Original Article

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Validity and Reliability of the Symptom-Management Self-Efficacy Scale for Breast Cancer Related to Chemotherapy

Meme Kanserinde Semptom Yönetimi-Öz Etkililik Ölçeğinin Geçerlik ve Güvenirliği

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ABSTRACT

Objective: Since breast cancer (BC) is one of the most common cancer types among women, it is very important for nurses to assess symptom-management and self-efficacy of patients during chemotherapy treatment. This study was carried out to examine the validity and reliability of the symptom-management self-efficacy scale for BC related to chemotherapy.

Methods: The study sample of this methodological research consisted of 248 women receiving chemotherapy treatment due to breast cancer in a public hospital in İstanbul between November 2017 ans March 2018. Translation-back translation method was used to assess the language validity of the scale. Kaiser-Mayer-Olkin and Bartlett's tests were applied to evaluate the sampling adequacy and the suitability of the data for factor analysis.

Results: The content validity of the Turkish form was 0.912; Cronbach alpha coefficient of the scale was 0.905. The factor loads of all the items belonging to the scale were above 0.40, and explained variance for the scale was as follows; 16,284 for the problem-solving sub-dimension; 13,517 for the sub-dimension of managing problems in emotional and interpersonal relationships, and total explained variance of the scale was found to be 46,944. For this reason, no items were removed from the scale and the scale was accepted as having 3 sub-dimensions as it was in the original.

Conclusion: Findings obtained from this study showed that the Turkish version of the scale was valid and reliable and could be used in research and clinical practice in Turkey.

ÖZ

Amaç: Meme kanseri (MK) kadınlarda en sık görülen kanser türlerinden biri olduğundan, hemşirelerin meme kanseri nedeniyle kemoterapi tedavisi alan hastaların semptom yönetimini ve öz-etkililiğini değerlendirmeleri oldukça önemlidir. Bu doğrultuda bu çalışma, MK'de semptom yönetimi-öz etkililik ölçeğinin Türk dilinde geçerlik ve güvenirliğini değerlendirmek amacıyla yapılmıştır.

Yöntemler: Metodolojik tipte yürütülen bu araştırmanın örneklemini Kasım 2017-Mart 2018 tarihleri arasında İstanbul'da bir devlet hastanesinde meme kanseri nedeniyle kemoterapi tedavisi gören 248 kadın oluşturmuştur. Ölçeğin dil geçerliliğinin değerlendirmesinde çeviri-geri çeviri yöntemi kullanılmıştır. Ölçeğin güvenirliğini değerlendirmek için kapsam geçerliliği, faktör analizi, Cronbach α katsayısı ve madde-toplam korelasyonu incelenmiştir. Verilerin faktör analizine uygunluğunu ve örneklem yeterliliğini değerlendirmek için Kaiser-Mayer-Olkin ve Bartlett testleri uygulanmıştır.

Bulgular: Ölçeğin Türkçe formunun kapsam geçerliliği 0,912; Cronbach alfa katsayısı ise 0,905 olarak bulunmuştur. Ölçeğe ait tüm maddelerin faktör yükleri 0,40'ın üzerinde olup, öl.eğin alt boyutlarına ait açıklanan varyansı; problem çözme alt boyutu için 16,284; kemoterapi semptomlarının yönetimi alt boyutu için 16,603; duygusal ve kişilerarası ilişkilerde sorunları yönetme alt boyutu için 13,517'dir ve ölçeğin açıklanan toplam varyansı 46,944'tür. Bu nedenle ölçekten hiçbir madde çıkarılmamış ve ölçeğin orijinaline uygun olarak 27 madde ve 3 alt boyuttan oluştuğu belirlenmiştir.

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Keywords: Validity-reliability, breast cancer, self-efficacy, symptom management

Sonuç: Bu çalışmadan elde edilen bulgular, ölçeğin Türkçe versiyonunun geçerli ve güvenilir olduğunu ve Türkiye'de araştırma ve klinik uygulamalarda kullanılabileceğini göstermiştir.

