



Sebahat Gözüm, PhD
İlknur Aydın, PhD

Validation Evidence for Turkish Adaptation of Champion's Health Belief Model Scales

KEY WORDS

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Instruments using Health Belief Model constructs in breast cancer screening in previous studies were developed and tested by Champion for American women, and since then, these have been revised twice. Champion's Health Belief Model Scale (CHBMS) has been translated and tested in various studies in other countries and cultures. Also, the current study examined the validity and reliability of the Turkish adaptation of the CHBMS among Turkish women. The instrument was translated using a back-translation technique, which includes the use of a panel of experts and interpreters to translate the items from the source language to the target language and then back-translate them to the source language. The study was conducted in Ordu, a city in north Turkey. A total of 266 Turkish women aged 20 and older working as primary schoolteachers were included in the sample. Analyses included internal consistency, reliability, factor analysis, and known group techniques. After the analysis, 3 items from the Barriers domain, 1 from the Seriousness domain, and 2 from the Motivation domain were deleted from the original scale. So, the final Turkish version of the CHBMS (CHBMS-T) consisted of 36 items that were clustered into 6 subscales: susceptibility (3 items), seriousness (6 items), motivation (5 items), benefits of breast self-examination (BSE) (4 items), barriers to BSE (8 items), and confidence/self-efficacy of BSE (10 items). Internal consistency ranged from 0.69 to 0.83. Construct validity was supported by exploring the factor structure of the instrument using factor analysis and testing known-group techniques. Psychometric testing demonstrated satisfactory internal consistency and validity of the instrument for this group of women. It can be used in planning and testing interventions to improve BSE beliefs and practice.

From the Department of Public Health Nursing, Atatürk University School of Nursing, Erzurum, Turkey (Dr Gözüm); and the 19 Mayıs University, Ordu School of Nursing, Ordu, Turkey (Dr Aydın).

Corresponding author: Sebahat Gözüm, PhD, Department of Public Health Nursing, Atatürk University School of Nursing, 25240 Erzurum, Turkey (e-mail: sgozum@atauni.edu.tr).

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Cancer is the second leading cause of death in Turkey. The primary site of cancer in Turkish women is breast cancer, which represents 24.1% of all female cancer.¹ The number of women diagnosed with breast cancer has rapidly increased, especially in those aged 40–44 and older. For early detection, which is a key in reducing breast cancer mortality, breast self-examination (BSE), mammography, and clinical breast examination methods have been used. Regular and correct performance of BSE is the most economical method for detecting breast cancer at an early stage. So, it is more suitable and applicable than are other methods for developing countries like Turkey. Also, a woman who performs BSE regularly may be more sensitive to mammography and clinical BSE than is a woman who does not perform BSE regularly.

Women aged 20 and older are recommended to perform monthly BSE.² However, only a few Turkish women do it. Studies in Turkey have reported that the ratio of BSE performance ranged from 27% to 39%.^{3–6} In a recent Turkish study,⁷ ratio of regular BSE performance has been reported to be lower than it was in previous studies (5.5%). Many researchers have attempted to find out the factors that influence women's practice of BSE.^{3–6} However, similar constructs have not been examined consistently in Turkish women. Therefore, it is critical to develop a systematic understanding of the factors that explain BSE practices among Turkish women.

Many investigators studying beliefs related to cancer screening practices have used the Health Belief Model (HBM) as a theoretical framework to study breast cancer screening behavior such as BSE or mammography screening.^{8–11} Champion's Health Belief Model Scale (CHBMS) for breast cancer screening is a commonly used instrument to measure the HBM variables of susceptibility, seriousness, benefits, barriers, and health motivation associated with breast cancer screening.¹² Instruments using HBM constructs in breast cancer screening in previous studies were developed for and tested with American women, and these were revised twice, in 1997 and 1999.^{8,12,13} The CHBMS has also been translated and tested in various studies in other countries and cultures, such as Jordanian women,⁹ Korean women,¹¹ African American women,^{12,14} and Chinese American women.¹⁰ Some CHBMS items had to be deleted from the original scale while adapting it to other languages and cultures.^{10–12} Although the number of factors of CHBMS was higher in the studies in Korean and Jordanian women, the factor structure of the scale was found to be quite identical to the original.^{9,11} In sum, CHBMS was found to be reliable and valid scale for use in other countries and cultures.

