Cultural Adaptation and the Psychometric Properties of the Korean Version of the Symptom Management Beliefs Questionnaire

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Purpose: Assessment of aging-stereotyped and erroneous beliefs in managing symptoms is an essential task to enhance self-care and health outcomes of the older population. The purpose of this study was to examine the psychometric properties of the Korean version of the Symptom Management Beliefs Questionnaire (K-SMBQ) to measure ageist beliefs in managing symptoms of older people.

Methods: A convenience sample of 211 community-dwelling older women was used. The 12-item K-SMBQ was finalized after translation, synthesis, back-translation, content validity, and pilot testing. The psychometric properties of the K-SMBQ scale were examined by exploratory and confirmatory factor analyses, convergent validity, hypothesized relationship testing, and known-groups method, as well as internal consistency and test-retest reliability.

Results: Three factors (i.e., Aging-Stereotypes, Pessimistic Expectations, and Good Patient’s Attitudes) were extracted by exploratory factor analysis and the good fit of the three-factor structure was demonstrated by confirmatory factor analysis. Construct validity was supported by significant correlations with conceptually and theoretically relevant concepts as well as by distinguishable features between three older age groups. The internal consistency was supported by Cronbach’s alpha coefficient, item-total scale correlations, and inter-item correlations; thus, adequate test-retest reliability was demonstrated.

Conclusion: This study verified the psychometric properties of the K-SMBQ and provided evidence on the cultural relevance for the concept of ageist beliefs regarding symptom management in older Korean people. The development of nursing interventions to promote self-care of older people should be based on the consideration of negatively stereotyped and erroneous beliefs about health in old age.

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Introduction

Korea is one of the most rapidly aging countries in the world. With increased longevity, a high proportion (86.7%) of older Korean people have one or more comorbid health problems and almost one third of the older population has functional limitations in daily living (Korea Institute for Health and Social Affairs, 2011). Therefore, enhancing older Koreans’ coping strategies and self-care is important for maintaining functional health and a high quality of life.

An increasing number of cognitive behavioral studies have reported significant associations between age-related perceptions, health-related behaviors, and health outcomes (Levy & Myers, 2004; Sarkisian, Prohaska, Wong, Hirsch, & Mangione, 2005; Yeom & Heidrich, 2009). General beliefs about common health conditions in old age may affect the perceptions of older people when attempting to interpret the meaning of health problems and their coping efforts to manage these health problems in old age. However, empirical evidence has shown that general beliefs about old age tend to be negative rather than positive, and ageist beliefs about health, defined as stigmatized and erroneous beliefs regarding health issues in old age, exist within social and cultural contexts (Nelson, 2002). For example, aging is often regarded as the process of becoming weak, or as being synonymous with illness and disability (Ory, Kinney Hoffman, Hawkins, Sanner, & Mockenhaupt, 2003).

Some previous studies have reported that older people are not free from ageist beliefs about themselves, indicating that they tended to attribute the causes of their symptoms to old age (Heidrich, Egan, Hengudomsub, & Randolph, 2006; Morgan, Pendleton, Clague, & Horan, 1997; Royer, Phelan, & Heidrich, 2009), to belittle the severity of their health problems (Brody &
Kleban, 1981), and to undervalue the controllability of their illnesses without adequate medical assessment (Brody & Kleban; Ory et al., 2003).

Findings from several cognitive behavioral studies have indicated that negative perceptions and attitudes about old age might work as a perceptual barrier to performance of beneficial health behaviors for older people (Heidrich et al., 2009; Yeom, 2010; Yeom & Heidrich, 2009). For example, older people who had low expectations about physical, psychological, and social functioning were less likely to practice health promoting behaviors such as physical exercise and a healthy diet (Kim, 2009; Sarkisian & Prohaska et al., 2005). In addition, older people who had higher levels of negative beliefs about symptom management had greater resistance to consulting health care providers about their health problems (Yeom; Yeom & Heidrich). These findings support the importance of understanding ageist beliefs in managing symptoms of older people so they can improve active self-care and symptom management.

Kim (2007) reported on the validity and reliability of the Expectations Regarding Aging (ERA) scale, which was translated into Korean. The ERA scale is an instrument focusing on the assessment of general expectations about physical, functional, and psychological functioning in old age. The scale might be helpful for understanding general perceptions about health in old age. However, it is not sufficient to assess aging-related stereotypes or misconceptions related to experiencing and managing the physical discomfort of older people. Therefore, considering the rapidly increasing older population, a valid and reliable measurement for assessment of stereotypes or erroneous beliefs in experiencing and managing health problems, including symptoms in old age, is urgently needed in order to enhance better self-care and coping strategies for older people.

