Translation and Validation of Champion’s Health Belief Model Scale With Korean Women

The Champion’s Health Belief Model Scale (CHBMS) is a reliable and valid instrument developed for American women to measure beliefs about breast cancer and breast self-examination. The purpose of this study is to translate the CHBMS into Korean and to validate the scale among Korean women. The CHBMS was translated using a back-translation technique. A convenience sample of 264 women was recruited from a continuing education center, a community health center, and a university in 3 South Korean cities. The participants were asked to complete the translated Korean version of the CHBMS questionnaire. The data obtained were analyzed using a principal component analysis with varimax rotation for construct validity. Loading criterion was set at .45. Cronbach’s alpha was computed for the reliability of the scale.

From the analysis, two items from the Benefits domain and four items from the Motivation domain were deleted from the original scale. Thus, the final Korean version of the CHBMS (CHBMS-K) consisted of 36 items that were clustered to 6 subscales: susceptibility (5 items), seriousness (7 items), benefits (4 items), barriers (6 items), confidence (11 items), and motivation (3 items). Cronbach’s alpha reliability coefficients for the 6 subscales ranged from .92 to .72. The CHBMS-K was found to be reliable and valid in scale for use with Korean women. It can be used in planning and testing interventions to improve breast self-examination beliefs and practice.

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Today, breast cancer is a major threat to the health of Korean women. Because the incidence of breast cancer was low in Korean women, Korean people considered breast cancer as a "western affliction." However, the number of women diagnosed with breast cancer has rapidly increased, possibly due to westernizing changes in dietary habits, lifestyle, and reproductive pattern.1 According to the report by the Ministry of Health and Welfare, breast cancer in Korean women is the second most common type of cancer.

With no known accurate prevention, early detection is a key in reducing mortality resulting from breast cancer. Breast self-examination (BSE) is a safe, effective, and economical screening method in the early detection of breast cancer.3 Women aged 20 years and older are recommended to perform monthly BSEs.4 However, few Korean women perform BSE. According to Chung and Suh,5 only 6% of Korean women regularly perform BSE and 45% had never done BSE. Therefore, some investigators have recently attempted to study the influence of health belief-related variables (such as susceptibility, seriousness, benefits, barriers, confidence, and motivation) guided by the Health Belief Model (HBM)6 on the performance of BSE in Korean women. However, most of the instruments used in those studies did not establish their reliability and validity. The lack of a reliable and valid instrument may threaten internal validity of a study.7 Thus, it is important to use a reliable and valid instrument in a study.

Champion’s Health Belief Model Scale (CHBMS) is a commonly used instrument to measure the HBM variables of susceptibility, seriousness, benefits, barriers, confidence, and motivation associated with breast cancer and BSE.8-9 The instrument was tested in various American studies and proven reliable and valid. To apply the instrument among women in other countries, the instrument should be translated and tested as a new instrument to see whether the translated version is reliable and valid with those women. Thus, the purpose of this study is to translate the CHBMS using a back-translation technique and to validate it among a sample of Korean women.

Background

The HBM is a psychosocial model that attempts to explain preventive health behavior.6 According to the HBM, the original influencing factors of 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.10-11 Motivation refers to beliefs and behaviors related to the state of general concern about health. Confidence is defined as the belief that one can successfully execute a behavior that will then lead to a desirable outcome.

Based upon the HBM, Champion developed and revised the Champion’s Health Belief Model Scale (CHBMS) associated with breast cancer and BSE.8-9 The content validity of the CHBMS was evaluated by an expert panel. In a sample of 581 women, construct validity was tested by a factor analysis with varimax rotation. As a result, a 6-factor solution was derived: susceptibility (5 items), seriousness (7 items), benefits (6 items), barriers (6 items), confidence (11 items), and motivation (7 items). Cronbach’s alpha coefficients of the factors ranged from .83 to .93. Items were formatted with a 5-point Likert scale from strongly agree to strongly disagree.

To use the CHBMS in other cultures, translation of the instrument is required. Werner and Campell12 suggest two translation strategies, symmetrical (or centered) and asymmetrical (or uncentered). Symmetrical translation involves supralinguistic translation of cultural symbols. The translation is essential when a study goal is to reference a construct across cultures. Asymmetrical translation emphasizes loyalty to one language, usually the source language, and is used when a study goal is to demonstrate cultural differences.

