Original Article

The Psychometric Properties of the Turkish Version of the Self-Perceived Burden Scale

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Abstract

Background: It is important for nurses to assess and self-perceived burden in HF patients. Regular, systematic assessments will help health professionals to identify risk groups as early as possible. The Turkish version of the Self-Perceived Burden Scale could be used by nurses in cardiology clinics.
Purpose: To determine the validity and reliability of Turkish version of Self-Perceived Burden Scale (SPBS).
Methods: This study has a cross-sectional and methodological design. The sample was composed of 90 heart failure patients.
Results: In the confirmatory factor analysis, factor loads was found between 0.25 and 0.90, Item-item score correlations coefficients ranged between 0.98 and 0.99, The Cronbach's alpha coefficient was 0.88.
Conclusion: The SPBS is a valid and reliable scale that can be used to determine self-perceived burden of heart failure patients in Turkey. The SPBS provides fast and effective evaluations of the patients for burden. The Turkish version of SPBS, can be used in the nursing practices and researches.

Keywords: Burden, heart failure, nursing, reliability, validity

Introduction

Heart failure (HF) is a significant health problem due to its high prevalence, the steady increase in this prevalence, and its very high morbidity and mortality (Mozaffarian et al. 2015, Allen et al. 2012). Heart failure leads to low quality of life due to an inability to meet basic needs, changes in body image, lack of self-care behaviours, problems with activities of daily living, chronic fatigue, sexual dysfunction and concerns about the future (Albert 2016, Jaarsma et al. 2010, Deek et al. 2016, Riegel et al. 2012). As heart disease progresses patients come to require the help with activities of daily living and this care is usually provided mainly by family members (Dickson et al. 2011, Davidson et al. 2013, Harkness et al. 2015). Since HF requires lengthy treatment family caregivers are also affected physically, psychologically, socially and spiritually, and the disease puts an economic burden on the family along with intense stres (Buck 2016, Hamilton 2016, AHA 2014, FCA 2013, Cossette et al. 2016, Harkness et al. 2015).

Although there are studies of the burden on caregivers there has been little research on patients' perceptions of being a burden to their caregiver. Care recipients' feelings of dependence on their caregivers and their needs, and experiences are ignored (Arechabala, Catoni, Barrios, & Palma 2012, Cousineau, Mcdowell, Hotz, & Hebert 2003, Ren et al. 2014, Leroy et al. 2016, Libert et al. 2016). A patient's perception of being a burden is defined as being feeling that one is dependent on others due to one's illness and feeling guilty that this is necessary, feeling responsible for being dependent and experiencing anxiety and diminishing of sense of self (Mc Pherson, Wilson, & Murray 2007, Kishino and Miyoshitom 2011). These perceptions can be assessed in cognitive, emotional and interpersonal terms. Feeling that one is a burden to loved ones can affect patients negatively and increase the risk of suicide (Kowal et al. 2012).

A study of haemodialysis patients found that patients feel dependent on caregivers and they feel uncomfortable about this and experience anxiety, depression and guilt; these feelings have a negative impact on the physical, mental, emotional health of patients (Cousineau et al. 2003). The degree to which a chronically ill patient feels that they are a burden may complicate their interaction with the caregiver, may lead to anxiety and depression, and may interfere with adherence to treatment. Patients' feelings of loss of control and independence, guilty, indebtedness, anxiety for caregivers, including worries that caregivers' health will be adversely affected by the physical stress of caring care cause anger, disappointment and despair (Cousineau et al. 2003). A study carried out by Ozer, Hacialioglu, Akyil, & Akpinar (2006) showed that patients feel a burden to people providing care for them in that they think they cause economical trouble and tire out their relatives; they are concerned about the adverse effect of caring on their caregivers and worry that they ruin their caregivers' daily plans (Ozer et al.2006). The burden felt by the patient has been measured in different populations such as cancer patients (Oeki, Mogami, & Hagino 2012) haemodialysis patients (Arechabala et al. 2012), stroke patients (Ren et al. 2014), and pain patients (Kowal et al. 2012) however it has not been measured in HF patients. The Self-perceived Burden Scale (SPBS) is designed to assess self-burden in chronically ill patients (including HF patients) and preliminarily validated in haemodialysis patients (the questions are not specific to haemodialysis patients). SPBS has not been tested for use with HF patients.

