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Breast Cancer and Family Support Scale: Validation of the Greek Version

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Abstract: The family support scale (FS-12) was designed to assess family support patients with chronic disease. The aim of this particular study was to validate the psychometric properties of the FS-12 scale in the Greek language. The study involved 130 patients diagnosed with breast cancer. The FS-12 scale was translated and validated to be used in the Greek language. Analyzes performed were to check reliability, validity and convergent validity. The validated FS-12 scale had a good Cronbach α index (α = 0.77) and strong split-half reliability index (Spearman-Brown = 0.729, Guttman Split Haft = 0.728). Factor analysis was performed using principal component factor analysis. Based on the results of the study, the FS12-GR scale is a valuable instrument to assess the family support of the breast cancer patient. Finally, it is a psychometric instrument that can be used by health professionals.

Keyswords: FS-12; Family support; Breast cancer

1. Introduction

In recent decades, breast cancer has increased significantly in almost all age groups. In 2050 it is estimated that it will reach 3.2 million new cases (Runowiczetal 2015; Sungetal 2021;Lima et al 2021; www.who.int/news-room/fact-sheets/detail/breast-cancer).

According to recent studies, family support plays a vital role, significantly contributing to the relief of depressive symptoms, emotional distress and anxiety and improving the quality of life of breast cancer patients (Wondimagegnehu et al 2019; Zamanian

et al2021). Breast cancer causes discomfort, stress, burden, social, economic and professional problems, fatigue, frustration and other emotional reactions both in the patient and in all their close interpersonal relationships, such as family, children, partner, friends (Altunetal 2019; Andriopoulou, Charos, Stergiadi 2018; Meier et al 2019;Noveiri et al 2019; Segrin, Badger, and Sikorskii 2019, Segrinetal 2018; Stefanouetal 2020; Wolffetal 2019; Yenug et al 2019; Xuetal 2021).

Women suffering from breast cancer need support from their family (Ardahan and Yesilbalkan 2010). Simultaneously, the family environment that supports the patients emotionally, financially, socially, etc. and family relationships based on communication, respect and empathy contributed positively to patient health, disease management and family resilience (Li et al 2018; Charos et al 2023; Liu et al 2021; Nimekari et al 2019; Nissenetal 2016;Xuetal 2021). In addition, the feeling of insufficient family support and conflictual relationships among family members reduces the patients' quality of life (Li et al 2019;Segrin et al 2019b; Yeung, Lu, and Mak 2019).

Therefore, the assessment of family support of breast cancer patients is an important aspect in order for patients to respond satisfactorily to the management of the disease and at the same time to receive more active psychosocial support (Charos, Andriopoulou, Vivilaki 2023). A reliable family support scale that focuses on patients with chronic diseases is the Family Support Scale (FS-12).

The FS-12 Family Support Scale (FS-12), was created in Finland by Julkunen and Greenglass(1989). The FS-12 is a revised scale, a variant of FS-13 and focuses on the patient's subjective feeling of emotional and instrumental support from other family members suffering from a chronic illness. Both scales, FS-13 (Changetal 2017; Julkunen and Greenglass 1989; Greenglass 1993; Gustavsson-Lilius, Julkunen, and Hietanen2007) and FS-12 measure family support. The FS12 is specialized and focuses on families suffering from chronic diseases and measures support from the onset of the disease. The FS-12 was not validated in the Greek language. In contrast, to the FS-13 which was validated in the Greek language by FS-13 Tselebis et al (2011) (Cronbach $\alpha = 0.82$).

The aim of the present study was to adapt the FS-12 scale to the Greek language and to check the validity and reliability of this scale

2. Material and Methods

2.1 Participants

The sample consists of 130 patients with breast cancer, at the beginning of the diagnosis in Greece. The sample collection period was from September 2019 to November 2020. Of the 162 women with breast cancer who were administered the scale and met the study inclusion criteria, 130 completed the questionnaires and returned them to the researcher. The response rate was 0.80% which was quite satisfactory according to the adverse conditions caused by the COVID-19.

Non-participation in the study was mainly due to concern about COVID-19 exposure and health problems.

Initially, patients were informed about the aim of the study and the following inclusion criteria were followed: (a) patients were diagnosed with breast cancer (b) patients were admitted to the clinic for surgery, (c) patients had the ability to read and to write in Greek, and (d) patients did not have a history of serious mental disorders. Patients who did not meet the study criteria were excluded. In addition, participants were given a signed consent to participate in the study and a booklet with instructions for completion.

Finally, permission to conduct the research was obtained from the scientific board of the oncology hospital (reference number 552, 06-28-2019) and the guidelines of both the Helsinki Code of Ethics (Declaration of Helsinki 2013) and the General Data Protection Regulation (GDPR 2019) were followed.

