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The Functional Assessment of Cancer Therapy General (FACT-G) Scale: Reliability and Validity of a Turkish Version

Kanser Tedavisinin İşlevsel Değerlendirmesi Ölçeği (FACT-G): Türkçe Versiyonunun Geçerlik ve Güvenilirliği

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Öz

Giriş ve Amaç: Son 20 yılda geliştirilen kansere özgü yaşam kalitesi (QOL) anketlerinin çoğu, referans önlemler olarak düşünülebilir. Kronik Hastalık Tedavisinin İşlevsel Değerlendirmesi (FACIT) sistemi, temelli ve genel sağlıkla ilgili yaşam kalitesi ölçümleridir. Bu çalışmanın amacı, Functional Assessment of Cancer Therapy General (FACT-G)'nin Türk kanser hastaları için güvenilirliğini ve geçerliliğini test etmektir.

Gereç ve Yöntemler: Bu araştırma metodolojik tiptedir. Veriler, sosyodemografik ve FACT-G anketi kullanılarak elde edildi. Örneklem 148 kanser hastasını içermektedir. Veriler, SPSS paket programı kullanılarak tanımlayıcı istatistikler ve ölçeklerin güvenirliğini saptamada, cronbach alfa katsayısı ve madde toplam korelasyon katsayısı (Pearson korelasyon) ile değerlendirildi. Enstrümanın geçerliliği için; açıklayıcı ve doğrulayıcı faktör analizi kullanıldı.

Bulgular: Kanser Tedavisinin İşlevsel Değerlendirmesi Ölçeği toplam puanı 60.71±14.42 iken, fiziksel, sosyal/aile, duygusal ve fonksiyonel iyilik alt ölçeklerinin puan ortalamaları ise sırasıyla; 15.83±5.48, 13.91±4.90, 13.45±5.03, 17.51±5.04 olarak bulundu. Ölçeğin iç tutarlılığını belirlemek için kullanılan cronbach alfa katsayısı toplam ölçek için 0.88 olarak, alt ölçeklerde ise 0.70 ile 0.79 arasında bulundu. FACT-G ve dört alt boyutunun puanları arasında istatistiksel olarak pozitif yönde korelasyon ve anlamlı bir ilişki olduğu saptandı (p=0.001).

Sonuç: Bu araştırmada FACT-G ölçeğinin psikometrik özelliklerinin değerlendirmesi sonucunda, ölçeğin Türkiye'deki kanser tanılı hastalarda kullanımı için geçerli ve güvenilir bir araç olduğu belirlendi.

Anahtar kelimeler: Geçerlilik, Güvenilirlik, Kanser, Kanser tedavisinin işlevsel değerlendirme ölçeği (FACT-G), Yaşam kalitesi.

Abstract

Objective: Many of the cancer-specific quality of life (QOL) questionnaires improved over the last 20 years, can be contemplated as reference measures. The Functional Assessment of Chronic Illness Therapy (FACIT) system is an based and generic health-related quality of life measures. The aim of this study was conducted to test the reliability and construct validity of the Functional Assessment of Cancer Therapy General (FACT-G) for Turkish cancer patients.

Materials and Methods: This research is a methodological study. The data were obtained by using the sociodemographic and the FACT-G questionnaire. The sample comprised 148 cancer pa¬tients. Data were analysed by using the SPSS package program, descriptive statistics and to assess the reliability of the scales, cronbach alpha coefficient, item total score analysis, and, item total correlation coefficient (Pearson's correlation). For the construct validity of the instrument; exploratory factor analysis and confirmatory factor analysis were used.

Results: The mean total score of FACT-G was 60.71±14.42, and for the physical, social/ family, emotional and functional well-being subscales 15.83±5.48, 13.91±4.90, 13.45±5.03 and 17.51± 5.04, respectively. The alpha

coefficient was 0.88 for the global scale of the FACT-G questionnaire and ranged from 0.70 to 0.79 across subscales. A statistically significant positive correlation was found between FACT-G and test-retest scores of the four sub-dimensions (p=0.001).
Conclusion: In this study, as a result of evaluating the psychometric properties of the FACT-G scale, the scale is a valid and reliable tool for use in Turkish patients with cancer.

Keywords: Cancer, Quality of life, Reliability, The functional assessment of cancer therapy general scale (FACT-G), Validity.