The most common and highly recommended procedure is back translation.13-14 In the procedure, a translator renders an instrument into a target language. A different translator then translates the resulting version back into the original language. Items with apparent discrepancies between the two translations are then modified. Guillemin et al15 state that translations are of a higher quality when undertaken by at least two independent translators. The multiple translations allow for the detection of errors due to the language knowledge of a translator and divergent interpretations of ambiguous items in the original version.16 After completing the translation, reliability and validity of the translated instrument should be tested as a new instrument, because the translation and language difference may change those of the instrument.17

Methods

Sample

A convenience sample of 264 women participated. The 264 participants met the criteria for an adequate sample size for a factor analysis (at least 5 cases for each observed item) as suggested by Tabachnick and Fidell.18 Inclusion criteria of the sample were older than 20 years, not having breast cancer, and the ability to read and write Korean.

Instrument

After permission from Victoria Champion (personal communication, August 20, 1999) for the translation and use of the CHBMS, the scale was translated using a back-translation technique. In the translation process, a symmetrical translation strategy rather than an asymmetrical strategy was emphasized because the goal of this study was not to measure the responses of a culture against those of another culture, but to reference a construct across cultures.

Two individuals who were bilingual in English and Korean and who were aware of the intent and concepts underlying the
instrument independently translated the source version of the CHBMS into Korean. The researcher, whose first language is Korean, reviewed the preliminary Korean version. An inconsistency was noted in only one item: “I am able to find a breast lump that is the size of a dime.” One translator translated the word of a dime into 10 Won (one type of Korean coin) and the other into 50 Won (one type of Korean coin). The size of 50 Won is more similar to that of a dime, so 50 Won was chosen as a more appropriate translation.

The Korean version was then back translated into English by two additional bilingual individuals. A panel consisting of two bilingual professors majoring in nursing compared the original and two back-translated versions to validate the translation. The two back translations were almost identical to the original version.

The two back-translated CHBMS versions were distributed to 3 women, whose highest level of education was middle school or high school, to identify any problems understanding the content of the instrument. One of the women asked to change the word hok (meaning lump or mass) into meongwooli (another expression of lump or mass), so that word was replaced.

Procedures

The participants were recruited from a university continuing education center in Seoul, a community health center in Kwangju, and a university in Suwon, South Korea. After institutional review board approval by each institute, a packet containing a cover letter, the translated CHBMS-K (Champion’s Health Belief Model-Korean), and a demographic information form were distributed to those who agreed to participate in the study. The participants were asked to return the packet after completion to a return box. Because the survey was anonymous, consent was assumed by the return of the questionnaire. Of the distributed questionnaires, 67% were returned. Also, 9 questionnaires were dropped because they were missing more than 50% of the data.

Data Analysis

The Statistical Package for the Social Sciences (SPSS for Windows) was used to analyze the obtained data. Descriptive statistics were computed for the demographic characteristics. The Kaiser’s measure of sampling adequacy (KMO) was computed to test the statistical suitability of data for factor analysis. Construct validity was tested using a principal component extraction with an orthogonal rotation. Loading criterion was set at .40 and above. Correlation among subscales was proposed to be less than $r = .40$ to indicate a moderate association. Reliability was assessed by interpreting the item-total subscale score correlations and Cronbach’s alpha, which was expected to be $> .70$.

Results

The age of the participants ranged from 25 to 63 years, with a mean of 34.3 years (SD = 7.8). Ninety percent (n = 239) had at least completed high school. Sixty four percent (n= 170) were married, and 31% were single. The remaining participants were widowed or divorced (Table 1).

The KMO adequacy was computed to decide whether the obtained data were suitable for factor analysis and showed that the value was .84, which was good for factor analysis. Thus, a principal component analysis was used to extract factors. An 8-factor solution was extracted with an eigenvalue greater than one.

After varimax rotation, a total of 40 items loaded significantly on one of 8 factors (Table 2). Factor 1 accounted for 14.5% of variance and represented all 11 confidence (Con) items. Factor 2 accounted for 9.5% of variance and represented all 5 susceptibility (Sus) items. Factor 4 accounted for 6.1% of variance. The 6 barriers (Bar) items significantly loaded together on factor 4.

Of the 6 benefits items, 4 were significantly loaded on factor 5. Two items (Ben 1: “When I do a breast self-examination I feel good about myself” and Ben 2: “When I complete a monthly breast self-examination I don’t worry as much about breast cancer”) failed to load meaningfully on any factors, reflecting heterogeneity of the items on the scale.
Items related to seriousness (Ser) in the original CHBMS separately loaded on factors 3 and 7 in this study. If factors are correlated above \( r = .40 \), collapsing the factors may be considered. The decision for the collapsing is based upon the levels of reliability of the uncollapsed factors and the conceptual meaningfulness of such collapsing.\(^{21}\) In this study, factors 3 and 7 were significantly correlated to each other (\( r = .54, P < .01 \)). When collapsing the factors, Cronbach’s alpha increased to .85, while the alpha values of factors 3 and 7 were .83 and .79, respectively. Also, both factors were conceptually related to seriousness. Thus, in this study factors 3 and 7 were collapsed and considered as one dimension for seriousness. Items related to motivation (Mot) were also clustered separately on factors 6 and 8. Of the 7 motivation items, Mot 1, 2, and 7 were loaded on factor 6 and others on factor 8. The correlation between factors 6 and 8 was weak (\( r = .26, P < .01 \)). Cronbach’s alpha of factors 6 and 8 were .72 and .57, respectively. When computing the Cronbach’s alpha of factors 6 and 8 together, it was .63. That is, factors 6 and 8 were conceptually independent of one another so that collapsing the two factors was not meaningful. Thus, the cluster of Mot 1, 2, and 7, which met the criteria of reliability greater than .70, was retained as items associated with motivation in this study.