2.2 Measures

The psychometric instruments selected to conduct this study measured relatively similar concepts in order to contribute to the validity of this scale.

Social Relationship Coping Efficacy Scale (SRCE). The SRCE is a self-efficacy theory-based scale that measures an individual's ability to engage in behaviors that enhance and maintain social support. It is a Likert-type scale that ranges from 1 to 9 and consists of 10 items (Merluzzi et al 2019). The SCRE-GR has a Cronbach α of 0.87 (Charos et al 2021).

Family Crisis Oriented Personal Evaluation (F-COPES). F-COPES is based on the family resilience and adaptation model. It measures family distress and identifies the strategies the family uses to manage an

illness. It was constructed by Mc Cubbin et al (1981) and weighted in Greek by Gouva et al (2016) and Cronbach's α was 0.77. The scale is of the Likert type from 1 to 5, contains 30 items and five subscales. Acquiring Social Support, Reframing, Seeking Spiritual Support, Mobilizing Family to Acquire and Accept Help, Passive Appraisal).

Family Support Scale (FS-13). The FS13 is a 1 to 5 Likert scale and assesses subjective family support. It was constructed by Julkunen et al (1989) and consists of 13 items and was validated in the Greek language by Tselebis et al (2011) (Greenglass 1993; Julkunen and Greenglass 1989; Tselebis et al 2011). Cronbach's α was 0.82.

Family Support Scale (FS-12) was created in Finland by Julkunen et al. (1989). The FS-12 scale focuses on the subjective feeling of family support for patients with chronic diseases. It consists of 12 questions, rated on a Likert scale from 1 (Strongly disagree) to 5 (Strongly agree). Items 3,5,6,8,9,11 are reverse scored. Cronbach's alpha is 0.90 (Gustavsson-Lilius et al., 2007). Cronbach's alpha of FS12GR was 0.77.The range of the total score is 12 – 60.The higher the total score of the scale, the greater the family support for the patients.

2.3 Demographic and Medical Information

Table 1. Demographic and medical characteristics of participants.

Variable	M / Percentage %
Age	54.8
Educational level	
Primary school	10.8%
Middle school	16.2%
High school	23.8%
Post-secondary education	7.7%
Higher education	30,8%
Post graduate education	9.2%
PhD	1.5%
Marital Status	
Unmarried	5.4%
Married	58,9%
Divorced	10.1%
Separated	3.9%
Widowed etc	15,5%
Employment Status	
Unemployed	9.3%
Employee clerk	21.7%
Civil servants	26.4%
Housewife	22.5%
Other etc	13.2%
Place of residence	
>100000	59.2%
Citizenship	
Greek	96.9%
Other	3.1%
Income	
0-1000 Euro	64.8%
1001-1500 Euro	26.4%
Euro	4%
>2001 Euro	4.8%
Mothers	
Yes	86 %
No	14%
Sex children	
Boys	25.2%

Continuation Table:

Variable	M / Percentage %
Girls	34.6%
Boys &Girls	40.2%
History of cancer	
Yes	45%
No	55%
Person first informed of their cancer	
Partner	46.8%
Mother	7.9%
Children	20.6%
Friends	4.8%
No one	3.2%
Other person	4.8%
More members of the family	11.9%
Person closest to the patient	
Partner	28.9%
Mother	4.7%
Children	19.5%
Friends	1.6%
No one	2.3%
Other person	3.9%
More members of the family	39.1%

2.4 Translation Procedures

In order to translate the FS-12 scale permission was first obtained from the creator of the scale and then translation procedures were followed according to the EORTC translation guidelines (Kulis et al 2017).

Initially the scale was translated from English to Greek by two translators who had excellent knowledge of the English language. It was then translated back into English by two native English translators who had excellent knowledge of the Greek language.

2.5 Cultural Adaptation

The scale was administered to 20 mental health professionals and 10 breast cancer patients. An in-depth interview was then conducted to identify language and expressive problems in both patients and professionals, and minor scale adjustments have since been made.

2.6 Pilot Test

To achieve a first assessment of the reliability of the scale, a pilot study was performed on a small sample of 29 breast cancer patients. According to pilot tests, the FS-12 scale had acceptable reliability and validity

2.7 Statistical analysis

Statistical analyzes were performed using SPSS, version 20.0. Descriptive statistical analyzes of participant demographics were calculated.

To check reliability, the internal consistency reliability coefficient was used, calculating the Cronbach alpha coefficient, the Spit-Half reliability coefficient, with the Spearman-Brown Coefficient and Guttman Split-Half Coefficient indicators.

Regarding the validity check was performed factor analysis using the principal component method. Convergent validity was assessed by correlating other scales, such as the FS13, SRCE, F_COPES scales.