1. Introduction

Cancer is the second leading cause of death globally and accounted for 8.8 million death in 2015 [1]. In spite of major advances in cancer medicine, it remains a significant health problem for all communities. Moreover, cancer disease affects the individual physically, emotionally, spiritually, cognitively, socially and economically and changes their way of life, their expectations and their life value [2]. The progressive increase in the rates of cancer, reveals the importance of disease management and treatment - care programs [3]. With the introduction of health care in an integrated approach to individuals, the quality of life of the individual has become as important as the other dimensions. This concept, which seems to be difficult to measure, has been tried to be standardized with the developed measuring instruments [4-6]. Of the many cancer-specific quality of life (QOL) questionnaires developed over the past 20 years, can be considered as reference measures [3,5-8].

The Functional Assessment of Chronic Illness Therapy (FACIT) system is a based and generic health-related quality of life measures. Cella et al. are developed the Functional Assessment of Cancer Treatment (FACT-General) is practicable and comprehensive to all types of cancers [9].

It is considered suitable for use with patients with any type of cancer and has also been used and validated in other chronic disease states (e.g. HIV / AIDS and multiple sclerosis) and the general population (using a slightly modified version). The FACT-G was used to refer to the general measure with the domains of physical, social/family, emotional and functional well-being [9-11].

Psychometric validation of the translations has been carried out in different countries as recommended that in cross-cultural adaptations. Many more recent studies indicate that the FACT-G scale is a psychometrically strong measurement means [9-17].

The aim of this study was calculated to test for the dimensionality, reliability and construct validity of Functional Assessment of Cancer Therapy Scale of hospitalized cancer patients in Turkey.

The research questions were: (1) How well does the four-factor model fit to the observed data? (2) Does the FACT-G scale reveal good reliability and construct validity for cancer patients?

2. Materials and Methods

2.1. Study Design and participants

This research is methodological study. The research was conducted between December 2018 and January 2019. The sample of the study was chosen with the method of simple random sampling. Data were collected from cancer patients admitted to Manisa State Hospital Radiation Oncology Clinic in Turkey. The research sample consisted of 160 cancer pa¬tients with mixed diagnoses. Of them, 12 refused to participate in the study. Therefore, the study was completed with 148 cancer pa¬tients (response rate=92.5%). The inclusion criteria required that the participants should be adults, be diagnosed with cancer and be voluntary. The sample was selected by random sampling method.

2.2.Statistical Analysis:

In order to determine the validity of the instruments, the data were analyzed by the descriptive statistics and exploratory factor analysis (EFA) using the SPSS version 20 (IBM), and the confirmatory factor analysis (CFA) by means of LISREL 8.8 (18,19). To determine the reliability of instruments; Cronbach coefficient alpha was calculated as a measure of internal consistency and test-retest reliability coefficients, and Pearson's correlation [20, 21-23]. For all the analyses, 0.05 and 0.001 were considered significant.

2.3.Instruments

2.3.1.Participant Information Form

Data were obtained by using the Socio-demographic Information Form, in which questions such as gender, age, education level, and the FACT-G questionnaire.

2.3.2.The Functional Assessment of Cancer Therapy Scale (FACT-G)

The FACT G has been exposed to a “Multilingual Translation Project” since 1993, and the psychometric validation of the translations have been carried in different countries as recommended in cross-cultural adaptations [2, -17,24]. The Turkish version was used in this study. The FACT-G, translated into Turkish (version 4) by the FACIT Organization. The FACT-G is composed of 27 items and four dimensions: Physical well-being (PWB, seven items, range 0-28), Social/Family well-being (SFWB, seven items, range 0-28), Emotional well-being (EWB, six items, range 0-24), and Functional well-being (FWB, seven items, range 0-28). item) are reversed. A total score is derived by summing the scale scores from all four subscales (range 0-108). The scale is in 5-point Likert-type format (0–4): Each item is scored from 0 to 4. ("not at all", "a little bit", "somewhat", "quite a bit", "very much"). Higher subscale scores indicate better health, functioning, or well-being [24]. The questionnaire was implemented by face-to-face interview. It took about 15-20 minutes.

2.4.Ethical considerations

For use the FACT-G was taken from the FACIT Organization permission by e-mail [24]. Approval for the

study was authorized by the institutional ethical committee and written informed consent was obtained from all the study participants (Manisa Celal Bayar University Faculty of Medicine the Ethics Committee of Health Sciences. Number:06/04/2017-E.29990).

3. Results and Discussion

The mean age of the patients was 57.88±12.3 years, 52,7% of them were female, 54% of the patients were primary school graduate. The majority of participants 77% were married. The mean total score of FACT-G was 60.71±14.42 and for the physical 15.83±5.48, social/family 13.91±4.90, emotional 13.45±5.03 and functional well-being 17.51± 5.04 subscales.

