

## RESEARCH COMMUNICATION

# “Caregiver Strain Index” Validity and Reliability In Turkish Society

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### Abstract

**Objective:** The Caregiver Strain Index (CSI) made up of 13 items was developed by Robinson (1983) and assesses the subjective care load of the caregiver. This study was conducted to evaluate its validity and reliability for Turkish society. **Design:** a cross-sectional descriptive study. **Participants:** 132 family members providing care for cancer patients **Intervention:** CSI was adopted for Turkey and administered twice via face-to-face interviews to 132 family members providing care for cancer patients from the Day Patient Unit of Ege University hospital. The content validity of the “Caregiver Strain Index” Kendall analysis was used while Pearson’s moment Correlation Coefficient was applied for the test retest reliability of the scale and Cronbach’s Alpha Interpretation statistical analysis tests for internal consistency and rotated factor loading of items of the scale. **Results:** Validity of the index was found to be 0.41 and test-retest reliability 0.75. While the Cronbach’s alpha value of the index for first administration was 0.77, it was found to be 0.73 for the second administration. **Conclusions:** At the end of our study, validity and reliability of the index were established, indicating utility in studies for assessing the care load of individuals providing care to cancer patients in Turkish society.

**Keywords:** Cancer - caregiver - caregiver strain index - validity - reliability - Turkish society

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### Introduction

Cancer, one of the most important health problems in the world and in our country (Kutluk and Kars, 1998), creates significant amount of stress for the patients, their families and the health professionals (Özkan, 1993) providing treatment during the process from the diagnosis to the terminal period (Kutluk and Kars, 1998). As the number of cancer patients increases and treatment mode shifts to walk-in treatment gradually, number of caregivers as well increases informally. Majority of caregivers are family members. Deprived of sufficient support from the healthcare system, these caregivers learn on their own, how to meet the needs of their patients without any guidance or knowledge support (Chen and Hu, 2002; William, 2003).

Care process is influenced by social norms of the society, cultural factors, the stage of the disease and the location of cancer, deficiencies experienced by the patients during the functional and mental processes, direct and indirect care needs of the patient, uncertainties regarding symptom control and factors like role conflict in the family. Because it has to be carried out concurrently with the normal activities of the family, caregiving process creates very heavy emotional, social, physical and economic load on the caregiver. Physical care provided to the patient, problems experienced during the management of symptoms and treatments, financial problems experienced

by the family of the patients with no social security and unfavorable socio-economic conditions, lack of sufficient emotional support, fear of death, uncertainty related to the disease, and seeing that the patient suffers increase the load of the caregiver (Given and Scherwood, 2006). During the preparation for the caregiving process, information related to the disease, care, treatment processes, emergency care and the way the caregiver interacts with health professionals are important (Fadiloğlu and Şenuzun, 2006).

Care load is a term used to describe physical, social, economic and emotional responses and persistent problems that can be experienced by family members providing supportive care (Chen and Hu, 2002; Given and Scherwood, 2006). Care load can also be defined as the objective and subjective results that can emerge due to the care process (Novak and Guest, 1989). Objective load is generally seen as the direct care load resulting from the disease itself and covers all tasks (control, payments..), experiences (disruption of relations with the family or social relations) of the caregiver and the activities that the caregiver cannot do (hobbies, career, occupation). Subjective load, on the other hand, is that the caregiver views the caregiving process as a load because of the physical, emotional, financial and work-related challenges he/she experiences. These feelings are usually responses such as grief, anxiety, shame, and sense of guilt (Montgomery et al., 1985; Sales, 2003). Studies

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carried out by Schulz et al., 1987 showed that there was an increase in the amount of psychological symptoms such as depression, anxiety and moodiness (Schulz and Beach, 1999). Fadiloğlu (1995) found out that caregivers of cancer patients got negatively influenced by the pain experienced by their patients (88.2%), by lack of knowledge about the disease (54.4%), and by the depression experienced by the patient (63.2%) and that as a result, their adaptation to the disease was negative (47.1%). Optimism and flexibility of the caregiver, facilitating his/her adaptation to the role and preparing him/her for the role, and receiving a response from the care he/she provides influence the caregiving process and decrease the level of strain experienced (Given and Scherwood, 2006).