Anahtar Sözcükler: Geçerlik-güvenirlik, meme kanseri, öz-etkililik, semptom yönetimi

Introduction

Cancer is one of the leading causes of mortality and morbidity in the world.It was reported by the World Health Organization that in 2015, 571,000 of the 8.8 million cancer-related deaths were caused by breast cancer (BC) (1). According to the data of the American Cancer Association, it was stated that 231,840 women were diagnosed as having BC in 2015 in the United States (2). It was declared that 570,000 women lost their lives from BC in the world, which accounted for approximately 15% of cancer-related deaths in women in 2015 (3). Similarly, BC is the most common type of cancer in women in Turkey, and it is reported that more than 1.5 million women are diagnosed as having BC every year (4).

Surgical treatment, radiotherapy, hormonotherapy and chemotherapy are used in the treatment of BC (5). Chemotherapy is a form of treatment using chemotherapeutic drugs to prevent the destruction of cancer cells or the uncontrolled growth of these cells (6). Chemotherapy drugs used in cancer treatment extend the life span of the patients but cause a series of side effects in them (7,8). In chemotherapy, besides cancerous cells, healthy cells are also damaged, especially after chemotherapy, sexual functions are negatively affected. Besides, the following symptoms are observed; infection, bleeding tendency, anemia, weakness/fatigue, alopecia, nausea/vomiting, constipation, diarrhea, changes in the mouth, gums, and throat (8). In addition, it is stated that chemotherapy causes many symptoms related to bone marrow depression, shortness of breath, insomnia, skin, and eye (9). Since chemotherapy treatment has been given at the outpatient clinics, it is becoming more crucial for patients to manage symptoms related to chemotherapy at home (10). In the literature, it is pointed out that patients face many difficulties when performing self-management of side effects caused by chemotherapy treatment (10,11). These side effects and symptoms observed during and after chemotherapy treatment negatively affect the patient's lifestyle, self-care, daily activities, quality of life, symptom management, and self-efficacy (11). Therefore, it is important to evaluate the symptom management and self-efficacy of patients receiving chemotherapy with a valid and reliable instrument that can make more clear to understand the potential role of symptoms and self-efficacy during the treatment process (10).

Self-efficacy level has an important place in the behaviors of individuals in coping with illness, adaptation, and maintaining health, and it has been emphasized that belief is important in health behaviors (11,12). Self-efficacy is defined as the perception of an individual to successfully perform a certain action and to control events (13). Self-efficacy has an important role in guiding the individual's behaviors, feelings, and thoughts. Most studies show that self-efficacy positively affects the treatment process in patients receiving chemotherapy and shortens this process (14,15). It is also believed that patients with cancer with high self-beliefs are more likely to participate in effective symptom management strategies, which make it easier for them to adapt to the disease and treatment (16). Practices to increase self-efficacy reduce emotional responses such as anxiety and stress. Strong self-efficacy increases the probability of initiating and maintaining recommended health behaviors (17). In this process, determining the level of self-efficacy is reported to be important in determining the needs of individuals (12). Liang et al. (9) revealed in their study that when patients' self-efficacy was high, they could also provide symptom management. In another study, it was reported that patients who could fulfill their self-care responsibilities had higher self-efficacy against possible symptoms (11,18).

In addition to being the basis of care given to patients with cancer, symptom management has an important role in preventing or controlling symptoms that develop due to treatment, and symptom management can only be done by evaluating symptoms (19). Techniques used in chemotherapy change depending on the developments in chemotherapy and biotherapy methods, and therefore, new approaches in symptom management are expected to keep up with these changes. Chemotherapy treatment is carried out on an outpatient basis without the need for hospitalization. For this reason, it is very important to be able to manage chemotherapy-related symptoms at home. It has been pointed out in the literature that patients experience various difficulties related to the symptoms associated with chemotherapy (11,19).

