RESEARCH ARTICLE

Reliability and Validity of the Quality of Life –Family Version (QOL-FV) in Turkish Family Caregivers of Patients with Cancer

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Abstract

Objectives: Family caregivers (FCs) are often the primary source of social and emotional support for cancer patients and play a major role in how well they manage their illness. The aim of this study was to create an Turkish version of the Quality of Life - Family Version (QOL-FV) and to evaluate its psychometric properties in a sample of FCs of cancer patients. Materials and Methods: This study was carried out with the FCs of 218 patients with cancer. Data were collected with a Demographic Questionnaire and the QOL-FV and The Multidimentional Scale of Perceived Social Support (MSPSS). The QOL-FV was developed by Ferrell and Grant and is composed of 4 subdimensions. Linguistic validity, translation, back translation, and content validity were tested with expert opinions. Test-retest reliability, and internal consistency reliability were assessed. Construct validity was tested by factor analysis and with the scale of the MSPSS. Results: The family caregivers were between the ages of 46-56 (32.6%), a great number of them being male (52.8%). The scale is made up of four subdimensions. The result of the test-retest analysis of this scale was calculated as r:0.86. As a result of the reliability analysis, six items were eliminated from the scale, factor analyses were fulfilled according to varimax transformation through the method of principal components. Four new subdimensions were restrustured at the end of the analysis. The scale of Cronbach α coefficient was calculated as 0.90. Concurrent validity showed low correlations with the MSPSS (r=0.29). Conclusions: The QOL-FV, adapted into Turkish, was found to have sufficient reliability and validity.

Keywords: Quality of life questionnaire -reliability - validity - cancer - Turkish family caregivers

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Introduction

Cancer affects the individuals diagnosed with cancer and their families physically, psychologically and socially in a negative way, and this leads to heavy costs on the part of the family and society. The effects of cancer on the individuals and their family have increased gradually in time and these negative changes have affected the way of life and expectations of the patient as well as the whole family; and therefore threaten the quality of life of both the patient and the family (Fadıloğlu, 2003; Ozer et al., 2009; Pereira, 2011).

The family caregivers were under stress to a large extent and had an increasing risk in terms of suffering from depression and having other health problems and their mortality rate increased (Weitzner et al., 1999; McMillan et al., 2005). In some studies, it is shown that family caregivers of cancer patients have experienced more anxiety and depression (Couper et al., 2006). Primary caregivers could be suffering from concurrent emotional distress due to the extensive demands associated with the giving of care to patients with a disease at an advanced stage. Several emotional reactions to caring have been noticed in carers, such as feelings of fear, uncertainty, hopelessness and mood disturbances (Costa-Requena et al., 2011; Pereira, 2011)

The involvement and support of the family in every stage of care are of great importance as the family caregivers and the patients are both affected in the same way during diagnosis period (Işıkhan et al., 2001). Many cancer survivors experience lasting effects of disease or its treatment leading to health and employment limitations. In during time of disease, caregivers play an important role in providing patients with emotional, financial, and personal care support (Yabroof andYoungmee, 2009). The family members giving care for the patients with ovarian cancer felt themselves very tired and they had many health problems since the initial period of the disease (Ferrell et al., 2002). In the same study, the relatives of the patients mentioned that they felt themselves quite nervous and inefficient in coping with problems and, therefore, had to quit their jobs in order to provide care for their patients.

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To our knowledge, there have not been enough studies on quality of life of family caregivers with cancer patients. Therefore, we attempted to adapt the QOL-FV. This is an instrumentation study conducted to estimate the reliability and validity of the QOL-FV for Turkish people. Having a reliable and valid instrument in Turkish will help nurses to assess information and support needs of family caregivers with cancer.

Materials and Methods

Setting and Samples

The study included 218 people whose family caregivers had cancer presenting to the chemotherapy unit of İzmir Ege University Hospital in Turkey between April 2006 and September 2006. The 218 participants met the criteria for an adequate sample size for factor analysis. All participants gave informed consent.

Inclusion criteria for family caregivers were as follows: 1) not diagnosed with any kind of cancer, 2) 18 years old or older, 3) ability to read and write in Turkish.

Instruments

Demographic Questionnaire: Sociodemographic data included the participant's age, education level, current marital status, work status and patients of relationship with family caregivers.