The original Symptom Management Beliefs Questionnaire (SMBQ) is an English-language instrument developed to assess older individuals’ negative age-related beliefs about experiencing and managing physical discomfort such as aches and pains, defined as symptoms (Heidrich et al., 2009; Yeom, 2010; Yeom & Heidrich, 2009). The construct validity and reliability of the original SMBQ were demonstrated in several studies of older people in the United States with various sociodemographic characteristics (e.g., gender, education level), and health status (e.g., breast cancer survivors, community-dwelling older people) (Yeom; Yeom & Heidrich). Previous studies have shown that the concept measured by the SMBQ could function as a factor affecting symptom management as well as decreasing the quality of life of older people (Heidrich et al., 2006, 2009; Royer et al., 2009; Yeom; Yeom & Heidrich). However, the scale has not been translated into Korean, and the question of whether the Korean version of the SMBQ (K-SMBQ) would be valid and reliable, as well as whether its concept would be culturally acceptable to older Korean people has not been examined.

A valid and reliable instrument for assessing aging-related perceptions related to experiencing and managing symptoms in Korea is important in order to enhance coping efforts and health outcomes of older people. Therefore, this study evaluated the psychometric properties of the newly translated K-SMBQ by testing its validity and reliability in older Korean people.

Methods

Study design

This is a methodological study to test the validity and reliability of the translated Korean version of the SMBQ in older Korean women using structured interviews and questionnaires.

Setting and samples

A total of 211 participants were recruited using convenience sampling from senior citizens’ centers and public health centers in two cities and out-patient clinics of a university hospital in South Korea. For participation in the study, older persons had to meet the following criteria: (a) 65 years of age or older, (b) community-dwelling, (c) with no history of critical illness (e.g., cancer, stroke, myocardial infarction) in the previous 6 months, and (d) without cognitive impairment or physical frailty that could preclude participation.

Ethical considerations

All procedures were approved by the Institutional Review Board of the university hospital that the author was affiliated. Data were collected from February to April 2012.

Measurements

SMBQ and the translation process

The original SMBQ is an English-language, self-administered instrument developed by Heidrich and colleagues (Yeom, 2010; Yeom & Heidrich, 2009). The SMBQ was developed to assess the extent to which older individuals hold negatively stigmatized and erroneous beliefs about experiencing and managing physical discomfort such as aches and pains, defined as symptoms. The SMBQ is composed of 13 items; each item asks how much respondents agreed with a statement on a 5-point Likert scale ranging from 1 (do not agree at all) to 5 (agree very much). The mean score of the 13 items was calculated with higher scores indicating that respondents have more negative age-related beliefs about experiencing and managing symptoms.

The items of the original SMBQ scale were derived from gerontology literature, empirical gerontological studies, interviews with health professionals who had significant experience with older patients, and Ward’s Barrier Questionnaire-II (Ward, Carlson-Dakes, Hughes, Kwekkeboom, & Donovan, 1998), which assesses barriers to analgesic use for management of pain in cancer patients (Yeom, 2010; Yeom & Heidrich, 2009). The factor structure of the original SMBQ scale has not been clearly reported. However, previous studies have demonstrated the construct validity of the SMBQ by showing that it had consistently robust relationships with empirically and conceptually relevant variables, such as difficulties in communicating with health care providers about symptoms (r ranged from .25 to .40) and experience of negative attitudes of health care providers (r ranged from .31 to .44), which function as perceptual barriers to symptom management (Heidrich et al., 2009; Yeom; Yeom & Heidrich). In addition, older people who had higher scores of the SMBQ were likely to report lower levels of purpose in life, positive relations with others, and physical and psychosocial quality of life (Yeom; Yeom & Heidrich). Furthermore, these studies have reported that the concepts underlying the SMBQ reflect negative stereotypes about old age, low expectations about the effectiveness of coping efforts, and erroneous beliefs about older patients’ attitudes (Yeom; Yeom & Heidrich).

In several studies on older people with various demographic and health-related characteristics, good internal consistency of the original SMBQ scale was supported by adequate Cronbach’s alpha ranging from .72 to .86 (Heidrich et al., 2009; Yeom, 2010; Yeom & Heidrich, 2009).

