

Validity and Reliability of Turkish Male Breast Self-Examination Instrument

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ABSTRACT

Objective: This study aims to measure the validity and reliability of Turkish male breast self-examination (MBSE) instrument.

Materials and Methods: The methodological study was performed in 2016 at Ege University, Faculty of Nursing, İzmir, Turkey. The MBSE includes ten steps. For validity studies, face validity, content validity, and construct validity (exploratory factor analysis) were done. For reliability study, Kuder Richardson was calculated.

Results: The content validity index was found to be 0.94. Kendall W coefficient was 0.80 ($p=0.551$). The total variance explained by the two factors was found to be 63.24%. Kuder Richardson 21 was done for reliability study and found to be 0.97 for the instrument. The final instrument included 10 steps and two stages.

Conclusions: The Turkish version of MBSE is a valid and reliable instrument for early diagnose. The MBSE can be used in Turkish speaking countries and cultures with two stages and 10 steps.

Keywords: Male breast cancer, male breast self-examination, Turkish, validity, reliability

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Introduction

Breast cancer is a malignant condition starting in the breast cells. Although it is thought to be a disease typical in women, about 1% of all breast cancers appears in men (1, 2). While it occurs in men aged 65 years on average, its incidence shows a peak at the ages of 68-71 years (3, 4). It has been reported men perceive that breast cancer is an illness that occurs mainly later in life (5). In Britain, 350-400 men can be diagnosed as breast cancer every year (6). According to data from International Association of Cancer Records, breast cancer is responsible for 0.37% of all cancers in men (3). Turkey Cancer Statistics reported that, the age-standardized breast cancer rate distribution in males is 0.8 in 2014 (World Standard Population, 100,000 people) (7). It has been reported in the literature that the incidence of male breast cancer is increasing (1, 4). However males had lower risk factor awareness than women across breast cancer (8). Based on data from American National Cancer Institute, Stang and Thomsen (9) reported that the incidence of breast cancer decreased in women but increased in men. It is also noted that the incidence increased from 0.86 to 1.8 for every 100.000 men (9).

The most important risk factor for male breast cancer is hormonal changes. Among them are changes in estrogen and testosterone. In a study in Sweden in 1988, the risk was found to increase by eight times in men working in manufacture of estrogen containing cream and soap. The strongest condition related to breast cancer is Klinefelter syndrome. In this syndrome, one X chromosome is added to XY chromosomes available in males and causes an increase in breast cancer risk (4, 10, 11). Obesity is another important risk factor since it increases estrogen-testosterone levels in males. It is stated that breast cancer risk rises by two fold in males with a body mass index of 30 and higher. Other risk factors are exposure to radiation, exposure to long-term high temperatures and hereditary transmission. It has been reported that 5-30% of all male breast cancer cases have a family history of breast cancer (10).

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Since male breast cancer is a rare tumor and can be mistaken for other conditions such as gynecomastia, there can be a delay in its recognition and can have an advanced stage when diagnosed. This has a negative effect on its prognosis (2, 3). The rate of survival is lower in males with breast cancer than in females. Five-year survival recorded in Britain is 80.8% in males and 86.6% in females (6). Delayed diagnosis of breast cancer in males has been attributed to their disregard for symptoms and lack of knowledge about the issue in the society (2). Therefore, the public awareness should be raised and people should be informed about male breast cancer in order to prevent delays in diagnosis and treatment. Awareness of symptoms of the disease and elimination of waste of time in referral to hospital will increase rates of early diagnosis. The National Comprehensive Cancer Network (12) recommends breast self-examination (BSE) as a primary prevention method and clinical breast examination (CBE) twice a year for males at risk of breast cancer. Not only women but also men should carry out a breast self-examination minimum once a month at the age of 18 years onwards. However, according to research, males do not have sufficient information about breast self-examination and believe that this examination and the disease are common among females (13, 14). The main reason for this is that brochures and education and counseling programs about breast cancer are directed towards women rather than men (15, 16). However, in view of an increase in the male breast cancer incidence, it is clear that breast self-examination is important for males. It is stated that this examination is a reasonable and practical method for early diagnosis of breast cancer in developing countries (11). Expressing specific steps in this examination in a clear and understandable way plays an important role in its acceptance and implementation. Al-Naggar and Al-Naggar (11) created Male Breast Self-Examination (MBSE) composed of two sections and ten steps illustrated by pictures. The MBSE is a simple early detection method which can be made easily by men. There have not been any studies on breast self-examination or a practical instrument to be used in early diagnosis of breast cancer in Turkish men. It will be useful to adapt an instrument directed towards promotion of breast self-examination and to spread its use in order to achieve primary prevention of male breast cancer in Turkey. Therefore, the aim of this study was to adapt MBSE into Turkish and to test its validity and reliability.