The Scale of Quality of Life-Family Version (QOL-FV): The scale developed by Ferrell and Grant for assessing the quality of life of cancer patients was reviewed to evaluate the life quality of family members and was re-adapted. The scoring should be based on a scale of 0=worst outcome to 10=best outcome. Several items have reverse anchors and therefore when you code the items you will need to reverse the scores of those items. For example, if a subject circles "3" on such an item, (10-3=7) thus you would record a score of 7. The items to be reversed are 1-4, 6, 13-20, 22, 24-29 and 33. Subscales can be created for analysis purposes by adding all of the items within a subscale and creating a mean score.

The family version of the QOL tool is an adaptation of the patient version QOL tool. The instrument was revised and tested from 1994-1998 in a study of 219 family caregivers of cancer patients. The test-retest reliability was r=0.89 and internal consistency was alpha r=0.69. Factor analysis confirmed the 4 QOL domains as subscales for the instrument (Ferrell and Grant, 2005).

Multidimentional Scale of Perceived Social Support (MSPSS), which is a kind of scale, developed by Zimet et al. (2008), is composed of 12 items which subjectively evaluates the sufficiency of support obtained from 3 different sources. The structure of the subdimension proposed includes the support of family, friend and someone special. The internal consistency of the scale and subdimension and test-retest correlations are sufficient. In the study of Eker et al. (2001), Cronbach α coefficient of MSPSS was 0.89.

Procedure

Measures to ensure language equivalence studies, the most practiced method of back translation method (Aksayan and Gözüm, 2002). The scale by three faculty members and two foreign language specialist, translated into Turkish. Translations were reviewed by the differences the language experts and was given final shape. The scale of expert opinions, to be the medical field of oncology and nursing faculty members were evaluated by a group of 10 people consisting of faculty members. Latest version as given scale pilot study was performed to a group of 15 people. Appropriateness of expressions are evaluated.

The first questionnaire was used to collect information on demographic questionnaire, and cancer-related variables (e.g. type of cancer, metastasis and duration of cancer). The forms of QOL-FV and MSPSS were filled by the researcher through face to face interview with the individuals. They filled out forms in a period of 20-30 minutes.

Ethical Considerations

Before we assessed the reliability and validity of the questionnaire for the Turkish family caregivers, we obtained approval from Betty Ferrell, who developed the QOL-FV, via e-mail on 28 October 2005 for the use of the QOL-FV for this study. We obtained approval from Haluk Arkar, who adopted to MSPSS to Turkish. We received written approval from the Ethics Committee of Ege University School of Nursing. We described the purpose of our study to the eligible family caregivers and sought their verbal informed consent for study participation.

Data Analysis

Content validity of the Turkish version of the QOL-FV was tested by requesting opinions of experts using the Kendall Coefficient of Concordance. The internal consistency of the scale was tested with the item-to-total correlations and by Cronbach coefficient α; we used the Spearman-Brown and Gutmann Split Half correlations to estimate the stability of the Turkish version of the QOL-FV; and test-retest reliability coefficients and t test analyses were made.

Results

The Sample Characteristics

The family caregivers were between the ages of 46-56 (32.6%), a great number of them were male (52.8%) and a great number of them (64.7%) were the husbands or wives of the patients. A number of participants (35.8%) were university graduate, a great number of participants were married (92.2%) and were unemployed (56.4%). A great number of participiants weren't have a chronic disease (67.4) (Table 1).

Lınguıstıc Valıdıty

The original questionnaire was translated to Turkish by the investigators, whose native language is Turkish. Subsequent translations of the questionnaire were made by 4 people who have a good command of both Turkish and English. The most suitable expressions were selected from the translated versions of the questionnaire, and a

Table 1. Socio-Demographic and Disease Characteristics of Family Caregivers (218)

		No.	(%)
Age	24-34	43	(19.7)
	35-45	67	(30.7)
	46-56	71	(32.6)
	57-65	37	(17.0)
Sex	Female	103	(47.2)
	Male	115	(52.8)
Marital Status	Married	201	(92.2)
	Single	17	(7.8)
Educational Level	Primary School	57	(26.1)
	Secondary School	26	(11.9)
	High School	54	(24.8)
	University	81	(37.2)
Employment Status	Employed	95	(43.6)
	Unemployed	123	(56.4)
Patients Of Relationship With Family Caregivers			
	Wife Or Husband	141	(64.7)
	Child	58	(26.6)
	Sister Or Brother	13	(6.0)
	Mother Or Father	6	(2.7)
Chronic Disease With Family Caregivers	Yes	71	(32.6)
	No	147	(67.4)

single version of the questionnaire was obtained. Back translation of the questionnaire into English was done by 1 person whose native language was English, who had a good command of both languages and who did not see the orijinal English version of the questionnaire. The back-translated version was compared with the original questionnaire. The questionnaire whose linguistic validity was confirmed was completed by investigator and advisor. 15 family caregivers with cancer patients presented to the chemotherapy unit of İzmir Ege University Hospital in Turkey, and necessary changes in the questionnaire were made in accordance with recommendations from the family caregivers.