There is a need to measure the extent to which HF patients feel they are a burden on others; however there is no reliable or valid measurement tool for use in Turkish populations. The SPBS is one of the most frequently used scales in the field, but there is no validated Turkish version available. This study assessed the psychometric properties of a Turkish version of the SPBS, which was originally developed by Cousineau et al. (2003), in Turkish patients with HF.

Methods

Design

This study adopted a methodological research design to test the validity and reliability of the Turkish version of the SPBS.

Sample

Patients were recruited from the waiting room of the cardiology outpatient clinic at a university hospital. The recommended sample size for factor analyses of scale validity and reliability is five to ten times the number of items (Akgul 2005). On this basis we aimed to achieve a sample of at least 50 patients and actually included 90 patients in the research sample. To assess test-retest reliability an instrument should be administered twice. A sample of at least 30 is recommended for test-retest analysis (Gozum & Aksayan 2003, Polit & Beck 2008). In this study the SPBS was given to 30 patients who were willing to take part in the retest ten days after the first administration. The inclusion criteria for the study were as follows: (a) diagnosed with HF at least six months ago; (b) age ≥ 18 years; (c) voluntary participation; (d) literate in Turkish; (e) no hearing or speech impairment.

Data Collection and Ethical Considerations

The data was collected by face to face interview between September 2014 and December 2014. The interviewer explained the aim of the research to patients attending the clinics where the research was carried out. Written permission was obtained from the appropriate Dokuz Eylul University ethical committee (1556-GOA, 2014/22-06) and the Dokuz Eylul University Hospital (82010743/5791).

Procedure

Translation of the SPBS

First the SPBS was translated into Turkish independently by the authors and by two linguists. The researchers reviewed this preliminary Turkish version of the scale and then drafted a single Turkish version of the SPBS which was then back-translated by a bilingual professional translator. The back translation and the original English version were then compared by the researchers.

Where there were differences in the wording of items or response choices the translators discussed the choice of word until they were able to agree a final version (Gozum & Aksayan 2003, Karasar 2000).

Content validity of the SPBS

The translated Turkish version was submitted to the expert opinion (five faculty members from the Faculty of Nursing) for an analysis of its content validity. Experts were asked to rate each item in the Turkish version of the SPBS based on relevance, clarity, and simplicity on a scale of one (not appropriate at all) to ten (completely appropriate).

Pre-test

Acquiring the final form with expert opinions, the scale was used in pre-interviews conducted with 10 patients and caregivers. The data from patients and caregivers to whom pre-implementation was performed was not used within validity and reliability study results.

Instruments

Demographic and care related characteristics

Separate questionnaires were administered to patients and caregivers. The patient questionnaire consisted of eight questions covering the patient's disease and sociodemographic factors: there were questions about age, sex, marital status, educational status, social insurance, duration of HF, left ventricular ejection fraction (LVEF), and whether the patient had any other chronic disease. The caregiver questionnaire consisted of 11 sociodemographic questions asking about age, sex, marital status, educational status, occupation, social insurance, economic status, relationship to the patient, whether the respondent lived with the patient, for how long the respondent had been a caregiver to the patient and whether the respondent had any chronic disease.

Self-Perceived Burden Scale (SPBS)

The research examined the reliability and validity of a Turkish version of the SPBS, which was originally developed by Cousineau et al. (2003). The SPBS is intended to identify patients with emotional problems related to feeling that they are a burden on their caregivers. There are two English-language versions of the SPBS: a long, twenty-five-item version that has demonstrated good internal consistency (Cronbach's alpha = 0.92) and an abbreviated ten-item version (Cronbach's alpha = 0.85) (Cousineau et al. 2003). Respondents rate items on a five-point Likert scale ranging from 1 (none of the time) to 5 (all of the time). Scores can range from 10 to 50 and higher scores indicate a greater perceived burden. Example items are: 'I feel guilty about the demands that I make on my caregiver' and 'I feel I am a burden to my caregiver.' The SPBS was developed with patients undergoing haemodialysis (Cousineau et al. 2003) and further validation research has been conducted with cancer patients (Lofaso and Weigand 2014), stroke patients (Ren et al. 2014), and paint patients (Kowal et al. 2012); however it has not been tested in HF patients. The above-mentioned studies have demonstrated that the SPBS has high convergent validity, discriminant validity and internal consistency (i.e. alpha coefficients > 0.85).