Thus, there was a need to develop a culturally appropriate instrument for Turkish women to describe their beliefs about breast cancer screening. In this way, the factors explaining BSE practices among Turkish women can be searched systematically. In the study recently presented at the same congress where this study was presented, women's breast cancer screening behaviors were measured by the 1993 version of CHBMS.⁷ The scale used for a group of lower economic and education level was found reliable and valid. The detailed psychometric results of the study, which has not been published yet, were

obtained from its authors. It was observed in this study that health motivation was divided into 2 different factors and the same was seen in confidence items, too. Three items were deleted from health motivation.¹⁵

To apply the instrument to women in other countries, it should be translated and tested as a new instrument to see whether the translated version is reliable and valid for those women.¹⁶ So, the purpose of this study was to assess the reliability and validity of the last revised CHBMS to measure Turkish women's beliefs about breast cancer screening.^{8,12,13}

■ Background

The Health Belief Model was one of the first models that adapted theory from the behavioral sciences to health problems, and it remains one of the most widely recognized conceptual frameworks of health behavior. It was originally introduced in the 1950s by psychologists working in the US Public Health Service.^{17,18} According to the HBM, the original factors influencing the likelihood of the occurrence of a preventive health behavior are (1) perceived susceptibility (perceived vulnerability to a disease or the risks of contracting it); (2) seriousness (perceived severity of the consequences of contracting a disease); (3) benefits (positive results of steps taken to avoid contracting the condition); and (4) barriers (perceived negative aspects of undertaking health behaviors). Two other concepts, motivation and confidence, were later added to the original HBM. *Motivation* refers to beliefs and behaviors related to the state of general concern about health. In 1988, Rosenstock et al added self-efficacy to the list of variables that predict behavior. Self-efficacy introduces the concept that an increase in perceived confidence in executing a behavior will result in an increase in the behavior.¹²

According to the HBM, women who believe that they are susceptible to breast cancer and that breast cancer is a serious condition are more likely to perform BSE. Moreover, women who perceive more benefits from BSE and fewer barriers are more likely to perform BSE. Furthermore, the more motivated the women are in promoting their health and the more confidence they have in their ability to perform BSE, the more likely they are to practice BSE.⁸ Users of Champion's instrument measure the HBM concepts, susceptibility, seriousness, benefits, barriers, health motivation, and self-efficacy, as they relate to breast cancer screening. The original scales were tested and found to be valid and reliable in measuring BSE practices and breast cancer beliefs.^{8,12,13}

On the basis of the HBM, Champion developed and revised the CHBMS associated with breast cancer, mammography, and BSE.^{8,12,13,19} The purpose of this study was to translate and adapt Champion's last revised HBM scales to the Turkish language, and test it to measure Turkish women's beliefs about breast cancer and BSE. Accordingly, 42 items (susceptibility for breast cancer 3 items, 1999 version; seriousness 7, health motivation 7, 1993 versions; self-efficacy of BSE 10, benefits of BSE 4, and barriers to BSE 11, 1997 version) were used for transcultural adaptation in Turkish women.

Translation and Adaptation of the Scale

To translate and adapt a standardized scale, investigators must give careful thought to language barriers and cultural differences. They must have knowledge of customs, beliefs, and practices of the target population related to health and illness. Researchers must also determine whether the concepts to be measured exist in the target culture or they have equivalent meanings.^{16,20–22}

After the second researcher took permission from Victoria Lee Champion (Vchampion@iupui.edu, e-mail, August 16, 2001) for the translation and use of the CHBMS, it was translated using a back-translation technique, which includes the use of a panel of experts and interpreters to translate the items from the source language to the target language and then back-translate them to the source language. Then, the 2 versions of the source language are compared for equivalent meanings. Direct and simple translation of a standardized scale may not result in a conceptually equivalent version in the target language. Therefore, translating the conceptual meaning rather than the literal meaning was the goal. The translator and back-translators should work independently of each other and then review the product together. After agreement on the wording and meaning is achieved, the scale should be tested with a small pilot group of the target population to ensure that the items are clear to them.^{16,20–22}

■ Methods

Participants

Data were collected from 266 female teachers from 26 primary schools in Ordu, a city in Turkey. The study was approved by the city health administration and education administration organizations. Potential participants were informed verbally about the aim of the study, and then asked if they agreed to answer in the questionnaire. The participants were told that they could withdraw from the study whenever they wished and that all information would be kept strictly confidential.