In order to ensure symptom management in patients receiving chemotherapy and to evaluate patients' self-efficacy, nurses should understand the symptoms and causes associated with chemotherapy, and the frequency and severity of symptoms. It has been pointed out in the literature that self-efficacy is an important component of well-being and successful symptom management (16). At this point, it is obvious that nurses should determine patients' self-efficacy in order to achieve effective symptom management during the chemotherapy treatment. However, in the literature, there is no valid and reliable measurement tool in Turkish language that evaluates the symptoms related to chemotherapy in BC and determines the self-efficacy level of the patients. For this reason, it is believed that the adaptation of the symptom-management self-efficacy scale for BC (SMSES-BC)

related to chemotherapy to the Turkish society will be a guide for the nurses who care for this patient group and will contribute to the literature.

Methods

Settings and Participants

This study was conducted in a methodological type to examine the validity and reliability of the SMSES-BC related to chemotherapy. The population of the study consisted of women who received chemotherapy for BC in the chemotherapy unit of a public hospital in Istanbul between November 2017 and March 2018. The sample of the study was determined using the purposeful sampling method. Women who agreed to participate in the study, over the age of 18, diagnosed as having BC, completed the third course of chemotherapy treatment, and agreed to participate in the study were included in the study in line with the voluntary principle. By including a total of 248 women in the study, the condition of reaching a size of 5-10 times greater than the number of items in the calculation of the sample size in methodological studies was met.

Instruments

The data of the study were collected using the patient information form and the SMSES-BC related to chemotherapy via face-to-face interview technique from 248 women who were treated in the chemotherapy unit of a public hospital in Istanbul between November 2017 and May 2018 and agreed to participate in the study.

Patient Information Form consisted of a total of 12 questions; 6 questions about the patient's demographic characteristics (age, gender, marital status, educational status, number of children, social security) and 6 questions for the information about the disease (previous hospitalization experience, chronic disease, BC diagnosis year, smoking/alcohol use).

Symptom-Management Self-Efficacy Scale for BC related to chemotherapy was developed by Liang et al. (9) to evaluate symptom management and self-efficacy in patients with BC receiving chemotherapy. The scale was developed in Likert type (0= not sure at all, 10= very sure). It is a scale consisting of 27 items and three sub-dimensions. The total score of the scale is obtained by adding up the numerical values corresponding to the answers. The total score that can be obtained from the scale is between 0-270. The high score indicates that the person's perceived self-efficacy in managing their symptoms is high. SMSES-BC related to chemotherapy includes 3 sub-dimensions: problem-solving skill (7 items), management of chemotherapy symptoms (15 items), and management of emotional and interpersonal problems (5 items). In the scale, there are no items scored by inverting. In the study carried out by Liang et al. (9), the Cronbach alpha value for the original scale was calculated as 0.96, and the Cronbach alpha value of all subscales ranged from 0.88 to 0.95. Content validity of the scale was between 0.75 and 1.00 (11).

Methodology of Translation and Procedures

First of all, the language validity of the SMSES-BC related to chemotherapy was provided. In the adaptation of the English form of the scale into Turkish, the translation-back translation technique which was recommended in the literature and widely accepted for the translation and adaptation of tools in different languages was used (20). For this purpose, the scale, which was originally in English, was translated into Turkish by two professionals, one of whom was a professional translator and the other one had a good command of English and was an expert in the field. The most appropriate translation was adopted for each item by examining the form translated into Turkish by two faculty members who were experts in their field and had a good command of English. The Turkish translation of the scale was re-translated into English by two people (one was a nursing lecturer and the other was a professional translator) who had a good command of English and Turkish and did not see the original of the scale. After the translation and back-translation of the scale was completed, both forms were compared and necessary arrangements were made. After the arrangements were made, a pilot application was carried out in 20 patients who met the inclusion criteria. After the pilot application, the comprehensibility of the scale items was reviewed again and the scale was finalized. The items in the original scale and the back-translated scale were compared and semantic equivalence was achieved. The final version of the scale was sent to Liang et al. (9) of the suitability of the translation was obtained. In this way, the language validity phase of the scale was completed.