Data analysis

Descriptive statistics and appropriate reliability and validity statistics were computed using the Statistical Package for the Social Services SPSS 15.0 (SPSS Inc., Chicago, IL). Confirmatory factor analysis (CFA) was assessed by using LISREL. Expert opinions for the content validity of the scale were evaluated through Kendall W analysis. Construct validity was assessed using CFA (Harrington 2009, Lobiondo-Wood & Haber 2006). Reliability was assessed with Pearson's product-moment correlation coefficient, item-item score correlations and Cronbach's alpha. Ten-day test-retest reliability was assessed using Pearson's correlation test and a dependent-samples t-test (Gozum & Aksayan 2003, Karasar 2000).

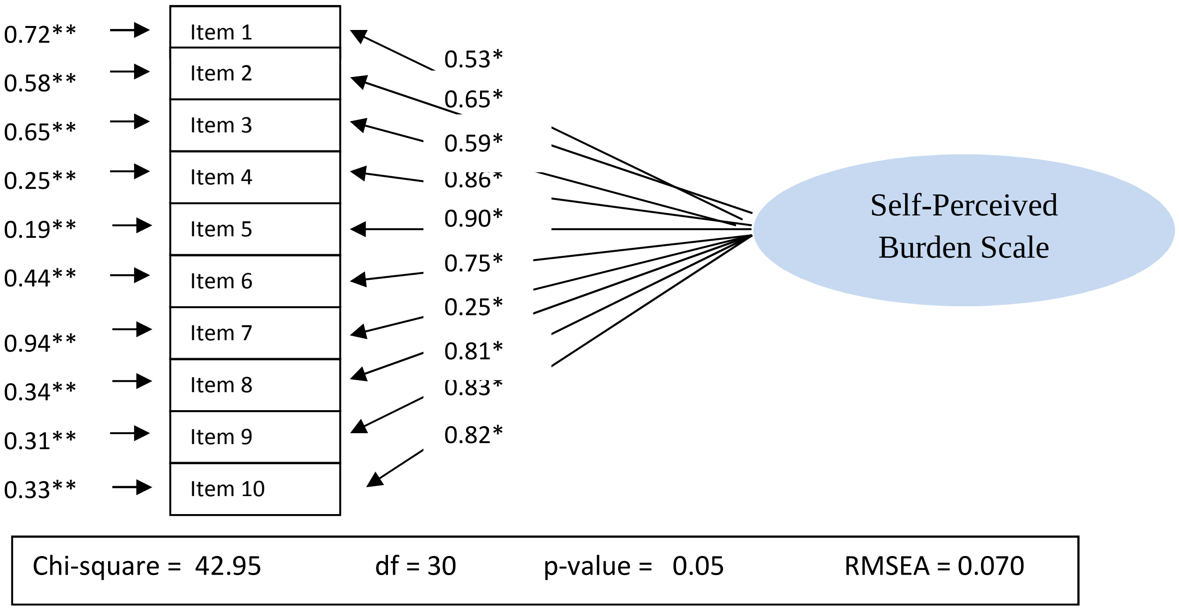
Results

Ninety patients and 90 caregivers were included in the research sample. The patients had a mean age of 70.97 ± 10.59 years. Most patients (53.3%) were men; 80.0% were married, and 57.8% were primary school graduates. The average LVEF value among patients was 37.9, and the average length of time for which they had suffered from HF was 7.7 years. Most patients (81.1%) and nearly half of the caregivers (45.6%) had another chronic disease. Caregivers had a mean age of 57.08 ± 12.79 years, 36.6% were primary school graduates.

Table 1. Characteristics of items in SPBS scale scores (n=90)

SPBS Items	Item-item score correlations (r)	p
1. I worry that the health of my caregiver could suffer as a result of caring for me	0 .99	0.000
2. I worry that my caregiver is overextending himself/herself in helping me	0.99	0.000
3. I am concerned that it costs my caregiver a lot of money to care for me	0.99	0.000
4. I feel guilty about the demands that I make on my caregiver	0.99	0.000
5. I am concerned that I am ‘‘too much trouble’’ to my caregiver	0.99	0.000
6. I am concerned that because of my illness, my caregiver is having to do too many things at once	0.99	0.000
7. I am confident that my caregiver can handle the demands of caring for me (reverse scored)	0.98	0.000
8. I think that I make things hard on my caregiver	0.99	0.000
9. I feel I am a burden to my caregiver	0.98	0.000
10. I am concerned that my caregiver is helping me beyond their capacity	0.99	0.000

Pearson correlation at a statistically significant level (p < 0.001).