The translation of the SMBQ was performed using a five-stage process, according to the guide for cross-cultural adaptation of self-report measures: translation, synthesis, back-translation, review of content validity, and pre-testing (Beaton, Bombardier, Guillemin, &
Ferraz, 2000). As the first step, the original instrument was translated by two native Korean speakers who are fluent in translation. The results of the translations were synthesized by modifying some terms to improve comprehensibility and cultural relevance. After completion of the synthesis process, the back-translation was performed by another bilingual expert. The back-translated version was compared with the original version to confirm the adequacy and accuracy of the translation. After examining any discrepancies between the two versions, the content validity was reviewed by an expert committee composed of two nursing researchers and two health care providers caring for older patients. The original SMBQ was a 13-item measure. However, after the expert review, one item was deleted because the content was almost the same as that of another item (i.e., “Healthcare providers will think I am a complainer if I ask about my symptoms”). After examining the content validity, a pilot test for comprehensibility and clarity of the 12 items was performed on a sample of 20 older people. The respondents were asked if they had trouble understanding and replying to the items and if they had any suggestions for the questionnaire. The participants reported no specific problems with the issues, and the 12-item K-SMBQ was finalized. Completion of the questionnaire took an average of 7 minutes.

ERA-12

The ERA-12 is an instrument for measuring positive perceptions about old age (Sarkisian, Steers, Hays & Mangione, 2005). The items of the ERA-12 assess how strong respondents’ positive expectations are regarding physical health, mental health, and cognitive functioning in old age. For the 12 items on the ERA-12 scale, respondents were asked how strongly they believed that each item was true or false on a 4-point Likert scale. The mean score was calculated and converted into a 0–100 range. Higher scores indicated that respondents had more positive expectations about physical health, mental health, and cognitive functioning in old age. The construct validity and reliability in an older Korean population was reported (Kim, 2007). In this study, the reliability of the ERA-12 was .81.

It has been determined that the ERA-12 measures conceptually relevant concepts and similar traits in terms of aging-related beliefs, compared to the K-SMBQ. High correlations with the concepts that reflect the same construct or traits support its convergent validity (Portney & Watkins, 1993). Therefore, the ERA-12 was chosen to examine the convergent validity. A significant correlation level between the SMBQ and the ERA-12 scores was expected.

Self-efficacy

General self-efficacy was assessed using the Self-efficacy Scale, which is composed of 16 items (Seo, 2001). The items on the scale ask about overall personal confidence in daily living. Using a 4-point Likert scale ranging from 1 (not at all) to 4 (very much), respondents rated their level of confidence in managing general activities. The mean score for the 16 items was calculated and a higher score indicated a higher level of self-efficacy. In this study, the reliability was .84.

General self-efficacy was chosen to examine whether its relationship with the K-SMBQ score showed a theoretically relevant direction. Self-efficacy theory explains that the operation of self-efficacy is associated with the expectancy that an individual has regarding outcomes (Bandura, 1993). This concept implies that an individual who has lower expectations about coping efforts in old age might be likely to have a lower level of self-efficacy. Thus, some level of relationship between the K-SMBQ and self-efficacy was expected, which means that older people who had a higher score on the K-SMBQ were less likely to have lower levels of self-efficacy.

Demographic characteristics

General demographic information, including age, gender, education, income, and marital and living status were assessed. The number of chronic illnesses was also assessed using a self-report checklist with 10 items, including health problems that are prevalent to the Korean population. In addition, the number of symptoms was assessed for 30 common symptoms in old age. Participants were also asked about the number of medications.

Data collection

Data collection was performed by the primary investigator and two research assistants who were trained by the primary investigator on survey techniques and the content of the questionnaire for inter-rater reliability. The primary investigator and two research assistants contacted potential participants and screened them for eligibility based on the criteria in a face-to-face interview. The study purpose, procedural details, the participant’s rights, and potential benefits and risks of the study were explained, and written consent forms were obtained. Structured interviews that helped participants understand the questionnaires were conducted, taking into consideration the generally low education level of the participants. The primary investigator and two research assistants read the questionnaires word-for-word and recorded the participants’ responses face to face.

Data analysis

SPSS for Windows Version 16.0 and Amos 16.0 (SPSS Inc., Chicago, IL, USA) were used to perform the statistical analysis of the data. Preliminary analyses and descriptive statistics that describe the sample and measures were computed using SPSS 16.0. All variables were screened for accuracy of data entry, missing values, outliers, and fit between the distributions and assumptions of multivariate analysis, such as linearity, homoscedasticity, and normality. Descriptive statistics (i.e., mean, standard deviation, skewness, kurtosis, and histogram) were used to assess the distribution of variables. Values of all variables were found to be within range, and means and standard deviations were plausible.