Content Validity

Content validity is to take expert opinions in order to determine whether the items in the measurement tool are suitable for the purpose of measurement and whether they represent the area to be measured (21). Along with the Turkish version of the language adapted scale, the English form was submitted to the opinions of 12 experts (two nurse lecturers, six specialist nurses, two oncologists, one psychologist, and one linguist) to determine its suitability in terms of language and content validity. The experts, whose opinions were received via e-mail, examined the items of the scale in terms of intelligibility and cultural compatibility. In order to obtain content validity index (CVI) value, expert opinions were evaluated using the Davis technique. According to the Davis technique, in which four-point grading is used, experts consider the items of the scale as follows; 1. "Not suitable", 2. "The item needs to be brought into an appropriate form", 3. "Appropriate but needs minor changes", 4. "Very suitable". In this research, CVI value was obtained as follows: the number of experts who chose option (a) and (b) was divided by the total number of experts, and the CVI for the item was obtained, and instead of comparing this value with a statistical criterion; a value of 0.80 was accepted as a criterion (22). The scale, of which language and content validities were made, was applied to 20 patients who were diagnosed as having BC in a public hospital in Istanbul and who were excluded from the chemotherapy sample in terms of applicability and understandability. Further, the expressions in the scale items were found to be understandable

by the patients. No adjustment was made in the scale items after the pilot study.

Ethical Consideration

Liang et al. (9), who developed the scale, was contacted by e-mail in order to carry out the validity and reliability study of the SMSES-BC related to chemotherapy in Turkish language and the necessary permission was obtained. Ethics committee approval (EKK/2017/101) and approval from the public hospital where the study was conducted were obtained to conduct the study (71211201-773.99). The study was conducted in accordance with the Declaration of Helsinki and based on the voluntary principle. Detailed information was given to the participants about the study, in addition, individuals were informed that participation in the study was not compulsory and the information obtained from the research would be kept confidential. Individuals who accepted to participate in the study were asked to read and sign the Informed Consent Form.

Data Analysis

The data were analyzed with SPSS for Windows 17.0 package program. Numbers, percentages, minimum and maximum values, mean and standard deviations were used in the analysis of the data. The CVI for content validity, varimax rotation, and principal component analysis for construct validity were applied. The suitability of the data for factor analysis was examined using Kaiser Meyer-Olkin (KMO) value and Bartlett's test. Cronbach alpha coefficient was calculated for internal consistency. Pearson correlation analysis was performed for item-total score correlation and time invariance.

Results

The mean age of 248 women in the study sample was 51.66±12.69. It was determined that 35.9% of the women participating in the study were primary school graduate, 52.8% had comorbidity and 22.2% of them were hypertensive. It was also found that 56.4% of women with BC also had BC in their mothers (Table 1).

Table 1. Participant characteristics (n=248)

Category		n	%
Education	Literate	35	14.1
	Primary school	89	35.9
	High school	62	25.0
	University	62	25.0
Employment	Employed	85	34.3
	Unemployed	163	65.7
Previous hospitalization	Yes	133	53.6
	No	115	46.4
Comorbidity	No	117	47.2
	Hypertension	55	22.2
	Diabetes + hypertension	24	9.7
	Diabetes	23	9.3
	Asthma	14	5.6
	Other*	15	6.0
First degree relative previously diagnosed with breast cancer	No	154	62.1
	Mother	53	56.4
	Sister	41	43.6
Duration of breast cancer diagnosis	1 year	60	24.2
	1-3 years	146	58.9
	3-5 years	30	12.1
	5 years and above	12	4.8
Smoking	Yes	92	37.1
	No	156	62.9
Mean age $\bar{X}$**± SD** 51.66±12.69			