The scale of QOL-FV was evaluated from 9 experts to offer their opinions about the questionnaire whose linguistic validity was confirmed. Each question in the questionnaire was scored on a 10-point scale: 1 corresponding to the worst and 10 corresponding to the best. Statistical analyses with Kendall Coefficient of Concordance W of the scores for the items of QOL-FV assigned by the experts showed that the experts were in agreement (W=0.154, P=0.061).

Table 2. Item-to-Total Correlations of Quality of Life-Family Version (QOL-FV) Turkish Version (N =218)

Items	r	p
12. Fatigue	0.63	0.000**
13. Appetite changes	0.55	0.000**
14. Pain or aches	0.59	0.000**
15. Sleep changes	0.58	0.000**
16. Rate your overall physical health	0.51	0.000**
1. How difficult is it for you to cope as a result of your family member's disease and treatment?	0.47	0.000**
2. How good is your overall quality of life?	0.53	0.000**
3. How much happiness do you feel?	0.57	0.000**
4. Do you feel like you are in control of things in your life?	0.57	0.000**
5. How satisfying is your life?	0.65	0.000**
6. How is your present ability to concentrate or to remember things?	0.56	0.000**
21. How distressing was your family member's initial diagnosis for you?	0.23	0.001**
28. How distressing has the time been since your family member's treatment ended?	0.34	0.000**
22. How much anxiety do you have?	0.57	0.000**
23. How much depression do you have?	0.62	0.000**
24. Are your fearful of a second cancer for your family member?	0.40	0.000**
25. Are you fearful of recurrence of your family member’s cancer?	0.55	0.000**
26. Are your fearful of the spreading (metastasis) of your family member’s cancer?	0.53	0.000**
7. Rate your overall psychological well being?	0.64	0.000**
29. Is the amount of support you receive from others sufficient to meet your needs?	0.37	0.000**
17. To what degree has your family member's illness or treatment interfered with your personal relationships?	0.57	0.000**
18. To what degree has your family member's illness or treatment interfered with your sexuality?	0.37	0.000**
30. To what degree has your family member's illness or treatment interfered with your employment?	0.32	0.000**
19. To what degree has your family member’s illness or treatment interfered with your activities at home?	0.57	0.000**
20. How much isolation is caused by your family member's illness or treatment?	0.56	0.000**
31. How much financial burden resulted from your family member's illness or treatment?	0.37	0.000**
8. Rate your overall social well being?	0.48	0.000**
27. How much uncertainty do you feel about your family member's future?	0.67	0.000**
9. Do you have a purpose/mission for your life or a reason for being alive?	0.30	0.000**
10. How hopeful do you feel?	0.53	0.000**
11. Rate your overall spiritual well being?	0.58	0.000**

**P<0.01

The questionnaire on which the experts agreed was piloted for 15 family caregivers to the chemotherapy unit. The family caregivers stated that the items of the questionnaire were understandable and, they did not make any recommendations.

Reliability

The test-retest reliability coefficient were 0.86 for the QOL-FV scale and were statistically significant ($p<0.001$). The correlation values of the QOL-FV scale items were confirmed between 0.00-0.64. Six items (12,14,22,31,32,34), which threatened the reliability in the scale and, whose total scale correlation values were under 0.20, were eliminated from the scale (Table2).

Table 3. Quality of Life-Family Version (QOL-FV)

Cronbach coefficient α	0.90
Spearman-Brown	0.83
Gutmann-Split-half	0.82
N	218.00
Items	31.00