Because the K-SMBQ had never been examined in the Korean population, exploratory factor analysis (EFA) using a principal components analysis followed by varimax rotation of the extracted factors was performed to examine the underlying structure of the K-SMBQ scale. The Kaiser-Meyer-Olkin and Bartlett’s Test of Sphericity were examined to evaluate sampling adequacy. Factors with an Eigenvalue of 1 or more were extracted as initial factors for further testing. The value of .40 or higher on factor loadings was chosen as the significant criteria for assigning items to factors. The conceptual relevance on the basis of empirical evidence was concerned with assignment of items that had significant loadings on multiple factors (Pett, Lackey, & Sullivan, 2003).

According to Van Prooijen and Van Der Kloot (2001), for testing the fit of the confirmatory factor analysis (CFA) on a new scale, it is useful to check the fit of the CFA on the same data from which the factor structure was derived. They also elucidated that when the CFA confirms the results of the EFA on the same data, it provides the foundation that the CFA would confirm the results of the EFA in further testing using a different sample. According to their recommendation, the fit of the factor structure derived from EFA was tested in the current study. The goodness of fit was evaluated using multiple indices for CFA: absolute fit indices of the Comparative Fit Index (CFI ≥ .95 as a good fit), the Normed Fit Index (NFI, .90—.94 as an adequate fit and ≥ .95 as an excellent fit), and the root mean square error of approximation (≤ .05 as a good fit, .05—.08 as an acceptable fit) (Kline, 1986).
The construct validity was examined through convergent validity testing, hypothesized relationship testing, and the known-groups method. The convergent validity and hypothesized relationship testing was examined using correlation coefficients with conceptually and theoretically relevant variables (Portney & Watkins, 1993). The known-group method was used in testing of analysis of variance for the three older age groups.

The internal consistency and test-retest reliability of the K-SMBQ were examined. The internal consistency was examined with Cronbach’s alpha, item-total scale correlations, and inter-item correlations. Cronbach’s alpha of .70 or higher was adopted as the criteria for evaluating acceptable internal consistency (Nunnally & Bernstein, 1994). Item-total scale correlation coefficients and item-to-item correlation coefficients were also tested to examine whether they measured the same construct. An item-total correlation of over .30 is generally considered a cutoff value to determine the acceptance of reliability (De Vaus, 2002; Nunnally & Bernstein; Traub, 1994). Thus, the cut-off value for item-total correlations was set at .30. Item-to-item correlation (.15 < r < .50) was set at an acceptable value (Clark & Watson, 1995).

For factor analysis, approximately 5–10 samples per item are considered adequate (DeVellis, 2003). Considering 10 samples per item of the K-SMBQ scale with 12 items (i.e., 120 samples) and adding a potential dropout rate of 20% (i.e., 24 samples), a minimum sample size was 144. Thus, a sample size of 211 in this study was satisfactory for the analyses.

Results

General characteristics of the participants

A total of 211 questionnaires were used for data analysis. The average age of the participants was 75.2 (SD = 4.31), with a range from 65 to 100 years. More than half of the participants were widowed (n = 126, 56.9%) and most of the participants lived alone (n = 97, 45.9%) or with a spouse (n = 66, 31.3%). Almost half of the participants were uneducated (n = 102, 48.3%), which is consistent with the general educational characteristics of older members of the Korean population (Korea National Health and Nutrition Examination Survey, 2010). Ninety-two percent of the participants had at least one chronic illness and the average number of chronic illnesses was 2.1 (SD = 1.13, range: 0–7). The most frequently reported illnesses included arthritis (n = 122, 57.8%), hypertension (n = 96, 45.5%), and diabetes (n = 45, 21.3%). The average number of symptoms was 9.4 (SD = 5.11, range: 0–24) and the average number of medications was 2.0 (SD = 1.60, range: 0–10).

EFA

Three factors were extracted from the EFA on the 12 items of the K-SMBQ scale. The Kaiser–Meyer–Olkin was .81 and the result indicated an adequate sample for the 12 items of the scale. Results for Bartlett’s Test of Sphericity showed statistical significance (χ² = 393.53, df = 66, p < .001), which was an adequate sample for factor analysis.

The rotated factor solution is shown in Table 1. The underlying structure of the original SMBQ scale has not been clearly defined. Thus, an expert committee reviewed the contents of items within each factor and discussed the relevance of the underlying concepts of the original SMBQ scale, which were demonstrated in prior research (Heidrich et al., 2006, 2009; Yeom, 2010; Yeom & Heidrich, 2009). After reviewing each concept, the three factors were labeled as follows: Aging–Stereotypes (Factor 1), Pessimistic Expectations (Factor 2), and Good Patients’ Attitudes (Factor 3). Aging–Stereotypes reflect negatively stigmatized beliefs about symptom management. Pessimistic Expectations reflect low expectations or negative attitudes about the effectiveness of medical care and self-care behaviors. Good Patients’ Attitudes reflect erroneous beliefs or misconceptions about what attitudes are appropriate for older people in medical encounters and what older patients should do in their interactions with health care providers.