*thyroid, vertigo, heart disease, hepatitis B

Validity

It was found that most of the items of the SMSES-BC related to chemotherapy were scored as "very appropriate" according to expert opinions and the CVI value was 0.912 (Table 2). KMO value of the scale was found as 0.895, and Barlett's test was found as 29621.730 (p=0.000). In the factor analysis, a 3-factor structure with an eigenvalue above 1.00 was observed. Further, factor loadings were found to vary between 0.410 and 0.855. It was determined that the 3-factor structure of the scale was the same as the original. The factor loads of all the items of the scale were above 0.40 and the explained variance was as follows; it was 16,824 for the problem-solving sub-dimension, 16,603 for the management of chemotherapy symptoms sub-dimension, and 13,517 for the management of problems in emotional and interpersonal relationships sub-dimension. The total explained variance of the SMSES-BC related to chemotherapy was 46.944 (Table 4). Therefore, no item was removed from the scale at this stage, and the scale was accepted as having 3 sub-dimensions.

Reliability

In the analysis performed to test the internal consistency of the SMSES-BC related to chemotherapy, the Cronbach alpha reliability coefficient was found to be 0.905. Further, item-total correlations for all items of the scale were positive, and deletion of any item did not cause a significant increase in the Cronbach's α coefficient. Therefore, no item was removed from the scale at this stage (Table 3).

Discussion

This research was carried out with the aim of bringing a measurement tool developed to determine the perceived self-efficacy and the management of symptoms related to chemotherapy in BC to the nursing literature of our country. To determine whether the SMSES-BC related to chemotherapy was valid and reliable in Turkish Language; content validity,

Table 2. Content validity index scores of the symptom-management self-efficacy scale for breast cancer related to chemotherapy items

Items		4	3	2	1	CVI score
1.	Coping with problems in social activities (e.g. stop meeting with friends, stop gossiping)	10	2	-	-	1.0
2.	Coping with emotional stress (e.g. feeling weak, anxious, afraid)	9	3	-	-	1.0
3.	Coping with palpitations (e.g. tachycardia)	8	4	-	-	1.0
4.	Managing fatigue (e.g. tiredness, weakness)	8	4	-	-	1.0
5.	Coping with interpersonal stress (e.g. stress from people who show interest in you)	6	6	-	-	1.0
6.	Coping with vomiting and nausea	12	-	-	-	1.0
7.	Coping with hormonal problems (such as night sweats, facial flushing)	9	3	-	-	1.0
8.	Seeking a place where you can express your feelings (e.g. religious practices, painting, reading books)	3	6	3	-	0.75
9.	Talking actively to healthcare professionals about the side effects of chemotherapy before treatment	8	3	1	-	0.91
10.	Coping with problems related to the oral mucosa (such as inflammation of the mucosa, cracked lips)	9	3	-	-	1.0
11.	Talking actively to healthcare professionals about the side effects of chemotherapy after treatment	4	4	2	2	0.67
12.	Coping with sleep problems (such as insomnia, sensitivity to stimuli while sleeping/waking up quickly)	10	2	-	-	1.0
13.	Coping with eating problems (such as difficulty swallowing, decreased appetite, change in taste)	7	5	-	-	1.0
14.	Coping with skin problems (such as darkening of the skin, redness, and itching)	6	5	1	-	0.91
15.	Prevention of infection (such as prevention of anemia, prevention of decrease in blood cells)	9	3	-	-	1.0
16.	Coping with pain (such as bone pain, muscle pain, spasm)	9	3	-	-	1.0
17.	Coping with nail problems (e.g. darkening of the nails, deterioration of the nail structure)	7	5	-	-	1.0
18.	Being able to get support from social groups (e.g. peer groups, religious officials)	2	6	4	-	0.67
19.	Coping with problems related to arms and legs (e.g. numbness, contraction)	2	6	4	-	0.67
20.	Talking actively with healthcare professionals to cope with the side effects of chemotherapy	4	7	1	-	0.91
21.	Coping with memory problems (such as forgetfulness)	7	5	-	-	1.0
22.	Access to internet resources to cope with chemotherapy-related problems	2	7	3	-	0.75
23.	Coping with hair loss	9	3	-	-	1.0
24.	Coping with social isolation	6	4	2	-	0.83
25.	Coping with work problems caused by chemotherapy (such as demanding rest due to illness)	3	6	1	2	0.75
26.	Getting support from people around her (e.g. healthcare staff, family, friend support)	9	3	-	-	1.0
27.	Coping with problems related to the digestive system (such as feeling bloated, constipation, diarrhea)	6	4	2	-	0.83
Content validity index		**0.912**				

explanatory factor analysis, and internal consistency were examined from 3 different aspects.