The stress and care load on the caregivers cause changes in physical, social and emotional responses of the caregiver. It is believed that there is a relationship between the problems experienced by the caregiver, the way he/she perceives the improvements in the patient and the response he develops for this situation. Relation between the load, strain and tension is explained in Figure 1 (Thornton and Travis, 2003).

Starting from the time of diagnosis, the primary caregiver of the cancer patient should assume responsibility for the care of the patient and prepare him/her self for this role. This can be achieved via training programs provided to the caregiver. Planned care training programs cause the caregiver to develop adaptation strategies focused on the deficiencies in the care process and to look for solutions and decrease the strain and tension level indirectly (Scherwood et al., 2004). In a study conducted on individuals with breast cancer, patients and their families were provided a five month training program via regular phone interviews or house visits. Training programs covered issues such as fear of death, negative thoughts, symptom management and problems experienced. At the end of five months, it was observed that caregivers levels of adaptation to their roles as well as their satisfaction increased and that death anxiety and uncertainty decreased (Given and Scherwood, 2006). When the caregiver is

provided assurance and appropriate explanation related to diagnosis and treatment as well as information related to the phase he/she is in, he/she perceives the situation as being less stressful. Also, the positive relation that develops between the caregiver and the health personnel causes the caregiver to feel less load. It does not result in less emotional load but the caregiver becomes closer to being positive. The caregiver would feel better and as receiving greater support (Folkman et al., 1986).

There is insufficient number of studies that measure the care load of individuals providing care to cancer patients in Turkish society. Caregiver Strain Index which was developed for measuring the subjective care load of individuals providing care to cancer patients is an easy-to-use, valid and reliable scale<sup>15</sup>. In this study, the goal was to evaluate the validity and reliability of the “Caregiver Strain Index” for the Turkish society.

## Methods

### Research Design and Sample

This study was designed as a descriptive study. Study sample is comprised of 132 caregivers that provide care to cancer patients treated at the chemotherapy unit of a university hospital in Izmir between June 2004 and October 2004. Caregivers were selected from among caregivers aged 18 and above who spoke Turkish, were literate and able to establish verbal communication and had no visual, auditory, perceptual and psychiatric problems. Prior to starting the study, consent of the ethics committee of the hospital where the study was carried out was obtained. Written and verbal consent of the caregivers included in the sample group have been obtained as well.

### Measures

During the study, two different data collection tools were used. These were “Caregiver Description Form” and “Caregiver Strain Index”.

**Caregiver Personal Information Form:** contains the following variables about the caregiver; age, gender, marital status, education level, occupation, existence of social security, employment status, income level, degree of relation to the patient, number of dependents, time he/she provided care for his/her patient, existence of individuals he/she received care support from.

**Caregiver Strain Index:** This scale that comprised of 13 items was administered to caregivers like spouse, friends and neighbors who provided care to patients aged 65 and above and had hip or heart surgery (Robinson, 1983; Chen and Hu, 2002). The scale contains at least one item regarding each of the following main factors; employment status, physical condition, social status of the caregiver and the changes that the caregiver experiences regarding time management. The scale has no sub dimensions.

Participants answer the items as Yes (1) or No (0). Total points obtained on the scale are reached by summing 0 and 1 responses. Positive answers given to 7 or more items on the scale indicates a high level of stress and the subjective care load as perceived by the caregiver. Robinson achieved a cronbach’s alpha value of 0.86 during the reliability study for the scale (Robinson, 1983).

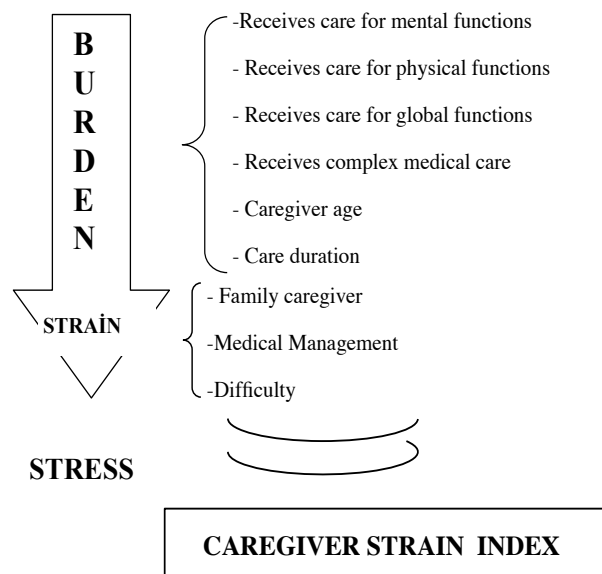


Figure 1. Model for Load, Strain and Tension in Individuals Providing Care for the Patient