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Determination of the final factor of the cross-loading items was based on the conceptual relevance between the item and factors. One item, “need to lower expectations” had cross loadings on Factor 1 and Factor 2, and another item “need to concentrate on treatment” had cross loadings on Factors 2 and 3. The item “need to lower expectations” was more highly and conceptually relevant on Factor 1 (i.e., Aging–Stereotypes), and the item “need to concentrate on treatment” was also more highly related and conceptually relevant to Factor 3 (i.e., Good Patients’ Attitudes). The three factors accounted for 58.4% of the variance. Four items were loaded onto Factor 1, explaining 31.2% of the variance with an Eigenvalue of 1.86 and explained 16.1% of the variance.

CFA

The goodness of fit of the three-factor structure extracted from EFA was demonstrated by the multiple indices of CFA: the CFI (.96) and NFI (.92) reached the criteria (CFI ≥ .95 and NFI ≥ .90), respectively. The root mean square error of approximation was .06, which fell between good (.05) and adequate (.08).

As illustrated in Figure 1, the factor coefficients of all items ranged from .42 to .84. The correlation coefficients among the three factors showed positive and moderate correlation: Factor 1 and Factor 2 (r = .58, p < .001), Factor 2 and Factor 3 (r = .35, p < .001), and Factor 1 and Factor 3, (r = .52, p < .001).

Convergent validity

Convergent validity was supported by a significant correlation (r = −.63, p < .001) between the K-SMBQ and ERA, which are regarded as measuring similar traits, in terms of aging-related beliefs about health. This result indicates that older persons who had lower levels of expectations regarding aging were likely to have

<table>
<thead>
<tr>
<th>Items</th>
<th>Factor 1&lt;sup&gt;4&lt;/sup&gt;</th>
<th>Factor 2&lt;sup&gt;5&lt;/sup&gt;</th>
<th>Factor 3&lt;sup&gt;d&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Symptoms as a natural part of aging</td>
<td>.663</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Need to concentrate on treatment</td>
<td>.495</td>
<td>.512&lt;sup&gt;6&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>3. Worries about becoming a complainer</td>
<td></td>
<td>.631</td>
<td></td>
</tr>
<tr>
<td>4. Symptoms as a natural part of aging</td>
<td></td>
<td>.641</td>
<td></td>
</tr>
<tr>
<td>5. Unnecessary to worry</td>
<td>.566</td>
<td>.448</td>
<td></td>
</tr>
<tr>
<td>6. Cure is often worse than the disease</td>
<td>.771</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Need to concentrate on treatment</td>
<td>.453</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Worries about becoming a complainer</td>
<td>.619</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Ineffective treatment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Easier to put up with fatigue than treatment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Need to lower expectations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Useless to find new ways</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eigenvalue</td>
<td>3.60</td>
<td>1.28</td>
<td>1.86</td>
</tr>
<tr>
<td>Variance (%)</td>
<td>31.2</td>
<td>11.1</td>
<td>16.1</td>
</tr>
</tbody>
</table>

Note: 4 Aging–Stereotypes. 5 Pessimistic Expectations. 6 Good Patients’ Attitudes. 7 Factor on which the item with cross loadings was placed.
higher levels of ageist beliefs about symptom management. In addition, as shown in Table 2, moderate levels of correlation were observed among the three factors of the K-SMBQ and ERA scores: Aging-Stereotypes \((r = -0.58, p < 0.001)\), Pessimistic Expectations \((r = -0.37, p < 0.001)\), and Good Patients' Attitudes \((r = -0.52, p < 0.001)\). The results demonstrate convergent validity.

**Hypothesized relationship testing**

The relationship between the K-SMBQ and self-efficacy was consistent with a theoretically expected direction. A negative correlation coefficient \((r = -0.26, p < 0.001)\) between the total score of the K-SMBQ and self-efficacy indicates that older people who had more ageist beliefs about symptom management were likely to have a lower level of self-efficacy. As shown in Table 2, significant correlation coefficients were also observed between each of the three factors and self-efficacy, respectively: Aging-Stereotypes \((r = -0.21, p < 0.001)\), Pessimistic Expectations \((r = -0.26, p < 0.001)\), and Good Patients' Attitudes \((r = -0.19, p = 0.031)\).