The second researcher had interviewed teachers individually in one school everyday. All female teachers at primary schools ($N = 266$) were invited to participate in the study and all of them consented to participate and were eligible. Inclusion criteria for the sample were age older than 20 and not having breast cancer. Data were collected by self-report method in the teachers' room.

Instrument

CHBMS was translated by the authors of this study and 2 translators, one of whom was a bilingual professor surgeon and the other was a nurse. The professor surgeon had a Turkish American background and the nurse, who was working as a translator in British Red Cross, had a Turkish English background. The two, who were aware of the intent and concepts underlying the instrument, independently translated the source version of the revised CHBMS into Turkish. The researchers, whose mother tongue was Turkish, ensured con-

ceptual meaning for the translators. And then, both authors and translators came together to review the translations and agreed on the first draft.

Later, the Turkish version of CHBMS was given to 6 additional bilingual health professional judges to validate the translation and to determine the cultural appropriateness of the tool. The professional judges were 2 gynecology nursing professors and 4 public health nursing professors, one of whom had personal experience with breast cancer. The experts worked independently and reported their views on the scale. Their opinions were largely similar to each other and included only minor word differences. The meeting couldn't be held as all experts lived in different cities and so all experts' views were gathered on a single form. Finally the 2 translators agreed on the modifications. The judges suggested some changes in wording and the translated scale was revised accordingly. So, "I am able to find a breast lump which is the size of a quarter" is modified into "I am able to find a breast lump which is the size of a walnut" and "I am able to find a breast lump which is the size of a dime" is modified into "I am able to find a breast lump which is the size of a hazelnut." The size of a walnut and hazelnut is more similar to that of a quarter and a dime, and so walnut and hazelnut were chosen as more appropriate translation. Professional judges determined that the revised tool was culturally appropriate.

Later, the Turkish translation was given to another bilingual medical doctor with a Turkish American background to translate it back into English. He had not seen the English version. The results revealed that all items were clear.

The final draft was tested for clarity of items 10 female teachers in Erzurum, Turkey. No changes in wording were needed as a result of this pilot application.

■ Procedures

The participants were recruited from 26 primary schools in Ordu, Turkey. A self-administrated questionnaire was designed to include the translated version of revised CHBMS, demographic information of the participants, and frequency of practice of BSE. Demographic variables included age, marital status, having a child, working year, personal breast problems, and family history of breast cancer.

Data Analysis

The Statistical Package for The Social Sciences (SPSS for Windows) was used to analyze data. Descriptive statistics were computed for the demographic variables, frequency of practice of BSE, and for each of the translated CHBMS. Student t test was used for comparing 2 independent means. Internal consistency of each of the 6 scales was tested using Cronbach α reliability coefficients. Reliability was also assessed by interpreting the item-total subscale correlations. Items with less than $r = 0.30$ correlation among subscale items were deleted from the subscale. Construct validity was tested using a principal component extraction with an orthogonal rotation. Loading criterion was set at 0.30 and above.^{16,23}

Table 1 • Description of the Samples

Variable	Frequency/Mean ± SD	%
Age	36.6 ± 8.2	
Working year	14.8 ± 9.0	
Marital status		
Single	214	80.5
Married	44	16.5
Widowed/Divorced	8	3.0
History of personal breast problem		
Yes	24	9.0
No	242	91.0
Family history of breast cancer		
Yes	21	7.9
No	245	92.1

■ Results

The age of the participants ranged from 21 to 53 years, with a mean of 36.6 (SD = 8.2). Eighty percent ($n = 214$) were single, 17% were married, and 3% were widowed or divorced. Eight percent of the subjects had a family history of breast cancer, and 9% reported a personal history of breast problem as mastitis but not breast cancer (Table 1). Approximately 44% ($n = 118$) of the subjects had performed BSE at least once in the last year, and the mean performance of BSE was 5.54 ± 3.18 times in the last year. Of the BSE-performing women, only 17 (14%) reported performing monthly BSE.

Construct Validity

To test for construct validity of the scales, the items of the 6 translated scales were pooled and subjected to factor analysis.