*Translation of Tool Items into Turkish*

When an instrument is translated for adoption into another language and culture, it is necessary to use correct grammar of the target language and to correctly interpret the idioms that are foreign to the culture of the target language (Gözüm and Aksayan, 2002). To accomplish the procedure,

- The researchers obtained written permission via mail from Alexis Melendez to adapt the CSI for Turkish and to use it in this study.
- A total of 5 linguists translated the tool from English to Turkish. Two of these linguists were instructors at the school of foreign languages and three of them were English teachers at high school level.
- The researcher rearranged the concepts in both tools (English and Turkish versions) in line with the recommendations of experts.
- Researchers re- translated the index from Turkish to English using a different English language philologist who had not seen the original English version.

After translation was completed; a total of 8 experts namely, an instructor from the school of nursing, an instructor from the school of literature, two instructors from the department of oncology of the school of medicine were contacted to obtain their views about the language and scope of the scale. The experts were provided with the original of the scale and its translation and were asked to score the fit of the items by assigning points between 0 and 10 to each item (0: not fit at all, 10: totally fit). Based on expert opinion, acceptable average score of each item was found to be “5 and above”. Kendall W analysis was performed for expert opinion congruency.

The scale was initially administered to 20 caregivers that met the sample criteria and determined that the questions in the scale were found to be clear and comprehensible by the caregivers and a decision was made to administer the scale to the larger sample.

*Data Collection and Analysis*

Data collection procedure used was as follows: 1) All caregivers were given a short description of the purpose of the study as well as the confidentially principle and were told that their participation was voluntary and that they were free not to participate in the study. 2) The caregivers were asked to use anonymity on the data collection form so the data from the first and the second administration could be matched to evaluate test-retest scores. 3) The Turkish version of CSI was used. These forms were administered to the participants in the waiting room of the chemotherapy unit. The researcher was present by the caregiver during the data collection process in order to provide guidance about the scale, to answer the questions of respondents and to ensure that the form is filled out correctly. Two or three weeks following its first administration, the scale was administered again to the caregivers included in the sample.

Data obtained from the study were analyzed using Statistical Package for Social Science (SPSS) software version 11.0 Descriptive information about the caregivers was analyzed using numeric and percentile tests. For the

content validity of the “Caregiver Strain Index” Kendall W analysis was used while Pearson’s Moment Correlation Coefficient was used for the test retest reliability of the scale and Cronbach’s Alpha Interpretation statistical analysis tests were used for internal consistency.

**Results**

General data are provided in Table 1. Validity of the scale was determined using Kendall Coefficient

**Table1. Descriptive Information Regarding Caregivers**

Descriptive information	Number	Percentage
Age Group		
18-30	4	3
31-42	27	20.5
43-55	50	37.9
56-68	44	33.3
69 and above	7	5.3
Gender		
Male	72	54.5
Female	60	45.5
Degree of Relation		
Parents	7	5.3
Children	31	23.5
Spouse	87	65.9
Relative	6	4.5
Other....	1	0.8
Marital Status		
Married	120	90.9
Single	12	9.1
Social Security Status		
Emekli Sandığı	106	80.3
SSK	14	10.6
Bağ-kur	10	7.6
Private	2	1.5
Employment Status		
Full Time	24	18.2
Part Time	3	2.3
Unemployed	105	79.5
Income level		
Below minimum wage	3	2.4
Minimum wage	61	46.2
Above minimum wage	68	51.5
Care duration		
6 months and less	46	34.8
6-12 months	35	26.5
13-24 months	25	18.9
25-37 months	10	7.6
38 months and above	16	12.1
Individuals provided support during the care period?		
No	128	97.0
Yes	4	3.0
Cancer type		
Breast cancer	54	40.9
Liver cancer	8	6.1
Lung cancer	16	12.1
Ovary cancer	6	4.5
Colon cancer	27	20.5
Rectum cancer	8	6.1
NHL/HL	4	3.0
Teratogenic carcinoma	1	0.8
Stomach cancer	2	1.5
AML	1	0.8
Pancreas cancer	1	0.8
Liver cancer	2	1.5
Multiple Myeloma	2	1.5