Material and Methods

Research Design: This study was performed to measure the validity and reliability of Turkish version of MBSE instruments as the methodological study.

Study sample

The methodological study was performed between May and June in 2016 in Izmir /Turkey. The sample included 112 male nursing students. All male students participated in this study. The sample met the criteria by Cochran formula more than 10 times of questionnaire items (17). Aim of the study was shared and verbal consents of participants were obtained. Ethical approval to conduct the study was provided by the Ethics Committee of Medical Faculty.

Instrument

The original MBSE instrument was developed by Al-Naggar and Al-Naggar in English and the Malay language in 2012 (11). It takes ten minutes to perform MBSE. The MBSE steps are performed in two stages: in the supine position and in front of the mirror. Men should be explained how they should examine their nipples and areolas and how

they should perform steps of the examination to detect both painless and painful, firm masses with irregular outlines, changes in appearance of nipples and retraction, ulceration and hemorrhagic discharge in nipples.

Translation of MBSE

In this study, a six-step translation method was adopted as required in international methodological recommendations about linguistic and cultural adaptation of measurement instruments (18,19) (Figure 1). Following the standardized way, the MBSE was translated for linguistic validation content validity index (CVI) was determined. CVI was determined by using Davis technique (17, 20). According to this technique, items are evaluated on a four-point scale: (a) “The item is appropriate”, (b) “The item should be slightly revised”, (c) “The item should be revised extensively” and (d) “The item is inappropriate”. The number of experts marking the options (a) and (b) is divided by the total number of experts to calculate CVI for an item. The cut-off value for this index is considered as 0.80 (17, 20).

Consistency between expert opinions was analyzed with a non-parametric test Kendall W analysis (17). The measurement instrument can be considered valid; first its linguistic validity should be achieved. According to this, differences in concepts and expressions between adapted and original versions of the instrument should be minimized, the adapted version should be meaningful and standardized in accordance with norms of target languages, the nature of the original instrument should not be changed or changes to be made should be minimized (21, 22). Expert opinion was requested from ten academicians having specializations in surgical nursing, obstetrics and gynecology nursing, medical nursing, public health nursing and fundamentals of nursing to achieve content validity of the Turkish version of MBSE. Expert opinion was asked to evaluate the instrument in terms of contents of the steps, appropriateness of the language for the Turkish population, clarity and understandability. MBSE was piloted on 30 university students for clarity and understandability. These participants were not included in the larger study.

Validity

Factor analysis with varimax rotation was used for defining the construct validity of the instrument. Eigenvalues higher than 1.0 and factor loadings at least 0.30 was used as a criteria to fitting structure and

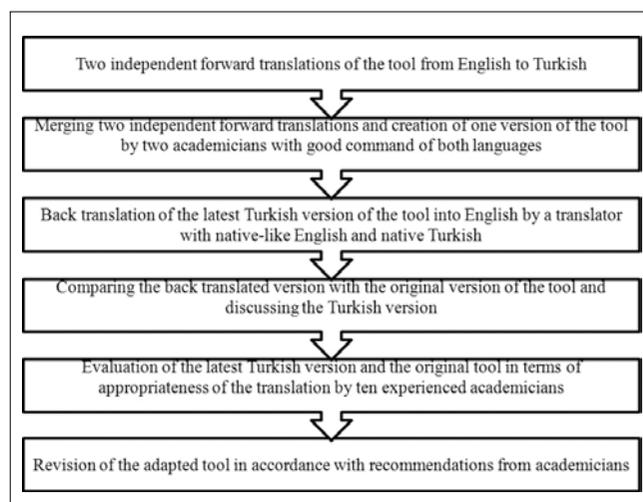


Figure 1. Standardized translation process of the MBSE

the correct number of factors (17, 21). Before conducting the factor analysis of the instrument, Kaiser Meyer Olkin (KMO) and Bartlett's test were used to calculate whether the sample was large enough to perform satisfactory factor analysis.