The first step in adapting a scale to a different language and culture is to provide language validity by translating the scale (20). Language validity of the scale was provided at the first stage in the translation of the SMSES-BC related to chemotherapy into Turkish language. Originally in English, the scale was translated into Turkish by two people who were fluent in English and Turkish. The most appropriate expressions were selected from the translations and the scale was finalized. The Turkish translation of the scale was re-translated into English by two people (one was a nursing lecturer and the other was a professional translator) who had a good command of English and Turkish and did not see the original of the scale. After the scale was translated into Turkish and the back translation was completed, both forms were compared and it was decided that the language equivalence of the scale was achieved by making the necessary arrangements.

In scale validity and reliability studies, evaluating the content validity is one of the primary stages (21). Content validity means evaluating the scale and the extent to which each item in the scale serves the purpose when examined as a whole. The method of obtaining expert opinion is used to evaluate the content validity (22).

Table 3. Item-total correlations and cronbach α coefficients of the symptom-management self-efficacy scale for breast cancer related to chemotherapy (n=248)

			Avg.	SD	Item-total correlations	If the item is removed cronbach α
9.	Talking actively to healthcare professionals about the side effects of chemotherapy before treatment		8.22	1.43	0.476	0.902
11.	Talking actively to healthcare professionals about the side effects of chemotherapy after treatment		8.20	1.38	0.496	0.902
18.	Being able to get support from social groups (e.g. peer groups, religious officials)		7.59	1.57	0.635	0.900
20.	Talking actively with healthcare professionals to cope with the side effects of chemotherapy		7.75	1.49	0.606	0.900
22.	Access to internet resources to cope with chemotherapy-related problems		6.37	2.98	0.505	0.903
25.	Coping with work problems caused by chemotherapy (such as demanding rest due to illness)		8.61	1.89	0.100	0.909
26.	Getting support from people around her (e.g. healthcare staff, family, friend support)		7.65	1.44	0.623	0.900
3.	Coping with palpitations (e.g. tachycardia)		6.92	2.06	0.633	0.899
4.	Managing fatigue (e.g. tiredness, weakness)		5.68	1.86	0.650	0.899
6.	Coping with vomiting and nausea		6.63	1.77	0.214	0.907
7.	Coping with hormonal problems (such as night sweats, facial flushing)		5.50	1.88	0.316	0.905
10.	Coping with problems related to the oral mucosa (such as inflammation of the mucosa, cracked lips)		6.37	2.21	0.432	0.903
12.	Coping with sleep problems (such as insomnia, sensitivity to stimuli while sleeping/waking up quickly)		5.90	2.09	0.555	0.901
13.	Coping with eating problems (such as difficulty swallowing, decreased appetite, change in taste)		6.44	1.70	0.448	0.903
14.	Coping with skin problems (such as darkening of the skin, redness, and itching)		5.94	1.88	0.415	0.903
15.	Prevention of infection (such as prevention of anemia, prevention of decrease in blood cells)		6.67	1.68	0.482	0.902
16.	Coping with pain (such as bone pain, muscle pain, spasm)		5.99	1.77	0.555	0.901
17.	Coping with nail problems (e.g. darkening of the nails, deterioration of the nail structure)		6.67	1.61	0.535	0.901
19.	Coping with problems related to arms and legs (e.g. numbness, contraction)		6.32	1.69	0.637	0.899
21.	Coping with memory problems (such as forgetfulness)		7.40	1.78	0.290	0.905
23.	Coping with hair loss		6.43	2.54	0.681	0.898
27.	Coping with problems related to the digestive system (such as feeling bloated, constipation, diarrhea)		5.56	2.05	0.392	0.904
1.	Coping with problems in social activities (e.g. stop meeting with friends, stop gossiping)		6.92	1.77	0.589	0.900
2.	Coping with emotional stress (e.g. feeling weak, anxious, afraid)		5.68	2.07	0.545	0.901
5.	Coping with interpersonal stress (e.g. stress from people who show interest in you)		6.88	1.49	0.559	0.901
8.	Seeking a place where you can express your feelings (e.g. religious practices, painting, reading books)		7.16	2.20	0.445	0.903
24.	Coping with social isolation		6.67	1.57	0.629	0.900
Problem Solving Cronbach α					0.804	
Management of chemotherapy symptoms Cronbach α					0.858	
Managing problems in emotional and interpersonal relationships Cronbach α					0.831	
Total the symptom management-self efficacy scale for breast cancer Cronbach α					**0.905**	