3.1.Reliability

The Reliability of FACT-G scale was assessed by means of the internal consistency, item-total score correlation, and test-retest analysis. Internal consistency reliability was determined by using Cronbach's alpha coefficient (Table 1). The alpha coefficient was 0.88 for the global scale of the FACT-G questionnaire. Cronbach's alpha the lowest correlation coefficients with the total score were observed in items related to the social well-being subscale (0.70) and highest for the functional well-being subscale (0.79). A commonly accepted values for Cronbach's coefficient alpha was calculated as a measure of internal consistency: values from 0.6-0.7 are acceptable, whereas values greater than 0.7 are good [21,22].

Item–total score correlation is measured using the Pearson's correlation coefficient in tests where Likert-type rating scales are used. The positive and high item total score correlation showed that the items gave akin to answers and the internal consistency of the test was high. Test retest reliability coefficients were assessed for the criteria of poor (r<0-0.20), fair (r=0.21- 0.40), moderate (r=0.41-0.60), good (r=0.61-0.80), and excellent (r>0.81-1) [21,23]. As shown Table 2. A statistically significant positive and strong relation to test-retest scores.

Table 1. The functional assessment of cancer therapy scale **(**FACT-G**):** item level descriptive statistics (n=148)

FACT-G item and Subscales		Mean±SD
Physical Well-Being (PWB)		
GP1	I feel peaceful	2.06±0.85
GP2	I have nausea	2.66±1.09
GP3	Because of my physical condition, I have trouble meeting the needs of my family	2.11±1.07
GP4	I have pain	2.54±1.12
GP5	I am bothered by side effects of treatment	2.04±1.18
GP6	I feel ill	1.91±1.08
GP7	I am forced to spend time in bed	2.48±1.09
Social and Family Well-Being (SFWB)		
GS1	I feel close to my friends	2.41±0.96
GS2	I get emotional support from my family	3.08±0.89
GS3	I get support from my friends	2.72±1.11
GS4	My family has accepted my illness	3.09±0.86
GS5	I am satisfied with family communication about my illness	2.97±0.98
GS6	I feel close to my partner (or the person who is my main support)	2.74±1.16
GS7	I am satisfied with my sex life	0.47±0.89
*Emotional Well-Being (*EWB)		
GE1	I feel sad	2.12±1.08
GE2	I am satisfied with how I am coping with my illness	2.27±0.86
GE3	I am losing hope in the fight against my illness	2.49±1.13
GE4	I feel nervous	2.07±1.13
GE5	I worry about dying	2.40±1.34
GE6	I worry that my condition will get worse	2.07±1.38
*Functional Well-Being (*FWB)		
GF1	I am able to work (include work at home)	1.52±1.13
GF2	My work (include work at home) is fulfilling	1.56±1.10
GF3	I am able to enjoy life	1.95±0.96
GF4	I have accepted my illness	2.64±0.84
GF5	I am sleeping well	2.08±1.04
GF6	I am enjoying the things I usually do for fun	2.03±0.92
GF7	I am content with the quality of my life right now	2.10±0.92
Subscales		
PWB	*(Score range:* 0-28) *(GP1-GP2- GP3- GP4- GP5- GP6- GP7*)	15.83±5.48
SFWB	*(Score range:* 0-28) *(GS1- GS2- GS3- GS-4 GS-5- GS6- GS7*)	13.91±4.90
EWB	*(Score range:* 0-24) *(GE1- GE2- GE3- GE4- GE5- GE6)*	13.45±5.03
FWB	*(Score range:* 0-28) *(GF1- GF2- GF3- GF4- GF5- GF6- GF7)*	17.51±5.04
FACT-G scale total score (PWB score) + (SWB score) (+EWB score) + (FWB score)		60.71±14.42

Table 2. Distribution and the reliability of FACT-G scores (n=148)