Reliability

In the present study, Guttman scaling was used to a set of binary questions answered by a set of subjects. The goal of the analysis is to derive a single dimension that can be used to position both the questions and the subjects (17). The instrument has "Yes (1)", "No (0)" answers to a set of steps that increase in specificity. For defining the reliability of the current study, Kuder Richardson 21 was used. The values above 0.8 showed good convergence was used as the criteria in the current study (17, 22).

Ethical approach: Aim of the study was shared and verbal consents of participants were obtained. Ethical approval to conduct the study was provided by the Ethics Committee of Medical Faculty (8 May 2016; number 21). Permission was obtained by email from Al-Naggar and Al-Naggar to use the MBSE instruments in this study.

Statistical analysis

The data was analyzed by using analytics software (SPSS 17.0). Inferential statistical methods (exploratory factor analysis, Kuder Richardson 21) were used.

Results

The mean age of students was 19.10 ± 2.05 and all of them were male. Of all the participants', 26.8%, 31.2%, 25% and 17% were attending 1st year, 2nd year, 3rd year, 4th year class respectively. Seven point one percent of the participants reported there were female breast cancers in their first degree relatives. None of the participants reported that there was male breast cancer in their first degree relatives. To adapt the form into Turkish, it was translated from English to Turkish independently

by two English teachers whose native languages are Turkish and two academicians having knowledge of breast cancer and living abroad for some time in their life. After that, the researchers evaluated translations of each item and created a single Turkish version of the instrument. At this stage, some revisions in words and sentences were made in terms of appropriateness of the language, meaning and concepts. The steps translated into Turkish were back translated into English by a linguist having good command of both languages. The original form and the Turkish version of the form were compared. Expert opinions about the translations of the steps were exemplified below (Table 1).

In accordance with feedbacks received, the expressions were revised and the final version of the instrument was created. The cut-off value of CVI was considered as 0.80 and none of the items were found to have a lower CVI. For all ten steps CVI was 0.94 and the Kendall W coefficient was 0.80 ($p=0.551$).

The pilot study allowed testing clarity, understandability and functionality of the steps in practice. No suggestions were made by the participants and the version of the instrument used in the pilot study was considered as its final version. It is presented in Appendix 1.

For construct validity of the instrument, the factor analysis was done using 10 steps. The Kaiser Meyer Olkin was obtained at 0.87 (Bartlett's test 2728.2, $p<0.001$). Two significant factors were identified for the MBSE. The largest factor emerging after Varimax rotation is 28.31% of variance, 25.63% of the second factor variance. The total variance explained by the two factors was found to be 63.24%. Factor loading of variables was shown at Table 2.

Six steps of MBSE for lying down check Kuder Richardson 21 was found to be 0.91. Four steps of MBSE for in front of mirror check Kuder Richardson 21 was found to be 0.83. Kuder Richardson 21 was found to be 0.97 for the 10 steps instrument (Table 3).

Table 1. Translations of authors and experts about the of steps of MBSE

Translations of authors	Translations of experts
Stage 1- Lying down	
Lie on your back with a pillow under your right shoulder	Lie on your back with a pillow under your right shoulder
Check your right breast by using tips of your three middle fingers of your left hand	Examine your right breast by using your three middle fingers of your left hand
Press your fingers without raising them from your skin by using mild, moderate and extreme pressure in the circular manner	Apply mild, moderate and extreme pressure in a circular manner without raising your fingers from your skin
Follow an upward and downward route with your fingers	Assess the whole breast tissue from the top to the bottom of your breast with your fingers
Check tissues under and above your clavicle and your armpits and feel changes	Feel changes in your armpits by checking tissues under and above your clavicle
Repeat the same steps with your right hand on your left breast	Repeat the same steps by using your right hand on your left breast
Stage 2- In front of mirror	
Keep your arms by your sides	Keep your arms aligning with your hips
Keep your arms on your head	Keep your arms on your head
Press your hands to your hips and stretch your breast muscles	Press your hands on your hips and stretch your breast muscles
Bend forward with your hands towards your hips	Put your hands on your hips and bend forward
MBSE: male breast self-examination	