A principal component analysis was used to extract factors. The obtained factors were rotated orthogonally using the varimax procedure. The rotated factor matrix using all 42 items with a forced 6-factor solution is presented in Table 1. Factor extraction was guided by theory and eigenvalues, as well as the criterion that items greater than 0.30 would be retained, as suggested by Öner¹⁶ and Gözüm and Aksayan.²⁴ As can be seen in Table 2, all items loaded at 0.30 or above except 2 items (items 6 and 7 of the motivation [MOT] subscale).

Six significant factors were identified. Any factor with an eigenvalue of one or more was considered significant. Table 2 shows the results of the factor analysis. All items on each factor were from the same construct except 4 items (BSE barrier item 1, seriousness item 5, and motivation items 6 and 7).

The 10 items of the confidence (CON) subscale and 2 items of the MOT subscale were loaded together as Factor 1 and accounted for 12.5% of the variance. Motivation items 6 and 7 had low factor loading, 0.196 and 0.257, respectively, in this factor. Factor 2 accounted for about 10% of the variance and represented 5 items from the 7 items of the MOT subscale. Factor 3 accounted for about 8% of variance and represented all items of the BSE barriers (BAR) subscale except one. BAR1 was loaded in Factor 5. Factor 4 included items related to fear of breast cancer and beliefs about long-term effects or consequences of breast cancer except one item (seriousness [SER]5 was loaded in Factor 6). Factor 4 accounted for 5.8% of the variance. Factor 5 included items related to the benefits of the BSE subscale except BAR1, and this factor accounted for 4.6% of the variance. Three items of the susceptibility (SUS) subscale and one item (SER5) of the SER subscale were represented by Factor 6 and accounted for 4% of the variance.

Known-group technique was used as the final method for testing construct validity. Theoretically, subscale scores should be different for groups of women, performing and notperforming BSE. In this study, the 118 women who had

Table 2 • Rotated Factor Analysis of the Champion's Health Belief Model Scale*

Factor 1: BSE Confidence/ Self-efficacy	Factor 2: Health Motivation	Factor 3: BSE Barriers	Factor 4: Seriousness	Factor 5: BSE Benefits	Factor 6: Susceptibility
CON1 0.56	MOT1 0.79		SER1 0.80	BEN1 0.39	SUS1 0.69
CON2 0.71	MOT2 0.85	BAR2 0.34	SER2 0.73	BEN2 0.79	SUS2 0.79
CON3 0.65	MOT3 0.77	BAR3 0.52	SER3 0.74	BEN3 0.81	SUS3 0.68
CON4 0.64	MOT4 0.78	BAR4 0.67	SER4 0.38	BEN4 0.85	
CON5 0.67	MOT5 0.54	BAR5 0.63			SER5 0.41
CON6 0.55		BAR6 0.61	SER6 0.47		
CON7 0.64		BAR7 0.58	SER7 0.30		
CON8 0.53		BAR8 0.56		BAR1 0.44	
CON9 0.43		BAR9 0.44			
CON10 0.64		BAR10 0.33			
		BAR11 0.51			
MOT6 0.20 [†]					
MOT7 0.26 [†]					
Eigenvalue 5.26	3.97	3.52	2.43	1.92	1.66
Variance explained 12.5	9.5	8.4	5.8	4.6	4.0

*BSE indicates breast self-examination; CON, confidence; MOT, motivation; BAR, barriers; SER, seriousness; BEN, benefits; and SUS, susceptibility.

[†]Loading lower than 0.30 respectively (0.196, 0.257).

**Table 3 • BSE Health Beliefs of Women Who Performed and Who Did Not Perform BSE, Mean ± SD***

	Susceptibility	Seriousness	Motivation	Confidence/ Self-efficacy	BSE Benefits	BSE Barriers
BSE						
Performed, [†] <i>n</i> = 118	7.77 ± 2.18	19.07 ± 4.88	20.51 ± 3.85	31.71 ± 6.13	15.55 ± 4.06	16.48 ± 5.22
Not performed, <i>n</i> = 148	8.08 ± 2.17	19.03 ± 5.17	20.19 ± 4.01	27.58 ± 6.21	14.53 ± 4.00	17.56 ± 5.19
Test and significance	<i>t</i> = -1.121 <i>P</i> > .05	<i>t</i> = 0.068 <i>P</i> > .05	<i>t</i> = 0.660 <i>P</i> > .05	<i>t</i> = 5.417 <i>P</i> < .000	<i>t</i> = 2.062 <i>P</i> < .040	<i>t</i> = -1.688 <i>P</i> > .05

*BSE indicates breast self-examination.