Table 3 displays a factor correlation matrix. No factors were significantly correlated over \( r = .40 \), meaning that factors were meaningfully independent. Item-total subscale correlations were \( > .43 \). The Cronbach’s alphas of each factor that emerged in this study were all above the minimum of .70 as recommended by Nunnally and Burnstein\(^{20}\) (Table 4).

**Discussion**

The CHBMS consisting of 6 subscales (a total of 42 items) was translated into Korean using a back-translation technique. Internal consistent reliability and construct validity among Korean women were tested. Cronbach’s alpha for each subscale ranged from .72 to .92, establishing internal consistency reliability. As a result of factor analysis for construct validity, primarily 8 factors were derived. All the items in each of the confidence, susceptibility, and barriers subscales clustered together as in Champion’s instrument. However, two items in the benefits subscale did not load significantly: “When I do a breast self-examination I feel good about myself (Ben1)” and “When I complete a monthly breast self-examination I don’t worry as much about breast cancer (Ben2).” To respond to these items, women need at least a little knowledge about BSE and must have performed the examination. In Korea, informational programs for BSE are not popular. Therefore, the Korean women’s knowledge level of BSE is low,\(^{22}\) and the number of Korean
women who have performed BSEs is few and ranged from 28% to 35%.23-24 For these reasons, items of Ben 1 and 2 might not be applicable to Korean women.

Items in the seriousness subscale loaded on two factors. Items from Ser 1 to 4, which are usually related to fear of breast cancer, clustered together. The items from Ser 5 to 7, associated with the belief of adverse effects of breast cancer, were grouped together. However, they were treated as one dimension because the two clustered groups were moderately correlated. Similar results were derived in a construct validity test of the CHBMS with Jordanian women.25 In women from Jordan, Ser 1-3 and Ser 4-7 were separately loaded but significantly correlated ($r = .44, P < .01$) so that they were treated as one dimension.

Items in the motivation subscale loaded on two factors in this study. One factor included items on general concern about health, and another factor mainly included items on general health behaviors. The latter factor was dropped in this study because it was meaningfully distinct from the former and low in internal consistency reliability. The two distinct dimensions of motivation were revealed in the study with Jordanian women, too. It may be postulated that the health beliefs associated with seriousness and motivation of Asian women, such as those from Korea and Jordan, may differ from those of American women.

In conclusion, in this study the Korean version of the CHBMS (CHBMS-K) consisted of a total of 36 items clustered to 6 subscales: susceptibility (5 items), seriousness (7 items), benefits (4 items), barriers (6 items), confidence (11 items), and motivation (3 items). The CHBMS-K was estimated to be reliable and valid with Korean women. Thus, the CHBMS-K can be used to study Korean women’s health beliefs about breast cancer and BSE without threatening the internal reliability of the study. In addition, it can be used to assess the health behavior levels of Korean women in various settings, such as hospitals, community health centers, or medical centers in companies. For further research, subsequent tests of the CHBMS-K are recommended, especially for the motivation subscale in Korean women.

References

Table 4 • Item-total Subscale Correlation and Cronbach’s Alpha for Subscales

<table>
<thead>
<tr>
<th>Factor (No. of Items)</th>
<th>Item-total Subscale Correlation</th>
<th>Cronbach’s alpha</th>
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<tbody>
<tr>
<td>Susceptibility (5)</td>
<td>.75-.83</td>
<td>.92</td>
</tr>
<tr>
<td>Seriousness (7)</td>
<td>.51-.69</td>
<td>.85</td>
</tr>
<tr>
<td>Benefits (4)</td>
<td>.53-.70</td>
<td>.79</td>
</tr>
<tr>
<td>Barriers (6)</td>
<td>.44-.67</td>
<td>.74</td>
</tr>
<tr>
<td>Confidence (11)</td>
<td>.54-.75</td>
<td>.91</td>
</tr>
<tr>
<td>Motivation (3)</td>
<td>.46-.60</td>
<td>.72</td>
</tr>
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