Table 4. The Results of the QOL-FV Factor Analyses

Items	Factor 1	Factor 2	Factor 3	Factor 4
Item 5	0.76	0.19	0.15	0.05
Item 3	0.74	0.12	0.10	0.04
Item 2	0.67	0.24	.0.02	0.05
Item 4	0.65	0.08	0.22	0.12
Item 11	0.64	0.07	0.09	0.38
Item 7	0.63	0.26	0.12	0.22
Item 6	0.58	0.20	0.24	0.00
Item 10	0.55	0.00	0.14	0.44
Item 8	0.51	0.37	0.02	0.06
Item 16	0.46	0.37	0.10	0.05
Item 9	0.37	0.01	0.07	0.28
Item 12	0.26	0.73	0.07	0.05
Item 14	0.14	0.70	0.20	0.02
Item 13	0.07	0.64	0.20	0.15
Item 15	0.14	0.59	0.31	0.04
Item 17	0.22	0.56	0.07	0.22
Item 20	0.21	0.54	0.06	0.28
Item 19	0.14	0.53	0.18	0.31
Item 1	0.39	0.47	0.13	0.34
Item 25	0.13	0.14	0.83	0.05
Item 26	0.12	0.10	0.82	0.10
Item 22	0.19	0.22	0.60	0.23
Item 24	0.13	0.18	0.59	0.18
Item 21	0.02	0.02	0.51	0.00
Item 27	0.45	0.29	0.49	0.06
Item 28	0.03	0.01	0.21	0.63
Item 30	0.01	0.16	0.03	0.60
Item 18	0.01	0.39	0.06	0.43
Item 23	0.30	0.21	0.41	0.42
Item 29	0.30	0.19	0.15	0.39
Item 31	0.20	0.24	0.05	0.27

Cronbach Coefficient α,Spearman -Brown and Gutmann Split Half Correlations Coefficients

Cronbach coefficient α value was 0.90 and subscales alpha coefficients ranged from 0.48-0.85 QOL-FV. Spearman-Brown correlation coefficient was 0.83 and, Gutmann Split Half correlation coefficient was 0.82 for the QOL-FV (Table3).

Contruct Validity

As a result of the factor analysis was collected under a size scale item. However, the scale factor analysis of the original structure of the 4 subdimension is directed to ensure compliance. In view of the factor weights, it was observed that four factors were haronic with the original scale. Factors for 47.45% of the total variances revealed. The variance loads “Eigen values” which were confirmed as the factors revealed 16.25, 12.82, 10.74, 7.62. To ensure compliance with the conceptual framework of the original structure of the scale and dimensions of factors from the bottom where a total of four ıtems was changed. The difference between subscales, factor loadings 0.10 is less than the appropriate change in the items below can be made (Tavşancıl, 2005). The factor weights of the ıtems are between 0.27 and 0.83 (Table 4).

Items were named under four different groups in the subscales of the scale which was restructured. According to this, the conditions of psychological and spiritual well-being (11 items), psysical health (9 items), the way of approach to diagnosis (7 items), support and economic effect (4 items) (Table 5).

The Pearson moment multiplication correlation coefficients of the QOL-FV and MSPSS scales were calculated and a significant relationship was confirmed among the scales in a positive direction ($r=0.29$) (Table 6).

Discussion

After the linguistic validity of the questionnaire was achieved. The scale of QOL-FV was evaluated from 9 experts to offer their opinions about the questionnaire whose linguistic validity was confirmed. Statistical analyses with Kendall Coefficient of Concordance W of the scores for the items of QOL-FV assigned by the experts showed that the experts were in agreement ($W=0.154$,

Table 6. Turkish Adaptation of the QOL-FV and Average Rating Points of the MSPSS scale (N=218)

Scales	Item no.	$\bar{X}$	Ss	r	p
Turkish Adaptation of QOL-FV	31	162.05	43.58	0.29	0.000
MSPSS	12	65.14	17.35		

Table 5. The subdimensions, mean scores, values of standard deviation and variance levels of QOL-FV scale

Subscales	Items of scale	$\bar{X}$	Variance Deviation (SD)	Standart Alpha Coefficient	Cronbach
Psychological and Spiritual Health Condition	1,2,3,4,5,6,7,8,9,10,11	64.20	277.93	16.67	0.85
Physical Health Condition	12,13,14,15,16,17,18,19,20	50.77	288.56	16.98	0.82
Approach to Diagnosis	21,22,23,24,25,26,27	23.20	190.31	13.79	0.80
Support and Economic Effect Condition	28,29,30,31	23.83	69.51	8.31	0.48

P=0.061). The questionnaire on which the experts agreed was piloted for 15 family caregivers to the chemotherapy unit. The family caregivers stated that the items of the questionnaire were understandable and, they did not make any recommendations.