Table 2. Rotated factor analysis of the MBSE instrument

Factor 1, Lying down	Factor 2, In front of mirror
Step1 0.97	Step7 0.97
Step2 0.97	Step8 0.97
Step3 0.97	Step9 0.97
Step4 0.96	Step10 0.97
Step5 0.96	
Step6 0.96	
Eigen value	
10.71	8.64
Variance explained	
28.31	25.63

MBSE: male breast self-examination
N: 112, Steps/Items: 10

Table 3. Internal consistency determine: Kuder Richardson for factors

Factors	Number and Quantity of phrases	Kuder Richardson 21 (n=112)
First factor: Lying down	6 (1,2,3,4,5,6)	0.91
Second factor: In front of mirror	4 (7,8,9,10)	0.83
Total	10	0.97

Discussion and Conclusion

One important technical aspect of a measurement instrument is its validity in addition to its reliability (23). It shows whether a instrument really measures a variable thought to be measured by a researcher. In other words, it indicates what a instrument measures and how accurate measurements it makes (21, 24, 25). Although the ability of a instrument to be valid depends on its reliability, a reliable instrument without validity is not very important in practice (22). The issue of validity is related to the question whether researchers can measure a variable they think that they do (21).

The aim of the validity analysis made in the present study was to have a group of experts examine whether steps of MBSE really represent what they are supposed to measure and to create a complete instrument composed of meaningful items. Content validity is a measure based on judgments of experts. There are no objective criteria which ensure sufficiency of the content of a scale (20, 21). MBSE was sent to ten experts with different specializations for evaluation of its content. The experts were asked to evaluate each item of the instrument in terms of their content, linguistic appropriateness for Turkish population, clarity and understandability (22, 23). In view of the CVI of 0.80 recommended by Polit et al. (22) for content validity, the CVI of 0.94 obtained for all the items in the present study shows a consistency between opinions of the experts. Validity refers to the degree

to which a variable has been measured. The most frequently preferred methods for evaluation of validity of a scale are content validity and construct validity (22, 24). Consensus between experts as a result of their evaluation of understandability and appropriateness of items in a instrument is considered as an indication of content validity of that instrument (17, 22). In the present study, Kendall W concordance test was performed to analyze content validity of MBSE. According to the test results, there was consensus between the experts (Kendall W=0.80, p=0.551) and the items were appropriate for Turkish culture and represented what was supposed to be measured.

In the present study, the final version of the MBSE instrument included 10 steps and two factors. After the factor analysis, six steps were observed in factor 1 “Lying down” check. Factor 2 “In front of mirror” includes four steps. These two factors were found similar with the original MBSE instrument (11). In the analysis of the basic components applied to the scale, two factors were obtained. The sampling adequacy calculated as KMO value in the study was found to be 0.87 and it implies that the sample size is perfect for factor analysis (17). The total variance explained by the two factors was found to be 63.24%. In this study, the Turkish MBSE instrument fully coincides with the original structure and conforms to the conceptually desired sub-dimensions. Kuder Richardson for the instrument was measured 0.97 and found excellent level of internal consistency (17, 21).

In conclusion, the final Turkish MBSE instrument included ten steps and two stages. The instrument is a valid and reliable for early detection of breast cancer in male. This instrument helps men to examine themselves and it could be used to improve men health in Turkey. The MBSE can be used in Turkish speaking countries and cultures.

Ethics Committee Approval: Ethics committee approval was received for this study from the ethics committee of Ege University (08.05.2016/21).

Informed Consent: Verbal informed consent was obtained from patients who participated in this study.

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appendix1

MALE BREAST SELF-EXAM

DO IT...

In the shower

msu
management & science university

**Step 1:
Lying down**

- 1 Lie down on your back with a pillow under your right shoulder
- 2 Use the pads of the three middle fingers on your left hand to check your right breast
- 3 Press using light, medium and firm pressure in a circle without lifting your fingers off the skin
- 4 Follow an up and down pattern
- 5 Feel for changes in your breast, above and below your collarbone and in your armpit
- 6 Repeat on your left breast using your right hand

These steps may be repeated while bathing or showering using soapy hands.

**Step 2:
In front of mirror**

Look for any changes from normal.
Inspect your breasts in 4 steps :

- 1 Hold arms at your side
- 2 Hold arms over your head
- 3 Press your hands on your hips and tighten your chest muscles
- 4 Bend forward with your hands to your hips