[†]Performed at least once in the last year.

performed BSE last year were accepted as the known group. The *t* test was used for assessing whether the means of 2 groups were statistically different from each other. Results are displayed in Table 3. There was no significant difference between performance and nonperformance of BSE in terms of seriousness, susceptibility, BSE barriers, and motivation beliefs except BSE benefits and confidence of BSE. The findings of this study indicated that BSE benefits and confidence beliefs in the BSE performed were more in the BSE performed women than in the BSE not performed women (*t* = 2.062, *P* = .040; *t* = 5.417, *P* = .000 respectively).

Reliability

The reliability coefficient for each subscale was calculated using Cronbach α technique. The following criteria were used to identify poorly functioning items: (a) a correlation of < 0.30 between an item and subscale score and (b) no decrease in the coefficient α if the item was deleted.^{16,23,24} All items met these criteria except 6 items. The 6 items (seriousness item 7; barriers to BSE items 1, 2, and 10; health motivation items 6 and 7) were deleted because of low correlation between the item and subscale score (*r* = 0.017, *r* = 0.019, *r* = 0.029, *r* = 0.29, *r* = 0.013, *r* = 0.09, respectively). The reliability measures for the SER, BAR, and MOT subscales were repeated twice to test the difference in reliability when the items were deleted. Chronbach α for the SER subscale including the item SER7 was .73, and it was .75 when SER7 was removed. Similarly, Chronbach α for the MOT subscale including items MOT6, and MOT7 was .74, and was .83 when these items were removed. Chronbach α for the barriers of subscale including items BAR1, BAR2, and BAR10 was .73 and was .73 when these items were deleted. Although there was no difference between the 2 subscale reliability measures, these items were deleted from subscales because of the aforementioned causes. Alpha reliability coefficients of the 6 factor-based subscales appear in Table 4 and Table 5.

Discussion

In this study, the investigators translated the last version of CHBMS into Turkish and adapted and tested it for measuring beliefs about breast cancer and BSE.^{8,12,13} The reliability

coefficients obtained in this study except for the benefits (BEN) subscale of BSE and the MOT subscale were lower than for Champion's scales^{8,12,13} but had accepted alpha coefficients. Cronbach α for each subscale ranged from .69 to .83, establishing internal consistency reliability. Alpha coefficients except for susceptibility in this study were found to be similar to those in another study conducted in Turkey with the 1993 version of CHBMS. This exception may have been due to the use of the 5-item scale.¹⁵ Alpha coefficient of the BEN subscale of BSE was found to be .83, which was higher than that of original scale (.69).¹² The lower Chronbach coefficient noted for susceptibility (.69) is lower than in the last revision of Champion's scale.¹³ Champion reported that the SUS subscale showed a slight decrease in internal consistency reliability with only 3 items. Thus, this specific limitation may necessitate further investigation. However, this subscale includes only three items in the revised version and current research, and so the number of items is likely to influence this estimation of internal consistency.

In the construct with 6 factors, all the items in each of the confidence/self-efficacy of BSE, BSE benefits, and SUS subscales clustered together as in Champion's instruments.^{8,12,13} Similarly, all the items except some items in each of the barriers to BSE, seriousness, and MOT subscales clustered together as the originals.^{8,12,13} Four items loaded different dimensions. One item in the BSE barriers, one item in the SER, and 2 items in the MOT subscales clustered together with the items of the other factors. Also, 3 of these items (BAR1, MOT6, and MOT7) had a low association with self-subscale scores. Three items in the BAR subscale did not load significantly; "I do not feel I can do breast examination correctly (BAR1)," "Doing BSE will make me worry about what is wrong with my breast (BAR2)," and "My breast are too lumpy for me to complete breast examination (BAR10)." To respond to these 3 items of BAR subscales, women need to have at least performed BSE. In this study, the ratio (55.6%) of women who had not performed BSE was more than that of the women who had performed BSE. For this reason, these items were not applicable to this study population and so they were eliminated by the investigators. For the same reasons, 2 items of the MOT subscale were also eliminated. Similar deletion of items of the MOT subscale was revealed in a study with Korean women¹¹ and in a study in Turkey, too.¹⁵ "I exercise at least 3 times a week (MOT6)" and "I have regular