**Table 2. Validity Analyses of the Caregivers Strain Scale**

Caregiver Strain Scale Item Number	Minimum and Maximum scores	Concordance score of the items	
		Average	Stand.Dev.
Sleep is disturbed (e.g., in and out of bed/ wandering at night)	5-10	9.25	+ 1,81
It is inconvenient (e.g., because helping takes time or long drive to help)	8-10	9.38	-+ 0,92
It is a physical strain (e.g., because lifting in and out of a chair)	7-10	9.25	-+1,17
It is confining (e.g., helping restricts free time)	8-10	9.50	-+ 0,93
Family adjustments (e.g., disrupted routine; no privacy)	5-10	8.88	-+ 1,81
Changes in personal plans (e.g., had to turn down job; no vacation)	7-10	9.25	-+ 1,07
Other demands on my time (e.g., from other family members)	5-10	8.75	-+ 1,91
Emotional adjustments (e.g., because of severe arguments)	5-10	8.88	-+ 1,80
Some behavior upsetting (e.g., incontinence; memory loss; accusations of theft )	5-10	9.00	-+ 1,78
It is upsetting to find ..... has changed so much from his/her former self	5-10	8.25	-+ 2,52
There have been work adjustments (e.g., need to take time off)	8-10	9.63	-+ 0,74
It is a financial strain	9-10	9.88	-+ 0,35
Feeling completely overwhelmed (e.g., concerns about how to manage)	8-10	9.50	-+ 0,93

**Table 3. First and Second Cronbach’s Alfa Reliability Coefficient Results of the Caregiver Strain Scale**

Test-Retest Administrations	n	Correlation of Test – Retest Score		Cronbach’s Alpha
		r	p	
First Administration	132	0.75	.000	.77
Second Administration	132			.73

**Table 4. Correlation Results of the Total of the Item Scores of the Caregivers Strain Index**

Caregiver Strain Scale Item	First Administration				Second Administration			
	Scale Average when item omitted	Variance	Total correlation of item	Scale Alpha when item omitted	Scale Average when item omitted	Variance	Total correlation of item	Scale Alpha when item omitted
	Sleep is disturbed	18.27	9.39	.49	.79	17.64	8.12	.13
It is inconvenient	17.92	9.05	.32	.76	17.32	8.16	.18	.73
It is a physical strain	18.04	8.34	.52	.74	17.45	7.39	.44	.70
It is confining	18.30	8.01	.54	.73	17.68	7.20	.49	.69
Family adjustments	18.32	8.08	.51	.74	17.73	7.30	.46	.70
Changes in personal plans	18.45	7.99	.58	.73	17.83	7.24	.54	.69
Other demands on my time	18.44	7.99	.58	.73	17.77	7.16	.54	.69
Emotional adjustments	18.48	8.33	.46	.75	17.80	7.66	.34	.71
Upsetting behavior	18.33	8.24	.45	.75	17.63	7.43	.39	.70
Upsetting change from former self	18.59	8.52	.46	.75	17.93	7.94	.31	.72
Work adjustments	18.20	8.50	.37	.76	17.58	7.60	.32	.71
It is a financial strain	18.13	9.72	.49	.80	17.41	8.50	.01	.75
Feeling overwhelmed	18.16	8.41	.41	.75	17.52	7.43	.40	.70
Number of items: 13	n: 132		Alpha: .77/.73		Item Alpha: .75/.71			

of concordance (W:0.41, p>0.05) and it was decided that there was no dissensus among the experts (Table 2). During the reliability testing phase, the scale was administered to 132 caregivers via face to face interview two times with 15 days in between and the results obtained were tested using Pearson Correlation analysis. The test retest reliability coefficient of the scale between the first and the second administration of the scale was found to be 0.75 and consistency was found to be at sufficient level over time. Cronbach’s Alpha value of the scale for the first administration was found to be 0.77, and 0.73 for the second administration and it was decided that reliability of the scale for the Turkish society was quite high (Table 3).

Intra-item Pearson Correlation Coefficient of the Caregivers Strain Index used in the study was analyzed and consistency of each item with the scale as a whole was assessed. It was determined that at the end of the first and second administration, the highest score average was

obtained by Item 10 (“It is sad that the patient is different from his/her previous condition”) with scores of 18.6 and 17.9 points respectively, and the lowest score average was obtained by Item 2 (“Providing care is not suitable for me”) with scores of 17.9 and 17.3 for the first and second administration respectively. The highest internal consistency was achieved by Item 12 (“Providing care brings financial burden”) with score averages of 0.80 and 0.75 for the first and second administrations respectively (Table 4).