**Known-groups method**

The known-groups method involves examination of the ability to discriminate between groups which are known to be distinguished, such as different age groups and different diagnostic groups, in a theoretically relevant manner (Portney & Watkins, 1993). Using the known-groups method, the differences in the K-SMBQ between the three older age groups (i.e., young-old, 65–74 years; middle-old, 75–84 years; and oldest-old, ≥ 85 years) were

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**Table 2** Correlations with Expectations Regarding Aging and Self-efficacy (N = 211)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Expectations regarding aging</th>
<th>Self-efficacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>K-SMBQ total</td>
<td>-0.63**</td>
<td>-0.26**</td>
</tr>
<tr>
<td>Aging-Stereotypes</td>
<td>-0.58**</td>
<td>-0.21*</td>
</tr>
<tr>
<td>Pessimistic Expectations</td>
<td>-0.37**</td>
<td>-0.26**</td>
</tr>
<tr>
<td>Good Patients' Attitudes</td>
<td>-0.52**</td>
<td>-0.19*</td>
</tr>
</tbody>
</table>

Note. K-SMBQ = Korean-Symptom Management Beliefs Questionnaire. 
*p < .05. **p < .001.

**Table 3** Comparison of Korean-Symptom Management Beliefs Questionnaire among Young-old, Middle-old, and Oldest-old groups (N = 211)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Young-old (n = 107)</th>
<th>Middle-old (n = 73)</th>
<th>Oldest-old (n = 31)</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>K-SMBQ total</td>
<td>2.87 ± 0.78</td>
<td>3.55 ± 0.76</td>
<td>3.75 ± 0.62</td>
<td>11.33**</td>
</tr>
<tr>
<td>Factor 1(a)</td>
<td>3.27 ± 0.89</td>
<td>3.60 ± 0.89</td>
<td>3.83 ± 0.71</td>
<td>5.64**</td>
</tr>
<tr>
<td>Factor 2(b)</td>
<td>2.11 ± 1.03</td>
<td>3.02 ± 1.09</td>
<td>3.33 ± 0.94</td>
<td>10.68**</td>
</tr>
<tr>
<td>Factor 3(c)</td>
<td>2.66 ± 1.27</td>
<td>3.36 ± 1.14</td>
<td>3.89 ± 0.94</td>
<td>5.77**</td>
</tr>
</tbody>
</table>

Note: K-SMBQ = Korean-Symptom Management Beliefs Questionnaire. 
\(a\) Aging-Stereotypes. 
\(b\) Pessimistic Expectations. 
\(c\) Good Patients' Attitudes.

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Figure 1. Three-factor structure of the Korean-Symptom Management Beliefs Questionnaire with standardized parameter estimates.
examined using analysis of variance (Table 3). Compared to the other groups, the oldest-old group had a significantly higher score on the K-SMBQ ($F = 11.33, p < .001$) and the scores for the three factors of the K-SMBQ were also significantly higher than those of the other two groups: Aging-Stereotypes ($F = 5.64, p < .001$), Pessimistic Expectations ($F = 10.68, p < .001$), and Good Patients’ Attitudes ($F = 5.77, p < .001$).

**Reliability**

The adequacy of internal consistency of the K-SMBQ was verified by Cronbach’s alpha (.81), item-total scale correlations, and inter-item correlations. As shown in Table 4, the item-total scale correlation coefficients ranged from .32 to .57 with a mean score of .46.

Item-to-item correlation coefficients ranged from .21–.48 with an average item-to-item correlation of .34. The result satisfied the recommended criteria that the average inter-item correlation should range between .15 and .50 (Clark & Watson, 1995).

Test-retest reliability of 20 subjects within a 2-week period was examined. A significant level of Pearson’s correlation ($r = .73$, $p < .001$) of the K-SMBQ scale for a 2-week period was found. The correlation coefficients for each of the 12 items of the K-SMBQ between a 2-week period were also significant, with a range from .72 to .84 ($p < .001$). The findings support good test-retest reliability and satisfactory consistency of the K-SMBQ.

**Discussion**

Assessment of ageist beliefs in managing symptoms in old age is an essential task for enhancing active self-care and health-related behaviors of the older population. This study verified the validity and satisfactory reliability of the K-SMBQ for assessment of age-related stereotyped and erroneous beliefs about managing symptoms of older people.

Because sociocultural contexts affect the way individuals form cognitive perceptions, consideration of their sociocultural backgrounds is a key issue in validating a translated measurement (Jang, Poon, Kim, & Shin, 2004). Therefore, the original SMBQ scale was translated according to the guide for cross-cultural adaptation of self-report measures. In addition, the accuracy and clarity of the items on the K-SMBQ were examined cautiously by an expert review committee and by pilot testing for cultural relevance.