FACT-G item	r	p	Corrected Item-total Correlation	if item deleted Cronbach alfa
GP1. I feel peaceful	0.32	<0.001	0.50	0.84
GP2. I have nausea	0.52	<0.001	0.67	0.82
GP3. Because of my physical condition, I have trouble meeting the needs of my family	0.75	<0.001	0.47	0.84
GP4. I have pain	0.40	<0.001	0.63	0.82
GP5. I am bothered by side effects of treatment	0.36	<0.001	0.61	0.83
GP6. I feel ill	0.39	<0.001	0.67	0.82
GP7. I am forced to spend time in bed	0.62	<0.001	0.70	0.81
GS1. I feel close to my friends	0.58	<0.001	0.57	0.81
GS2. I get emotional support from my family	0.54	<0.001	0.72	0.79
GS3. I get support from my friends	0.71	<0.001	0.73	0.78
GS4. My family has accepted my illness	0.58	<0.001	0.67	0.79
GS5. I am satisfied with family communication about my illness	0.58	<0.001	0.66	0.79
GS6. I feel close to my partner (or the person who is my main support)	0.34	<0.001	0.58	0.81
GS7. I am satisfied with my sex life	0.08	<0.001	0.16	0.86
GE.1 I feel sad	0.34	<0.001	0.56	0.78
GE2. I am satisfied with how I am coping with my illness	0.08	<0.001	0.22	0.84
GE3. I am losing hope in the fight against my illness	0.44	<0.001	0.66	0.76
GE4. I feel nervous	0.31	<0.001	0.53	0.79
GE5.I worry about dying	0.66	<0.001	0.69	0.75
GE6. I worry that my condition will get worse	0.70	<0.001	0.78	0.72
GF1. I am able to work (include work at home)	0.69	<0.001	0.57	0.83
GF2. My work (include work at home) is fulfilling	0.76	<0.001	0.72	0.80
GF3. I am able to enjoy life	0.65	<0.001	0.77	0.80
GF4. I have accepted my illness	0.16	<0.001	0.27	0.87
GF5. I am sleeping well	0.19	<0.001	0.36	0.86
GF6.I am enjoying the things I usually do for fun	0.78	<0.001	0.81	0.80
GF7. I am content with the quality of my life right now	0.77	<0.001	0.78	0.80
Subscales				Cronbach's α
Physical Well-Being (GP1,2,3,4,5,6,7th items)		<0.05		0.85
Social and Family Well-Being (GS1,2,3,4,5,6,7th items)		<0.05		0.78
Emotional Well-Being (GE1,2,3,4,5,6th items)		<0.05		0.79
Functional Well-Being (GS1,2,3,4,5,6,7th items)		<0.05		0.83
FACT-G total				0.88

3.2.Construct Validity

The construct validity CFA results for the FACT-G model is presented in Figure 1.

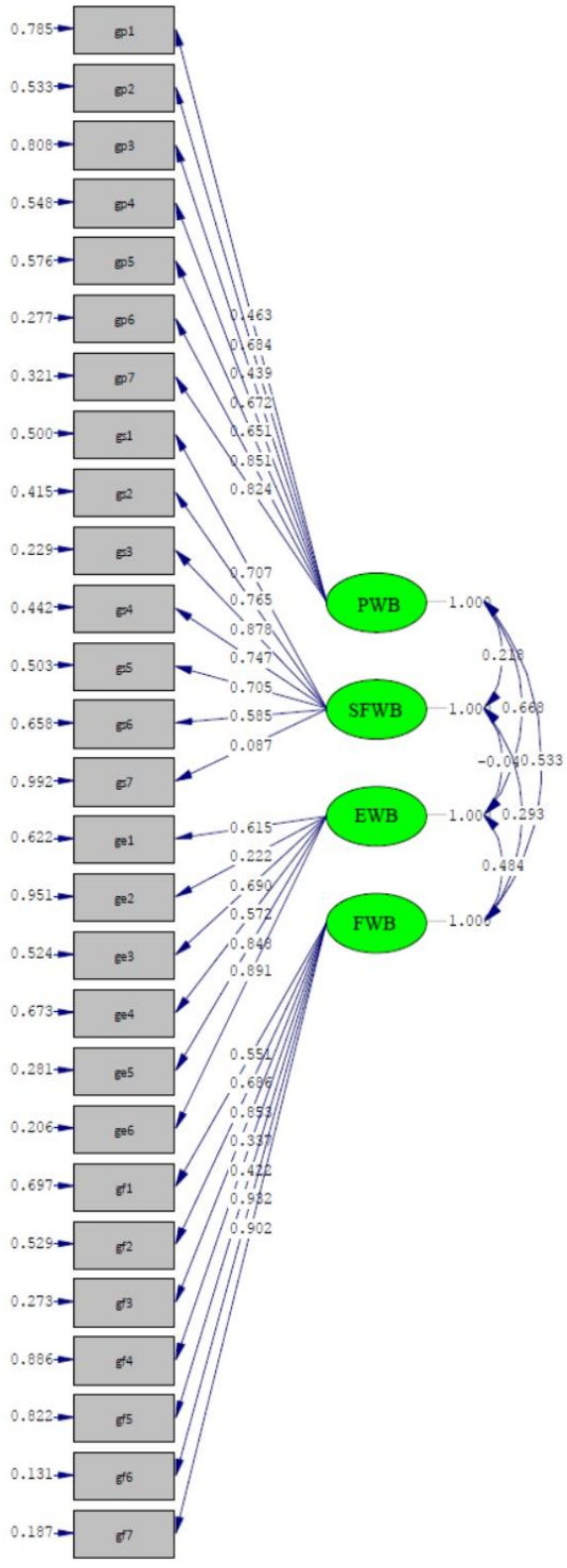
Fit statistics included root mean square residual (RMR; criterion <0.06), root mean square error of approximation (RMSEA; criterion <0.06), the comparative fit index (CFI; criterion >0.95), Tucker-Lewis Index (TLI; criterion >0.95) and the standardized root mean square residual (SRMR; criterion <0.08). Goodness of Fit Index (GFI), Normed Fit Index (NFI), Incremental Fit Index (IFI) and Relative Fit Index (RFI) values were also used. In addition, an RMR or RMSEA value of ≤ 0.05 indicates perfect compatibility but a value of ≤ 0.08 is considered as showing acceptable suitability [18-20].