3. Results

3.1 Descriptive Statistics

The mean age of the patients was 54.8 years, the majority of the sample (30.8%) had completed higher education, 58.9% of the sample were married. A fairly significant proportion of patients (45%) reported having a family history of cancer. 46.8% sought support from their husband/partner by first disclosing to him their health problem, while many of the people who chose to be by their side were family members (39.1%), etc. (**Table 1**).

Table 1 contains more detailed information about the participants.

3.2 Factor Analysis

Principal component analysis without rotation was used for factor analysis. A single factor was used in the scale and confirmed by the scree plot. The loadings of the correlation coefficients of the scale were above

0.44 (factor loadings) with the exception of two variables that were below (item 5 = 0.25 and item 9= 0.36(**table 2**). For this reason we use one factor in the analysis of the scale.

The values of the factor variances (communalities), 90% are >0.132 (**table 2**) and the weighted total variance percentage is the same before and after rotation.

Table 2. Communalities and factor loadings.

Communalities and factorloadings					
		Communalities	ComponentMatrix		
	Items	Extraction	Factorloadings	M	SD
1	My family supports me in all my efforts	0.433	0.658	4.5	0.7
2	At home, they understand me even if I am tired and angry	0.360	0.600	4.1	0.9
3	Since the appearance of the illness, I feel like left alone with my worries	0.314	0.560	3.9	1.4
4	It's really nice to come home after a hard day	0.502	0.709	4.4	0.8
5	It doesn't do any good talking about your daily troubles at home	0.064	0.254	3.1	1.3
6	We often disagree about sharing the duties at home	0.201	0.448	3.3	1.4
7	The feeling (atmosphere) is very harmonious in our family	0.406	0.635	3.7	1.1
8	Conflicts at home sometimes take all of my energy	0.236	0.486	3.2	1.4
9	I am often blamed for neglecting duties at home	0.132	0.364	4.2	1.1
10	Facing the illness has made us to feel more close to each other	0.303	0.594	4.1	1.1
11	It is impossible to really relax at home	0.380	0.616	4.1	1.2
12	Our family sticks together despite any difficulties	0.364	0.604	4.5	0.8

Bartlett's test of sphericity (Chi-Square=276.077, p=0.000) showed statistically strong correlations between items. The KMO index for sampling adequacy was 0.781.

3.3 Reliability

Cronbach's α of Family Support-12 was equal to 0.769. Correlation index values range from 0.209 to 0.504.

Cronbach's α of Item deleted did not improve significantly if any item on the scale was deleted. Finally, the Spearman–Brown index was 0.729 and the Guttman Split-Half index was 0.728.

3.4 Validity

According to convergent validity the FS-12 – Greekscale is positively correlated with the FS13 (r= 0.713), SRCE (r=0.524) and F-COPES (r= 0.406) scales (**table 3**).

As noted in the measure descriptions, its scales were chosen to measure relatively similar concepts in order to contribute to validity. The SRCE scale focuses on maintaining or enhancing social support, the F-COPES focuses on family resilience, and the FS13 on overall family support. These differences account for the significant but modest validity coefficients.

Table 3. Correlation FS-12 with others measures

Constructs and measures	Correlationwith FS-12
FS13	,713**
SRCE	,524**
F-COPES	,406**

4. Discussion

According to the results, the Greek version of the Family Support-12 scale showed relatively satisfactory reliability with relatively strong internal consistency and the Cronbach α FS12-GR was 0.77.

Convergent validity showed relatively high positive correlation of FS12-GR with FS13, SRCE, F-COPES scales. This fact strengthens the psychometric properties of the FS12-GR scale and the FS12-GR and can be safely used as a psychometric tool in the Greek population.

The FS-12 scale was applied to patients with coronary artery disease requiring surgery. The recovery of bypass patients also depended on psychosocial

factors, such as family support. Patients who had high family support protect health and promote recovery. Assessing family support is important in order to promote patient care as needed (OkkonenandVanhanen 2006).

Similarly, the specific scale was applied in studies with cancer patients and reached important conclusions (Gustavsson-Lilius, Julkunen, and Hietanen; Julkunen Greenglass 2009).

The FS-12 is a valuable construct that focuses on the family support of patients arising from their cancer experience, especially in Greece where family relationships are close and function protectively and supportively against the stress caused by the disease.

Finally, this psychometric instrument is easy to use in clinical practice and can be used by health professionals for the early detection of patients' family support in order to implement early psychosocial support programs. Assessment of family support of patients with breast cancer is an important aspect for the satisfactory management and adaptation of patients to the disease.

5. Limitation

The main limitations of this study are the small sample of patients obtained, and future researchers would benefit from studying family support at different stages of their illness, as well as investigating other types of validity and reliability of the scale.

6. Conclusion

Family support is a vital role for breast cancer patients. According to the results of the study, the FS-12GR scale demonstrates satisfactory psychometric properties to measure family support of breast cancer patients.

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