Reliability

Test-retest reliability varies based on the feature with the measured time interval between applications is usually between 2-6 weeks is adequate. To demonstrate the stability of this correlation coefficient of the group is required to be at least 30 people. One that does not change the scale against time to determine the correlation coefficient calculated is expected to be positive and high. This value must be above 0.70 (Tavşancıl, 2005; Uğur, 2006). In this study, the value of the test-retest correlation coefficient of the scale was calculated as r=0.86 respectively. In a study conducted by the test-retest correlation of the scale was 0.82 (Çimen et al., 2005). Reliability and validity of the The Multidimensional Relationship Questionnaire (MRQ) in Turkey, it was conducted by the test-retest correlation of the scale was 0.80 (Büyükşahin, 2005).

Item analyses require that correlations between scores for each item and the total score on the questionnaire should be made to determine to what extent each item is associated with the whole measurement tool. The item-to-total correlation coefficient is expected to be positive and more than 0.25. However, the criterion used in practice for item-to-total correlation coefficients is more than 0.20. However, this is not obligatory. It is recommended that items with low correlations should be deleted. Low item-total correlation coefficients of substances removed from the scale (Tavşancıl, 2005; Tokkaya and Ozgül, 2010). In this study, item-to-total correlation coefficients ranged from 0.00 to 0.64 for items. Six items (12,14,22,31,32,34), which were threatened the reliability in the scale and, whose total scale correlation values were under 0.20, were eliminated from the scale.

It is reported that if Cronbach α coefficient is between 0.60 and 0.80, then it will be adequate enough for the instrument to be used in studies (Tavşancıl, 2005; Öztürk, 2006). The Cronbach's α coefficient was found to be reliability for the total scale was 0.90 and subscales Cronbach's α coefficients ranged from 0.48-0.85. From the reliability analyses, the Spearman Brown coefficient was calculated as 0.83 and the Gutmann split half coefficient was calculated as 0.82. Turkish reliability and validity study of the scale of the multi-dimensional relationship of internal consistency Cronbach's α coefficient was calculated as 0.83. (Büyükşahin, 2005). Cronbach's α index was 0.92 for the PCS-I as a whole (0.89 for Helplessness, 0.87 for Rumination and 0.56 for Magnification) (Monticone et al., 2011). Childhood Cancer Fatigue Scale validity and reliability study, Cronbach's α coefficient was 0.85 (Ekti and Conk, 2008). Reliability and validity study of the Hospital Anxiety and Depression Scale anxiety subscales of the scale for the two half-test reliability was calculated as 0.69. In another study, Gutmann split-half coefficient was calculated as 0.80 (Tuturel-Kışlak, 2002).

Contruct Validity

Factor in the calculation of eigenvalues (eigen values) are used, the eigenvalue is calculated as the number of factors. The simplest method is known eigenvalues at 1.00 in the values taken on. A good factor in the transformation, the expected results, the size should be reduced, and the conceptual significance of independence must be ensured (Tavşancıl, 2005). As a result, by considering these factor loads, it was seen that the most appropriate method was found in the original scale and in 4 factors. Factors for 47.45% of the total variances revealed. The variance loads "Eigenvalues" which were confirmed as the factors revealed 16.25, 12.82, 10.74, 7.62. Factor loadings of items are between 0.27-0.83.

The scale of some items into more than one factor has been identified. The difference between the factor loadings on the factors which items enter the criteria to be taken into account at least 0.10 (Akyolcu, 1997; Bengi-Gürkan et al., 1997; Çakır and Palabıyıkoğlu, 1997; Aksayan and Gözüm, 2002). Conceptual framework within which the original structure of the scale taking into account the suitability of items; factor groups where four of the items changed. Changing the size of factor loadings according to the distribution of subscales was changed names. The first subscale; "Psychological and spiritual health status (11 items)", the second subscale "Physical health status (9 items)", the third subscale "Diagnostic approach to the situation (7 items)" and finally, "Support and economic status of affected (4 items)" referred toas the lower size.

Validation of the validity testing phase of building work, a technique used frequently to test hypotheses. In this method, the investigator, or observations about the resources, in line with the assumption that the relationship already established between them and the level of the direction of the relationship is tested by evaluating the correlation analysis (Gözüm and Aksayan, 2002). Gordon et al. (2004) in their study of depression and anxiety levels have shown that caregivers about six times as much (Küçükgüçlü, 2004). The Pearson Moment multiplication correlation factors of the QOL-FV and MSPSS scales were calculated and a significant relationship was detected among the scales in a positive direction (r=0.29). Subscale scores ranged from 0.14 to 0.30 scale of the QOL-FV. Total score and the QOL-FV scale, the scale of MSPSS relationship between subscale scores were positively and significantly.

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