*Factor loadings. **Error variance: The part of the total variance caused by anything irrelevant that was not experimentally controlled.

Fig. 1 Confirmatory factor analysis of the Self-Perceived Burden Scale

Most of the caregivers were women (71.1%) and were married (86.7%). Caregivers were spouses (57.8%), adult children (33.3%), or friends or other relatives (8.9%). The average length of time for which they had been a caregiver to the patient was 6.4 years and 78.9% of caregivers lived with the patient.

Validity Test

Concordance validity

Scores of the five experts were evaluated using the Kendall W analysis, and no statistically significant difference was found among the scores (for SPBS, Kendall W=0.13, p=0.240). Consequently, it was determined that expert scores were consistent low level with one another.

Construct validity

Confirmatory factor analysis

Confirmatory factor analysis was performed to confirm the consistency of scales for construct validity in the study to adapt the SPBS into Turkish. Several indices were used: χ^2/df = 1.43; root mean square error of approximation (RMSEA) = 0.07; standardised root mean square residual (SRMR) = 0.04; comparative fit index (CFI) = 0.99; non-normed fit index (NNFI) = 0.98; normed fit index (NFI) = 0.96; incremental fit index (IFI) = 0.99; goodness of fit index (GFI) = 0.91. The factor loadings of the scale ranged from 0.25 to 0.90. Figure 1 illustrates the model.

Reliability

Internal consistency analysis

When item-item score correlations of 10 items were examined in the reliability analysis of the SPBS, it was found to be 0.98-0.99 in the scale at a statistically significant level ($p<0.001$). (Table 1). In the analysis conducted to test the internal consistency which is one of the reliability indicators of the SPBS, Cronbach alpha coefficient was 0.88 of scale.

Test-retest reliability

There was no statistically significant difference between scores on the first and second administration of the SPBS ($p > 0.05$). Pearson's correlation analysis indicated that there was a very strong, positive, and statistically significant relationship between test and retest scores ($r = 0.99$, $p < 0.001$).

Discussion

Validity and reliability of SPBS

Translations of a scale should have similar reliability and validity characteristics to the original. It was therefore important to evaluate the validity and reliability of a Turkish version of the SPBS. The results of this study provide evidence of the reliability and validity of our translation of the SPBS in Turkish HF patients.

The use of CFA is recommended in examining the construct validity in the scale adaptation studies to test an existing hypothesis regarding the structure of items in the scale, compare the factor structure of the adapted scale to the original factor structure, and evaluate similarities and differences (Gozum & Aksayan 2003).

In this study CFA indicated that all items had factor loadings of between 0.25 and 0.90 (Figure 1). It is recommended that in CFA all items should have a model-data fit coefficient value of at least 0.30 (Harrington 2009). The factor loading for item 7 of the negative affect scale did not meet this criterion; however it was decided not to exclude this item from the scale as the construct validity of the scale was unaffected, the factor loading was borderline and the item makes an important contribution to the scale. Goodness of fit statistics should also be at the desired level in CFAs. Model fit was assessed with the χ^2/df statistic; values of $\chi^2/df < 2$ are assumed to indicate good fit, so the value in this study (χ^2/df = 1.43; 42.95/30) indicated good model fit. According to Harrington (2009) values of $\chi^2/df < 5$ indicate acceptable goodness of fit.

The other statistics used to measure goodness of fit were RMSEA, SRMR, CFI, NNFI (Harrington 2009, Simsek 2007). RMSEA $\leq$ 0.08 indicates close fit (Harrington, 2009; Simsek, 2007); in this study, RMSEA = 0.07, indicating that the data were consistent with the model. SRMR values < 0.10 and CFI or NNFI values $\geq$ 0.90 indicate good fit (Harrington 2009, Simsek 2007). In this study the SRMR, CFI, and NNFI values indicated a good fit between model and data. This study thus provides support for the construct validity of the Turkish version of the SPBS and suggests that it is a valid for use in Turkish samples.