Three factors defined as Aging-Stereotypes (Factor 1), Pessimistic Expectations (Factor 2), and Good Patients’ Attitudes (Factor 3) were extracted using EFA, and the satisfactory fit of the three-factor structure of the K-SMBQ was verified using CFA. Aging-Stereotypes reflect negatively stigmatized beliefs about having and managing symptoms in old age, such as “Many symptoms are a natural part of the aging process.” Pessimistic Expectations reflect pessimistic attitudes and low expectations regarding the effect of self-care and medical treatment for symptoms, such as “The ‘cure’ for symptoms is often worse than the disease.” Factor 3, “Good Patients’ Attitudes,” refers to erroneous or worrisome beliefs about older patients’ attitudes when interacting with health care providers, such as “Health-care providers will think I am a complainer if I ask about my symptoms.” If older people believe that having symptoms is a natural process of aging, they may expect that asking about their symptoms is a waste of time, or that their questions might interrupt health care providers’ concentration on curing more serious illnesses.

The three factors were found to moderately relate to one another. A significant relationship between Aging-Stereotypes and Pessimistic Expectations implies that older people who have more stigmatized beliefs about aging were likely to have lower expectations regarding medical effects than those with less stigmatized beliefs. In addition, Pessimistic Expectations showed a moderate association with Good Patients’ Attitudes, indicating that older people who have a more pessimistic view and lower expectations about treatment effects may be reluctant to seek health care than their less pessimistic counterparts because they worry about being labeled. At the same time, older people who have erroneous beliefs about older patients’ attitudes about medical encounters (e.g., “Doctors/nurses might find it annoying to be told about symptoms.”) tended to have lower expectations about medical treatment than those without such beliefs. The results are consistent with previous empirical findings, which have shown that older people who perceived negative attitudes from health care providers were likely to have higher levels of ageist beliefs about symptom management and greater difficulty asking health care providers about their symptoms (Yeom, 2010; Yeom & Heidrich, 2009). Therefore, these findings imply a significant role of health care providers in that their attitudes when communicating with older patients could affect the health-related perceptions of older patients.

Construct validity was also demonstrated by convergent validity, the hypothesized relationship, and known-group differences. Convergent validity was verified by significant correlation with expectations regarding aging, which has traits that are conceptually similar to ageist beliefs about symptom management. This indicates that older people with low expectations about physical and cognitive functions in old age were likely to have more ageist beliefs about symptom management. In addition, expectations regarding aging were related to each of the three factors derived from the factor analyses. The findings imply a connection between general attitudes toward old age and specific age-related beliefs about coping with health problems, in terms of age-stereotypes about health, more pessimistic views about the curability of health problems and medical effects, and erroneous beliefs about good older patients’ attitudes in medical encounters.

A significant linkage between the K-SMBQ and self-efficacy is relevant to the empirical and theoretical foundations, and implies that ageist beliefs about managing symptoms could decrease self-efficacy, resulting in poor health behaviors. The construct validity of the original SMBQ scale was demonstrated by the robust relationships with theoretically and conceptually relevant measures, such as difficulties communicating with health care providers about symptoms, experience of negative attitudes toward health care providers, and quality of life (Heidrich et al., 2009; Yeom, 2010; Yeom & Heidrich, 2009). Therefore, the findings support the importance of understanding ageist beliefs in order to enhance effective health behaviors of older people.

Despite these important findings, significant differences were detected in the K-SMBQ and the three factors among the three older