Table 4. Factor analysis findings for the symptom management-self efficacy scale for breast cancer (27 items)

Items		Factor/sub-dimension		
		1	2	3
9.	Talking actively to healthcare professionals about the side effects of chemotherapy before treatment	0.034	0.184	**0.855**
11.	Talking actively to healthcare professionals about the side effects of chemotherapy after treatment	0.047	0.217	**0.833**
18.	Being able to get support from social groups (e.g. peer groups, religious officials)	0.454	0.244	**0.545**
20.	Talking actively with healthcare professionals to cope with the side effects of chemotherapy	0.286	0.264	**0.694**
22.	Access to internet resources to cope with chemotherapy-related problems	0.270	0.238	**0.544**
25.	Coping with work problems caused by chemotherapy (such as demanding rest due to illness)	-0.022	-0.128	**0.499**
26.	Getting support from people around her (e.g. healthcare staff, family, friend support)	0.453	0.196	**0.595**
3.	Coping with palpitations (e.g. tachycardia)	0.448	**0.526**	0.159
4.	Managing fatigue (e.g. tiredness, weakness)	0.521	**0.589**	-0.011
6.	Coping with vomiting and nausea	0.007	**0.385**	-0.015
7.	Coping with hormonal problems (such as night sweats, facial flushing)	0.037	**0.520**	-0.004
10.	Coping with problems related to the oral mucosa (such as inflammation of the mucosa, cracked lips)	0.068	**0.542**	0.203
12.	Coping with sleep problems (such as insomnia, sensitivity to stimuli while sleeping/waking up quickly)	0.417	**0.506**	0.043
13.	Coping with eating problems (such as difficulty swallowing, decreased appetite, change in taste)	0.086	**0.522**	0.209
14.	Coping with skin problems (such as darkening of the skin, redness, and itching)	0.281	**0.410**	0.045
15.	Prevention of infection (such as prevention of anemia, prevention of decrease in blood cells)	0.251	**0.437**	0.210
16.	Coping with pain (such as bone pain, muscle pain, spasm)	0.196	**0.703**	0.076
17.	Coping with nail problems (e.g. darkening of the nails, deterioration of the nail structure)	0.234	**0.464**	0.310
19.	Coping with problems related to arms and legs (e.g. numbness, contraction)	0.403	**0.632**	0.058
21.	Coping with memory problems (such as forgetfulness)	-0.034	**0.428**	0.178
23.	Coping with hair loss	0.517	**0.586**	0.076
27.	Coping with problems related to the digestive system (such as feeling bloated, constipation, diarrhea)	0.125	**0.434**	0.170
1.	Coping with problems in social activities (e.g. stop meeting with friends, stop gossiping)	**0.784**	0.062	0,251
2.	Coping with emotional stress (e.g. feeling weak, anxious, afraid)	**0.723**	0.254	-0,003
5.	Coping with interpersonal stress (e.g. stress from people who show interest in you)	**0.640**	0.138	0,282
8.	Seeking a place where you can express your feelings (e.g. religious practices, painting, reading books)	**0.731**	0.075	0,010
24.	Coping with social isolation	**0.742**	0.147	0.273
Explained variance (%)		**16.824**	16.603	13.517
Total explained variance (%)		**46.944**		