In this study the Turkish version of the SPBS scale demonstrated acceptable internal consistency. One of the methods used to evaluate its internal consistency was item analysis. Although different thresholds of acceptability are quoted for item-item correlation coefficients 0.20 is generally accepted as the minimum level and items with reliability coefficients between 0.30 and 0.40 are considered to have good reliability whilst items with reliability coefficients above 0.40 are regarded as ideally distinctive, and thus reliable (Gozum & Aksayan 2003, Tavsancil 2002). In this study all item-item correlation coefficients were at least 0.98.

Cronbach's alpha coefficient is also used to evaluate internal consistency. Values lower than 0.40 indicate that a measurement tool is not reliable, values between 0.40 and 0.59, indicate low reliability, values between 0.60 and 0.79 indicate adequate reliability and values of 0.80 and above indicate high reliability (Akgul 2005). In our study Cronbach's alpha for the translated scale (0.88) indicated high reliability. Cronbach's alpha for the original version (Cousineau et al. 2003) was 0.85.

Test-retest analysis is one of the most frequently used reliability analyses; it is a measure of the invariance characteristics of a measurement tool. There was no difference between mean test and retest scores and the test-retest reliability coefficient was 0.99, indicating excellent temporal consistency; there was a positive, highly significant relationship between test-retest scores (Polit & Beck 2008, Tavsancil 2002). In summary, the Turkish SPBS was found to have a high level of reliability.

Study limitations and future recommendations

It is important for nurses to assess and self-perceived burden in HF patients. Regular, systematic assessments will help health professionals to identify risk groups as early as possible. The Turkish version of the SPBS could be used by nurses in cardiology clinics. Future research should assess the validity of the scale in other clinical populations. The Turkish version of the SPBS should be evaluated more extensively with a larger sample.

Conclusion

This study provides evidence that the Turkish version of the SPBS is a reliable and valid instrument for assessing self-perceived burden in Turkish HF patients. We conclude that the Turkish version of the SPBS is suitable for use in research and clinical practice in Turkey. This study can be used by health care providers as a guide to assessing patients' perceptions of care burden.

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References

Akgul A (2005) Statistical analysis techniques: Using SPSS in medical research. Ankara: Emek Publishing.

Albert NM (2016) A systematic review of transitional-care strategies to reduce rehospitalization in patients with heart failure. Heart & Lung 45: 100-113.

Allen LA, Stevenson LW, Grady KL, Goldstein NE, Matlock DD, Arnold RM, Cook NR, Felker GM, Francis GS. & Hauptman PJ (2012) Decision making in advanced heart failure a scientific statement from the American Heart Association. Circulation 125:1928–1952.

American Heart Association. (2014) Heart and Stroke Statistics—2014 Update. Retrieved from http://www.heart.org/HEARTORG/General/Heart-and-Stroke-Association-Statistics_ UCM_319064_SubHomePage.jsp

Arechabala M, Catoni M, Barrios S. & Palma E (2012) Spanish validation of the self-perception of burden of care scale. Acta Paulista de Enfermagem 25:140-45.

Buck HG (2016) Cardiovascular Informal Caregivers What Role? Whose Role? Journal of Cardiovascular Nursing 31(4): E9YE9.

Cossette S, Belaid H, Heppell S, Mailhot T, Guertin MC (2016) Feasibility and acceptability of a nursing intervention with family caregiver on self-care among heart failure patients: a randomized pilot trial. Pilot and Feasibility Studies 2: 34.

Cousineau N, Mcdowell I, Hotz S. & Hebert P (2003) Measuring chronic patients' feelings of being a burden to their caregivers development and preliminary validation of a scale. Medical Care 41: 110–118.

Davidson PM, Abernethy AP, Newton PJ, Clark K. & Currow DC (2013) The caregiving perspective in heart failure: a population based study. BMC Health Services Research 13: 342.

Deek H, Noureddine S, Newton PJ, Inglis SC, Macdonald PS. & Davidson PM (2016) A family-focused intervention for heart failure self-care: conceptual underpinnings of a culturally appropriate intervention. Journal of Advanced Nursing 72(2): 434–450.

Dickson VV, Buck H & Riegel B (2011) A qualitative metaanalysis of heart failure self-care practices among individuals with multiple comorbid conditions. Journal of Cardiac Failure 17(5): 413–419.

Family Caregiver Alliance, National Center on Caregiving. (2013). Retrieved from http://www.caregiver.org/caregiver/jsp/home.jsp

Gozum S & Aksayan SA (2003) Guide for transcultural adaptation of the scale II: Psychometric characteristics and cross-cultural comparison. Turkish Journal of Research and Development in Nursing 5: 3-14 (in Turkish).