**Table 4** K-SMBQ item Means, Standard Deviations, and Correlations with Total ($N = 211$)

<table>
<thead>
<tr>
<th>Items</th>
<th>$M \pm SD$</th>
<th>Item-total correlation</th>
<th>Cronbach’s alpha if item deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Symptoms as a natural part of aging</td>
<td>4.39 ± 0.94</td>
<td>.37</td>
<td>.81</td>
</tr>
<tr>
<td>2. Hard to cure symptoms</td>
<td>4.01 ± 1.23</td>
<td>.45</td>
<td>.80</td>
</tr>
<tr>
<td>3. Annoying to be told about symptoms</td>
<td>2.97 ± 1.56</td>
<td>.51</td>
<td>.79</td>
</tr>
<tr>
<td>4. Learn to live with symptoms</td>
<td>3.21 ± 1.53</td>
<td>.57</td>
<td>.82</td>
</tr>
<tr>
<td>5. Unnecessary to worry</td>
<td>3.18 ± 1.62</td>
<td>.56</td>
<td>.81</td>
</tr>
<tr>
<td>6. Cure is often worse than the disease</td>
<td>2.81 ± 1.58</td>
<td>.52</td>
<td>.75</td>
</tr>
<tr>
<td>7. Need to concentrate treatment</td>
<td>3.91 ± 1.16</td>
<td>.32</td>
<td>.82</td>
</tr>
<tr>
<td>8. Worries about becoming a complainer</td>
<td>3.18 ± 1.51</td>
<td>.34</td>
<td>.81</td>
</tr>
<tr>
<td>9. Ineffectual treatment</td>
<td>2.88 ± 1.58</td>
<td>.52</td>
<td>.79</td>
</tr>
<tr>
<td>10. Easier to put up with fatigue than treatment</td>
<td>2.59 ± 1.48</td>
<td>.35</td>
<td>.81</td>
</tr>
<tr>
<td>11. Need to lower expectations</td>
<td>3.50 ± 1.46</td>
<td>.43</td>
<td>.82</td>
</tr>
<tr>
<td>12. Useless to find new ways</td>
<td>2.58 ± 1.47</td>
<td>.54</td>
<td>.80</td>
</tr>
</tbody>
</table>
age groups, indicating that the oldest-old group had the highest level of ageist beliefs about symptom management. The findings are empirically relevant and also consistent with the evidence reported in studies about older U.S. women using the original SMBQ scale, supporting the construct validity of the K-SMBQ and the original SMBQ scales (Heidrich et al., 2008; Yeom, 2010; Yeom & Heidrich, 2009).

The reliability of the K-SMBQ was demonstrated by good internal consistency as well as test-retest reliability. In the current study, Cronbach’s alpha was .82, which was a moderate level of satisfaction compared to the original SMBQ scale that ranged from .72 to .86 (Heidrich et al., 2009; Yeom, 2010; Yeom & Heidrich, 2009). In addition, the adequate values of item-total scale correlation and inter-item correlations support the reliability of the K-SMBQ as a measurement for assessment of ageist beliefs in symptom management in older Korean people. However, some of the inter-item correlations (e.g., item 7 and item 10, r = .21) were relatively weak, although they were within an acceptable range (Clark & Watson, 1995). Therefore, further studies that confirm our results is recommended.

The evaluation of the psychometric properties of the K-SMBQ in older Korean people suggests that while different social, political, and cultural backgrounds may exist between Korea and Western countries, negative age-stereotyped and erroneous beliefs in managing symptoms are an important issue requiring significant consideration to enhance health and quality of life of older people.

This study has some limitations. Participants in this study were older women. It is not known whether or not gender differences exist with regard to age-related stereotyped beliefs among all older Korean adults. In addition, the participants were community-dwelling and relatively healthy older women. Beliefs about managing symptoms may differ in older people with different health conditions. Therefore, further studies on older people with various health issues, such as heart conditions and cancer, are warranted. In addition, in the Korean culture, family support is also regarded as a meaningful factor affecting health conditions as well as managing health problems of older people (Choi, Kim, & Kim, 2003). This suggests that there is a need to examine age-related beliefs for older people with diverse environmental contexts, such as institutionalized versus non-institutionalized older people. These limitations imply that the participants in this study were relatively homogeneous rather than heterogeneous.

Despite its limitations, this study is meaningful in that this is the first study to examine the psychometric properties of the K-SMBQ. It provides a foundation for further examination and development of a measurement for assessing aging-related stereotyped beliefs about management of health problems in older Korean people. In addition, this study verified that the concept of the SMBQ is culturally acceptable, although there may be differences in aging-related beliefs in the management of health problems between Western and Eastern cultures. However, the factor structure of the original SMBQ scale has not been clearly defined and thus, there are limitations for comparing the findings in the current study. In addition, the original SMBQ has not been translated into other languages and its perceptual acceptance in other cultures is unknown. Therefore, further studies are needed in older populations with diverse sociodemographic characteristics and different cultural backgrounds to enhance the generalizability and for better verification of the K-SMBQ scale.

Conclusion

Understanding the perceptions of older people regarding old age is essential to provide fundamental clues about promoting self-care and effective management of older people. The findings of this study support the validity and reliability of the K-SMBQ as an instrument of negative age-stereotyped and erroneous beliefs about managing symptoms in older Korean people. The K-SMBQ could be applied as a measure for investigating perceptual barriers to symptom management and for developing nursing interventions to enhance positive attitudes toward aging, as well as active self-care of the older population. Conducting further studies to increase the applicability of the K-SMBQ and thereby contributing to the enhancement of the health and quality of life of older people is warranted.

Acknowledgment

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References