In the present study, found that the appropriate statistics for the Fact-G scale for Turkish cancer patients met criteria: CFI= 0.89, RMSEA= 0.081, TLI= 0.90, SRMR= 0.08. Other fit indices displayed an acceptable level (GFI= 0.73, RMR= 0.098, NFI= 0.90, IFI= 0.89 and RFI= 0.81.

3.3.Discussion

It has been shown in various studies, the Fact-G quality of life instrument is suitable for use in all types of cancer patients and also validated in other chronic disease states. (5,6,9,11,15,17).

This research reports test of the reliability and construct validity of the Turkish version of FACT-G among Turkish cancer patients. As in the original validation study of FACT-G, this study also included patients with mixed cancer diagnoses. In this study the patients had FACT-G scale global scores with a mean score of



Chi-Square=762.34, df=318, P-value=0.000001, RMSEA=0.081

Figure 1. Results of confirmatory factor analysis of the functional assessment of cancer therapy scale. PWB: Physical Well-Being; SFWB: Social and Family Well-Being; EWB:Emotional Well-Being; FWB:Functional Well-Being.

60.71±14.42. Among the subscales, the patients obtained the highest scores from the functional well-being subscale and the lowest scores from the emotional well-being subscale. The findings of this study showed that the quality of life of the patients was moderate as a result of comparison with the findings obtained from other studies [12,25].

The Fact-G scale of cronbach's alpha to the total score in this study was 0.88 compared with 0.89 reported by Cella et al. and cronbach alphas for the subscales in this study ranged from 0.78 to 0.85, which was higher than those reported by Cella et al. 0.65 to 0.82 [9]. In addition, the alpha values of the deleted item were calculated for all scale items to investigate any problematic item on the scale. As a result of these analyzes, no problem items were found. A similar result was obtained in another study in Portuguese (26).

The item scale correlations showed good item accomplishment. The correlations obtained between the initial test and re-test were quite high for all subscales: PWB ($r = 0.78$, $p < 0.001$), SFWB ($r = 0.65$, $p < 0.001$), EWB ($r = 0.74$, $p < 0.001$), and FWB ($r = 0.79$, $p < 0.001$). Comparison of results from this study with findings from other studies test-retest reliability is adequate for all subscales [5,10-12,14-17]. All subscales had alpha values >0.70, as required by current recommendations [21-23]. The high correlation obtained for each item indicates that the relation of the measured theoretical structure is high.

4. Conclusion

This study showed that the Turkish version of the FACT-G was highly acceptable, had good internal consistency, and good test–retest correlation indicating stability (r>0.65).

Confirmatory factor analysis showed that all goodness indexes were at acceptable attribute. The Fact-G also revealed a multidimensional structure with four main dimensions. This was identified in research the factor structure was the same as that reported by Cella et al. [9]. This goodness of fit indices displayed that model-data suitability was reached for the tested model. Also, other studies have demonstrated that a four-factor model fit better [15-17].

Finally, this study ensures that strong support for the Turkish version of the psychometric properties of the original FACT-G scale is regarded as a valid and reliable tool and for patients with all types of cancers in Turkey.

Study limitations

Further studies are needed to enquire of the Fact-G Scale in a larger sample of different cultures in varied populations.

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