In this study, the Davis technique was used to evaluate the content validity and expert opinions were obtained by evaluating the opinions of 12 experts on the items. In the Davis technique, the "CVI" for the item is obtained by dividing the number of experts who mark the "appropriate" and "appropriate but requires minor changes" options to the total number of experts. The fact that this value is 0.67 in studies in which 12 experts give opinions means that the content validity is at an acceptable level (21). Considering the recommended reference values for CVI, the CVI value found as 0.912 in this study showed that the content validity of the Turkish form of the scale was appropriate. According to the result, there was a consensus among the experts about the applicability

and understandability of the items of the scale. In other words, the content validity of the scale was provided.

Multiple methods are used by different researchers to evaluate the construct validity in scale development and validity-reliability studies. One of the most common of these is factor analysis. Factor analysis, one of the multivariate statistical techniques, makes many variables that are related to each other fewer, more meaningful, easily understood, and independent from each other and is widely used (24). In this study, the KMO coefficient was 0.895, and Bartlett test results were x^2=29621.730, p=0.000, and these results revealed the adequacy of the sample consisting of 248 participants for factor analysis (23). It is reported that if the number of samples included in the study is not sufficient, the results cannot be generalized to the society, the reliability of the obtained results should be supported by different applications and more comprehensive studies should be carried out by increasing the number of samples (25). In this study, factor analysis was performed to determine the construct validity of the scale in order to obtain clearer findings from the study after the content validity. In the factor analysis, a 3-factor structure with an eigenvalue above 1.00 was observed. Further, factor loads varied between 0.410 and 0.855. The 3-factor structure of the scale was determined to be the same as the original. Since all factor loads were above 0.30, no item was removed from the scale at this stage (23).

Internal consistency is calculated by using the Cronbach alpha coefficient and takes a value between 0.00 and 1.00. A high value means that the reliability is also high, and the Cronbach alpha coefficient is required to be at least 0.70 in order for a measurement tool to be reliable (26). The Cronbach alpha coefficient calculated to determine the internal consistency of the SMSES-BC related to chemotherapy was 0.905. In addition, the Cronbach alpha coefficients of the sub-dimensions of the scale were as follows; 0.804 for the problem-solving sub-dimension, 0.858 for the management of chemotherapy symptoms sub-dimension, and 0.831 for the management of problems in emotional and interpersonal relationships sub-dimension. In the study carried out by Liang et al. (9), the Cronbach alpha coefficient of the original form of the scale was found to be 0.96, and this result was similar to our study. Item-total correlations for all items of the scale were positive, and in line with this information, it could be said that the scale was a valid and reliable measurement tool.

Study Limitations

Despite the significant and satisfied results, the fact that this research was conducted in a single city of Turkey was the limitation of this study since there could be some cultural differences between different regions of our country and the validity and reliability could change depending on this fact.

Conclusion

The findings obtained from this study showed that the Turkish form of the SMSES-BC related to chemotherapy was valid and reliable for Turkish language and society. This adapted scale contains the same number of items and sub-dimensions as in its original language. As a result of this study, the dissemination of the scale in different regions by repeating it in a larger sample group in Turkey, testing its reliability, and planning different studies by considering other factors that may affect self-efficacy in patients can be recommended.

Ethics

Ethics Committee Approval: Ethical approval was obtained from the ethics committee (EKK/2017/101) and approval from the public hospital where the study was conducted was obtained to conduct the study (71211201-773.99).

Informed Consent: The participants were informed about the aim of the study and confidentiality of their personal information, and their consent was obtained.

Peer-review: Externally peer reviewed.

Authorship Contributions

Concept: D.S. R.S., Design: D.S. R.S., Data Collection or Processing: D.S., Analysis or Interpretation: D.S. R.S., Literature Search: D.S. R.S., Writing: D.S. R.S.

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