stroke Association. Stroke 2018;49:e46-99.
23. Civelek ME. Essentials of structural equation modeling. Linconl, Nepraska: Zea Books; 2018;17-22.
24. Orçan F. Exploratory and confirmatory factor analysis: Which one to use first? Journal of Measurement and Evaluation in Education and Psychology 2018;9:414-21.
25. Taber KS. The use of Cronbach's alpha when developing and reporting research ınstruments in science education. Res Sci Educ 2018;48:1273-96.

Appendix

Caregiver competence scale

	Not at all	Just a little	Fairly/somewhat	Very/very much
1 How much do you believe that you've learned how to deal with a very difficult situation?				
2.How much do you feel that all in all, you're a good caregiver?				
3 How competent do you feel?				
4 How self-confident do you feel?				