**Table 4 • Item Analysis and Internal Consistency of the CHBMS-T, N = 266***

	Mean	SD	Item-Total Correlation	If Item Deleted
Susceptibility (version of 1999)				
It is likely that I will get breast cancer	2.86	0.94	0.53	0.57
My chances of getting breast cancer in the next few years are great	2.62	0.92	0.55	0.54
I feel I will get breast cancer sometime during my life	2.47	0.90	0.44	0.68
Seriousness (version of 1993)				
The thought of breast cancer scares me	3.50	1.28	0.61	0.66
When I think about breast cancer, my heart beats faster	3.29	1.31	0.54	0.68
I am afraid to think about breast cancer	3.38	1.28	0.58	0.67
Problems I would experience with breast cancer would last a long time	3.19	1.16	0.44	0.70
Breast cancer would threaten a relationship with my boyfriend, husband, or partner	2.71	1.24	0.31	0.73
If I had breast cancer my whole life would change	2.98	1.25	0.47	0.70
Health motivation (version of 1993)				
I want to discover health problems early	4.18	1.11	0.51	0.66
Maintaining good health is extremely important to me	4.33	1.01	0.54	0.42
I search for new information to improve my health	3.99	1.02	0.50	0.43
I feel it is important to carry out activities that will improve my health	4.24	0.92	0.52	0.43
I eat well-balanced meals	3.59	1.05	0.40	0.46
Benefit BSE (version of 1997)				
When I do BSE, I am doing something to take care of myself	3.48	1.25	0.42	0.88
Completing BSE each month may help me find breast lumps early	3.93	1.30	0.77	0.73
Completing BSE each month may decrease my chances of dying from breast cancer	3.78	1.25	0.74	0.74
If I find a lump early through BSE, my treatment for breast cancer may not be as bad	3.80	1.19	0.72	0.76
Barrier BSE (version of 1997)				
BSE is embarrassing to me	2.45	1.16	0.40	0.69
BSE takes too much time	2.10	1.09	0.47	0.69
It is hard to remember to do breast examination	2.28	1.10	0.40	0.69
I don't have enough privacy to do breast examination	1.71	1.05	0.42	0.69
BSE is not necessary if you have a breast exam by a healthcare provider	2.15	1.22	0.47	0.69
BSE is not necessary if you have a routine mammogram	2.45	1.20	0.42	0.69
My breast too large for me to complete breast self-examination	1.87	1.12	0.34	0.70
I have other problems more important than doing breast self-examination	2.08	1.08	0.37	0.70
BSE self-efficacy (version of 1997)				
I know how to perform BSE	3.08	1.19	0.42	0.81
I can perform BSE correctly	2.90	1.09	0.59	0.79
I could find a breast lump by performing BSE	3.23	1.02	0.55	0.76
I am able to find a breast lump that is the size of a walnut	3.37	1.07	0.55	0.79
I am able to find a breast lump that is the size of a hazelnut	3.25	0.99	0.59	0.79
I am able to find a breast lump that is the size of a pea	2.85	0.96	0.46	0.80
I am sure of the steps to follow for doing BSE	2.62	1.10	0.49	0.80
I am able to tell something is wrong with my breast when doing breast self-examination	2.79	1.11	0.42	0.81
I am able to tell something is wrong with my breast when I look in the mirror	2.36	1.06	0.35	0.81
I can use the correct part of my fingers when examining my breasts	2.96	1.02	0.54	0.79

*CHBMS-T indicates Champion Health Belief Model Scale, Turkish Version; BSE, breast self-examination.

health check-ups even when I am not sick (MOT7)” items might have been difficult for Turkish women to respond because the level of performance of such health-promoting behaviors is low even for Turkish women healthcare providers.^{25,26}