In the study, factor loads of the items included in Caregivers Strain Index were found with principal component analysis statistical analysis method, whereas rotation of the items was analyzed with varimax with kaizer normalization statistical analysis and as a result it was discovered that the items in the scale were divided into four factors. Factor loads of all items in the scale change between 0.648-0857. Factor load of an item found in the

**Table 5. Rotated Factor Loadings of Items of the Scale**

Items of the scale	Factor 1	Factor 2	Factor 3	Factor 4
It is confining	.730			
Family adjustments	.755			
Changes in personal plans	.857			
Other demands on time	.690			
Emotional adjustments		.648		
Some behavior upsetting		.788		
Upsetting change from former self		.775		
Sleep is disturbed			.753	
It is inconvenient			.690	
It is a physical strain			.587	
It is a financial strain				.822
Feeling overwhelmed				.653
Work adjustments	.392	.352		.345
Alpha	.79	.77	.81	.77
Variance (%)	23.093	15.578	12.893	
	10.880			

1, Adaptation; 2, Upsetting; 3, Inconvenience; 4, Overwhelmed

scale (“There have been work adjustments ( e.g., because of having to take time off“) changes between 0.345 and 0.392 and it falls into factor 1, factor 2 and factor 3 due to this factor load. When variance and cronbach’s alpha values of these four factors were analyzed, variance of factor 1 was found to be 23.093 and cronbach’s alpha value was found to be .79; whereas, variance of factor 2 was found to be 15.578 and cronbach’s alpha value was found to be .77 and variance of factor 3 was found to be 12.893, Cronbach’s alpha value was found to be 81; while variance of factor 4 was found to be 10.880, Cronbach’s alpha value was found to be .77 (Table 5).

## Discussion

In this study, validity and reliability of “Caregivers Strain Index” were established because of the lack of measurement tools with established validity and reliability to measure the care load of caregivers providing care to cancer patients in Turkey.

Views of eight experts were obtained in order to determine whether the items of the scale translated to Turkish measures the behavior to be measured or not and to assess the fitness of the scale for that culture. Concordance of the expert views were assessed using Kendall W analysis (Sencan, 2005) and Kendall Concordance Coefficient was found to be 0.41 (p>0.05). This result was interpreted as the experts having no differences in opinion. The Chinese version of the scale developed by Hu<sup>2002</sup> was administered to the relatives of cancer patients providing care to these patients and its content relation was assessed and its content validity was found to be 1.0 (p>0.05) after obtaining expert opinion<sup>4</sup>. For the assessment of the comprehensibility of the scale, a pre-administration to the group with the same characteristics as the sample is recommended. In this study, 20 caregivers with the same characteristics as the sample were administered the scale and the comprehensibility of the statements was tested. Content validity was achieved as a result of the expert opinion obtained and pre-administration (Gözüm and Aksayan, 1999; Sencan, 2005). Because the scale has no

sub-dimensions, no factor analysis was done.

“Invariance over time”, which is one of the reliability measurements, is the relation between data groups obtained as a result of the measurement of something under similar conditions and within a certain period. The frequency with which the scale is administered is important. The time between each administration should be long enough not to allow the measured quality to change and short enough to allow the respondents to remember their responses in the first administration. Usually it is recommended not to exceed four weeks<sup>19</sup>. In this study, depending on the treatment given to the patient, test-retest was done every 14-28 days. After the scale was administered 15 days after the first administration, test-retest reliability coefficient was found to be 0.75 and it was considered to be statistically significant (r:0.75, p:0.00). It was determined that the test-retest reliability of the scale were compatible with literature data. CSI developed by Robinson 1983 was modified by Thornton& Travis in 2003. The scale restructured by Thornton& Travis was administered to 158 caregivers who provided care to their relatives, were aged 53 and above and who had good communication skills and the internal reliability was found to be .90. Internal reliability of the original scale was .86. Test-retest reliability of CSI developed by Robinson<sup>1983</sup> could not be reached but the test-retest reliability of the modified version (n=53) was found to be 0.88. As a result, it was determined that the modified version of the scale was compatible with the original scale and that its reliability was slightly high (Sales, 2003; Sullivan, 2007). With the Chinese version of the CSI organized by Hu<sup>1999</sup>, alpha value was found to be 0.66 and the average test-retest value was found to be 0.564. In repeated administrations, cronbach’s alpha value of the objective load measurement section of the Caregiving Load Index developed by Montgomery (1985) to measure the care load of the caregivers were found to be 0.87 and 0.90, while the Cronbach’s alpha value of the section measuring subjective load was 0.68 and 0.82 and the cronbach’s alpha value of the section measuring subjective stress was found to be 0.81 and 0.88 (Pasacreta et al., 2000). Findings of our study are similar to the data available in literature.