Harrington D (2009) Confirmatory factor analysis. USA: Oxford University Press.

Hamilton H (2016) The Lived Experience of African American Caregivers Caring for Adult African American Patients With Heart Failure.www.homehealthcarenow.org 34(4): 196-202.

Harkness K. Buck HG, Arthur H, Carroll S, Cosman T, McGillion M, Kaasalainen S. (2015) Caregiver Contribution to Heart Failure Self-Care (CACHS). Nursing Open 51-60.

Lofaso CR & Weigand DA (2014) Individual Characteristics and Self-Perceived Burden in Cancer Patients. Curr Psychol 33: 174–184.

Jaarsma T, Johansson P, Agren S, Stromberg A (2010) Quality of life and symptoms of depression in advanced heart failure patients and their partners. Curr Opin Support Palliat Care 4: 233–7.

Karasar N (2000) Scientific research method (10th edn). Ankara: Nobel Publishing.

Kowal J, Wilson K, Mc Williams L, Péloquin K & Duong D (2012) Self-perceived burden in chronic pain: Relevance, prevalence, and predictors. Pain 153: 1735–1741.

Kishino M, Miyashita M (2011) Self-perceived burden to family in terminally ill cancer patients at palliative care unit in Japan: perspectives of patients. BMJ Support Palliat Care 1(1): 102–103.

Lobiondo-Wood G, & Haber J (2006) Reliability and validity. Missouri: Mosby Elsevier.

Leroy T, Fournier E, Penel N, Christophe V (2016) Crossed views of burden and emotional distress of cancer patients and family caregivers during palliative care. Psycho- Oncology 25(11):1278-1285.

Libert Y, Borghgraef C, Beguin Y, Delvaux N, Devos M, Doyen C, Dubruille S, Etienne AM, Lienard A (2016) Factors associated with self-perceived burden to the primary caregiver in older patients with hematologic malignancies: an exploratory study, Psycho-Oncology.

Mc Pherson CJ, Wilson KG & Murray M (2007) Feeling like a burden: Exploring the perspectives of patients at the end of life. Social Science & Medicine 64: 417–27.

Mozaffarian D, Benjamin EJ, Go AS, Arnett DK, Blaha MJ, Cushman M Das SR, de Ferranti S, Després JP, Fullerton HJ, Howard VJ, Huffman MD, Isasi CR, Jiménez MC, Judd SE, Kissela BM, Lichtman JH, Lisabeth LD, Liu S, Mackey RH, Magid DJ, McGuire DK, Mohler ER 3rd, Moy CS, Muntner P, Mussolino ME, Nasir K, Neumar RW, Nichol G, Palaniappan L, Pandey DK, Reeves MJ, Rodriguez CJ, Rosamond W, Sorlie PD, Stein J, Towfighi A, Turan TN, Virani SS, Woo D, Yeh RW, Turner MB; American Heart Association Statistics Committee; Stroke Statistics Subcommittee.Heart disease and stroke statistics—2016 update: a report from the American Heart Association. Circulation 26;133(4):e38-360.

Oeki M, Mogami T & Hagino H (2012) Self-perceived burden in patients with cancer: Scale development and descriptive study. European Journal of Oncology Nursing 16: 145-152.

Ozer N, Hacialioglu N, Akyil RÇ & Akpinar R (2006) The situations of the patients to feel a burden themselves for their relatives who gave the care them. Journal of Ataturk University School of Nursing 9: 31-37 (in Turkish).

Polit D, & Beck CT (2008) Nursing research: Generating and assessing evidence for nursing practice. London: Wolters Kluwer/Lippincott Williams&Wilkins.

Ren H, Liu C, Li J, Yang R, Ma F, Zhang M. (2014) Self-perceived burden in the young and middle-aged in patients with stroke: A cross-sectional survey. Rehabilitation Nursing 0: 1–11.

Riegel B, Jaarsma T. & Stromberg A (2012) A middle-range theory of self-care of chronic illness. Advances in Nursing Science 35(3): 194–204.

Simsek OF (2007) Structural equation modeling entry: Basic principles and LISREL practices. Ankara: Cem Publishing.

Tavsancil E (2002). Attitude measurement and data analysis with SP SS (2nd edn). Istanbul: Nobel Publishing.