Although one item (SER5) of the SER subscale loaded other dimensions, this item was found correlated with the SER

subscale. Therefore, this item (SER5) was retained in the SER subscale. On the other hand, item 7 (“If I developed breast cancer, I would not live longer than 5 years”) of the SER subscale was removed because SER7 had a low association with self-subscale scores. Factor loading of the same item was found lower in the study carried out in Jordanian women, too.⁹ This result may be explained as fatalism and the role of God in

Table 5 • Item-Total Subscale Correlation and Reliability Coefficients, N = 266*

Scales	Item-Total Subscale Correlation	Cronbach α	Number of Scale Items
Susceptibility	0.44–0.55	0.69	3
Seriousness	0.31–0.61	0.75	6
Motivation	0.40–0.54	0.83	5
Confidence/ self-efficacy	0.35–0.59	0.82	10
BSE benefits	0.42–0.77	0.83	4
BSE barriers	0.34–0.47	0.73	8

*BSE indicates breast self-examination.

illness and death, which is common in Muslim cultures such as Turkey and Jordan.⁹

Based on the HBM, it was hypothesized that mean scores of HBM scales would be significantly different for women who performed BSE to those who didn't. This evaluation done with known-group technique may be interpreted as predictive validity, too. The CON subscale demonstrated a significant difference in both groups in the expected direction. A person who believed in herself would be more inclined to perform BSE. This finding is consistent with the results obtained in other studies.^{7–9,12,14} Mikhail and Petro-Nustas⁹ underline "the importance of educating women to correctly examine their breast, and giving them opportunities for supervised practice to increase confidence in their ability to perform the procedure and analyze the findings."^{9(p163)} Therefore, we conclude that nurses should try to increase confidence in women.

The benefit was significant predictors of the BSE performed in this study as in the other Turkish study.⁷ Respondents, in this study, may have been aware of the connection between early detection of breast cancer and better prognosis and reduction of mortality from breast cancer. But this result is inconsistent with other studies.^{8,9,12,14}

There was no significant difference between those who performed BSE and those who did not perform BSE in terms of SER, SUS, health MOT, and BSE BAR subscales. The education, income, and health insurance levels of all the women in the study were the same and their age and marital status were similar. The aforementioned results may reflect the similar descriptive characteristics in the study. These findings may also be related to the fact that most of the respondents viewed seriousness, susceptibility, health motivation, and BSE barriers, producing a lack of variability in this construct. Mikhail and Petro-Nustas reported that all the variables, except the seriousness and benefits variables, predicted the frequency of BSE practice.⁹ Likewise, in the Champion's studies,^{8,12,14} it was reported that SUS, SER, and BEN subscales showed very low correlations, which renders their predictive validity suspect. These results indicated that the predictors of BSE would vary in every culture.

In conclusion, in this study, the Turkish version of the CHBMS (CHBMS-T) consisted of 36 items clustered to 6 sub-

scales: susceptibility (3 items), seriousness (6 items), motivation (5 items), benefits of BSE (4 items), barriers to BSE (8 items), and confidence/self-efficacy of BSE (10 items). The CHBMS-T was found to be reliable, and it exhibited satisfactory content and construct validity when used with educated Turkish women. Thus, it can be used by nurses and other health professionals to assess well-educated Turkish women's health beliefs about breast cancer and BSE, without threatening the internal reliability of the study. Such an assessment is necessary to identify women's learning needs and to design educational programs specifically tailored to target women's misconceptions and faulty beliefs. These subscales can also be used to test the effectiveness of intervention strategies. In addition, they can be used to assess the health belief levels of Turkish working women in various settings, such as hospitals and community health centers. Identifying beliefs through the use of valid and reliable scales to increase BSE in these populations may eventually help us in early detection of breast cancer among Turkish women.

Continued work on refining and testing of the Turkish version of CHBMS is recommended, particularly for the subscales of seriousness, motivation, and barriers to BSE. Prospective studies can add to the validation of the tool. Validity and reliability of CHBMS-T should be reassessed with each new population.

As the other Turkish study¹⁵ including reliability and validity of CHBMS was both unpublished and presented at the same time with this study, results could not be compared in detail. This condition may be accepted as a limitation of the study. However, those authors have been in close contact with each other. As the socioeconomic levels of the subjects of both studies are different, their results will be able to provide a wider view of Turkish women's beliefs on BSE. As a result, more evidence will have been gathered on reliability and validity of CHBMS-T.

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