In the study, items of the scale were found to be divided into four factors. Factor loads of all items in the scale change between 0.648 - 0.857. Variance of factor 1 (Adaptation) included in the scale was found to be 23.093, Cronbach’s alpha value was found to be .79, item loads were found to be (It is confining) (.73), There have been family adjustments (.75), There have been changes in personal plans (.85), There have been other demands on my time (.69); variance of factor 2 (Upsetting) was found to be 15.578, Cronbach’s alpha value was found to be .77, item loads were found to be (There have been emotional adjustments (.64), Some behavior is upsetting (.78), It is upsetting to find. has changed so much from his/her former self (.77)) ; variance of factor 3 (Inconvenience) was found to be 12.893, cronbach’s alpha value was found to be .81 and item loads were found to be (Sleep is disturbed (.75), It is inconvenient (.69) , It is a physical strain (.58)) ; variance of factor 4 (Overwhelm) was found

to be 10.880, Cronbach's alpha value was found to be .77 and item loads were found to be ((It is a financial strain (.82), Feeling completely overwhelmed (.65)). Factor load of a single item ("There have been work adjustments (e.g., because of having to take time off)") changes between 0.345 and 0.392 and it falls into factor 1, factor 2 and factor 3 due to this factor load. For that reason, those items were excluded from the calculation of factor load. Factor loads of items obtained in the study are similar to the values of CSI scale determined by Robinson B. Factor loads of items included in the scale determined by Robinson are given below (Robinson, 1983).

- Factor 1 : Inconvenience (Sleep is disturbed (.47), It is inconvenient (.46), It is confining (.70), There have been family adjustment (.82), There have been other demands on my time (.40), There have been emotional adjustment (.36))
- Factor 2 : Adjustment (Changes in my personal plan (.47), Feeling completely overwhelmed (.71), It is a financial strain (.54))
- Factor 3 : Upsetting ((Some behavior is upsetting (1.00), It is upsetting that my family member has changed (.41))
- Factor 4 : Work adjustment (1.00)

#### *Evaluation of the Scores Obtained from all items of the Scales*

Internal consistency was a commonly used measurement of reliability for testing the reliability of the scales and it is evaluated by calculating the Cronbach's alpha coefficient (Gözüm and Aksayan, 1999). While determining the degree of reliability of the scale, in cases where the item scores are continuous (Likert type), it is recommended to calculate the Cronbach's Alpha coefficient (Mok et al., 2003). The magnitude of the correlation coefficient that will be considered as a measurement of reliability depends on the purpose with which the scale will be used. For physiological measurements, 0.90 and above; and for attitude measurement, 0.70 are acceptable levels (Gözüm and Aksayan, 1999). Because the CSI as a whole is a Likert type scale for both interviews, Cronbach's Alpha coefficient was calculated and Cronbach's alpha value was found to be 0.77 and 0.73 for the first and the second interviews respectively (Robinson, 1983; Sencan, 2005). Gutman Split-Half, Spearman-Brown analyses and Cronbach's alpha values were used to measure the consistency of two halves of the scale with each other. The results were found to be high enough. Gutman Split-Half value was found to be 0.64 and 0.54 for the first and the second administration respectively; Spearman-Brown value was found to be 0.66 and 0.55 for the first and the second administration respectively. The Cronbach's alpha value of the first half of the scale that consists of seven items of the scale was found to be 0.73 and 0.71 for the first and the second administration respectively; the Cronbach's alpha value of the second half of the scale that consists of six items of the scale was found to be 0.59 and 0.55 for the first and the second administration respectively. In modified CSI, Thornton & Travis 2003 analyzed the relationship between the qualities and

conditions of the caregiver and the strain of the caregiver with Pearson moments correlation and it was found that there is a significant correlation between caregiver's mental capacity and caregiver's strain ( $r: .34, p < 0.01$ ), between caregiver's functional ability ( $r: 0.27, p < 0.01$ ), and caregiver's mental-physical capacity ( $r: .32, p > 0.01$ ) and caregiver's strain ( $p < 0.01$ ). According to this, it can be said that as functional capacity of the caretaker decreases, his strain increases<sup>15</sup>. When the mean of the maximum and minimum item scores given to the 13 items of the scale, variance values, total item correlations and item scale alpha values are analyzed, it is seen that the highest score mean belongs to item 10 ("It is sad that the patient is different from his/her previous condition") with mean scores of 18.59 and 17.93 for the first and the second interview respectively. The reason for item 10 to get the highest score can be explained as the importance placed on the family in the Turkish culture and as being influenced from a negative development about a family member<sup>2,11</sup>. The lowest score mean is achieved by item 2 ("Providing care is not suitable for me") with average scores of 17.92 and 17.32 for the first and the second interview respectively. The reason for item 2 to get a low score can be explained as the fact that in Turkish society, providing care for a family member is seen as a duty rather than a burden. In the literature, a study conducted by Mok et al., 2003 showed that caregivers did not view the care process as a burden and they felt like doing something important for a loved one, thus they did not see care as a burden despite all types of individual challenges experienced (Mok et al., 2003). Looking at Table 4 and 5, it is seen that item scale alpha value was 0.77 and 0.71 for the first and the second interview respectively. For both interviews, the highest scale alpha was achieved by item 12 (Providing care brings financial difficulties) with values of 0.80 and 0.75, respectively. The reason for this item to get a high score was thought to be the fact that cancer is a chronic disease and that the level of hidden expenses are quite high. Caregivers explained this finding as "Finding donors for thrombocyte and blood infusions to be given to the patient and travel and accommodation expenses of the patient and the caregiver him/herself.". In the scale, for both of the interviews, the lowest total scores are obtained by item 6 (My personal plans are changing) and item 7 (There are different demands on the time I allocated for myself) with scores of 0.58 and 0.54, respectively. The researcher explained the low scores of these items as the fact that in Turkish society, care process is traditionally seen as a duty rather than a burden and that 41.7% of the caregiver group are retired and have been providing care for less than six months (34.8%). 54.5% of the caregivers that participated in the study were male. The reason for the high number of male caregivers is that 40.9% of the patient population provided care had breast cancer. In a study by Pasacrate et al. 2000 it was determined that care task was no longer a task for ladies and that male caregivers made up of 44% of the total number of caregivers (Pasacrate et al., 2000).

In order to decrease caregiver's strain, social support network should be widened in the direction of the requirements of caregiver and necessary psychological

intervention and help should be provided. Nurses should plan interventions such as supporting daily care of adult patients, behavioral cognitive psychotherapy, massage, therapeutic contact and other multi-dimensioned interventions and contribute to the application of those interventions in order to decrease the care load felt by caregivers. Training about the patient's disease, disease process and treatment should be given to caregivers individually or in groups. Sorenson et al., 2002 found out that supportive interventions provided for caregivers of stroke and cancer patients whose physical and mental health is bad decreased the load of caregiver. Besides, behavioral cognitive psychotherapy methods can be used in order to help caregiver's self-administration to develop and alleviate his strain. This therapy method helps to establish and develop therapeutic relationship between caregiver and care personnel. Sorenson et al., 2002 discovered that it alleviates the load and strain of the individuals providing care for the oncology population to give breaks during daily care and to spare resting time for themselves (Sorenson et al., 2002). For this, first of all the load and strain of caregiver should be evaluated, interventions suitable for the results should be planned and performed, if required telephone calls should be made, written materials should be prepared and effective use of these by caregivers should be provided. The nurse should follow the positive changes observed in the caregivers in the family, the decrease in anxiety and change in the information level and evaluate her self-administration and her competence as a caregiver. In conclusion in line with the findings, it was determined that the Turkish version of the Caregiver's Strain Index is a valid and reliable measurement tool. This study can play a guiding role for measuring the subjective care load and for planning the initiatives to be organized for caregivers in the studies to be carried out for caregivers under care load risk.

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