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Development and Validation of Breast Self-Examination Scale (BSES) to Practice, Knowledge and Attitude towards Breast Self-Examination among Malaysian Women

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ABSTRACT

Introduction: Breast cancer is one of the common, life-threatening cancer among women worldwide. However, diagnosis tends to occur at a later stage, negatively affecting prognosis and treatment outcomes. Raising public awareness and knowledge could possibly contribute to early detection, hence improve survival rates. We aimed to develop a tool to assess practice, knowledge and attitude towards breast self-examination (BSE) among women.

Methods: We developed Breast Self-Examination Scale (BSES) based on literature review via three phases: (a) domain identification, (b) domain blueprinting and (c) item generation for each domain assessing practice, knowledge and attitude towards BSE. Two forms of validity evidence related to content (n=3) and response process (n=40) were critically appraised by experts and a sample of female adults, respectively. Content validity index (CVI) and face validity index (FVI) estimated the content validity and response process validity.

Results: Breast Self-Examination Scale (BSES) assessed the practice, knowledge and attitude towards BSE. CVI values for the three domains were 1. The FVI values for the three domains In the revised version of questionnaires were also 1.

Conclusion: BSES is a valid tool for evaluating the practice, knowledge and attitude towards BSE among Malaysian women.

Keywords: Breast self-examination, content validation, face validation, response process, breast cancer

INTRODUCTION

Cancer is one of the most vital health concerns today. Amongst all other cancers, breast cancer is the most frequently occurring cancer in women and the most prevalent cause of cancer morbidity and mortality among women globally (1,2)—breast cancer impacts on approximately 2.1 million women annually. In 2018, it contributed to about 15% of all cancer deaths among women, and the number of deaths is estimated to be 627,000 (3). The rate of breast cancer is increasing every year in nearly every region worldwide.

In Malaysia, breast cancer accounts for about 34.1% of all cancers among females. Between 2012-2016, 21,634 cases of female breast cancer diagnosed compared to only 18,206 patients between 2007-2011 (4). This figure showed that there was a drastic increase in the number of cases. The peak incidence of breast cancer occurs at around 50-59 years of age and then slowly declines in older women (4,5). The incidence was highest among Chinese and then followed by Indians and Malays. Half detected at a late stage (stage III and IV) (4).

Young women between 20-29 years accounted for about 72.4% of the mortality rate (6) that could be due to a lack of awareness among this age group as they do not consider themselves to be at risk of developing breast cancer and believe that it is a problem that affects older women. Several studies revealed that the majority of Malaysian women demonstrated inadequate knowledge about breast cancer, and studies showed breast self-examination (BSE) practice has a significant relationship with breast cancer knowledge (7). The low level of knowledge, lack of awareness towards BSE can partly explain the delay in presentation of symptomatic breast cancer to health care provider (8).

Despite high mortality and morbidity, early diagnosis is possible and effective treatment is available. In Malaysia, about half of the women diagnosed at Stage III or IV received little or no benefit from any form of therapy (9). Hence, early detection of breast cancer remains the priority, and it is critical to increase the percentage of breast cancer patients diagnosed at an early stage and to provide timely access to effective cancer treatment as well as reducing barriers to care. The ultimate goal is to reduce the risks of deaths from breast cancer and to improve survivals.

Screening helps to identify cancers before any symptoms appear. Various methods evaluated as breast cancer screening tools. Recommended screening methods to reduce breast cancer mortality and morbidity include BSE, clinical breast examination (CBE) and mammography. Although, the efficacy of routine BSE in early detection of breast cancer is debatable (5). BSE is still recommended as a screening method for increasing breast health awareness because it is inexpensive, non-invasive, involve little time, physical energy and does not require complex technical training (5). BSE helps women to become familiar with their typical breast structures and to detect any unusual changes in their breast tissues.

Despite the relative benefits of BSE, its application remains low. Given the aggressiveness of cancer that occurs among women, educational programs should be organised and offered on this critical health issue to promote breast health awareness and the practice of BSE. We aimed to develop a tool to assess the practice, knowledge and attitude towards BSE among Malaysian women. The objectives of this study were to quantify the content validity and response process validity of Breast Self-Examination Scale (BSES) using content validity indices and face validity indices.

METHODS

We developed BSES, which assessed the practice, knowledge and attitude towards BSE among women. The following subsections elaborates the details in development and judgement phases.

Development Phase

The tool was developed via three phases which include domain identification, domain blueprinting and item generation for each of the domains. The scale is a self-administered questionnaire. The three domains identified include the practice, knowledge and attitude towards BSE. Practice domain focused on how the respondents perform BSE. Knowledge domain concentrated on recognising the sign and symptoms of breast cancer, correct timing and method of performing BSE. Attitude domain focused on their attitude towards BSE. A blueprint of each domain derived after reviewing various published literature in the field of breast cancer (4,10-17). Subsequently,potential items of each domain generated.

Besides the items in the three main domains, the questionnaire also acquired respondents' demographics, for example, their age, marital status, ethnicity, personal and family history of breast cancer. We assessed BSE practice using multiple-choice questions, whereas the knowledge questions were multiple-choice with one or more than one correct answers to determine the respondents' level of knowledge of BSE. Each of the correct response awards one point; negative one point for the incorrect answer, and zero if left unanswered to discourage random guessing. For the attitude questions, respondents provide answer based on a five-point Likert scale (strongly agree to strongly disagree). One of the questions was structured to a dichotomous (Yes/ No) format.

Judgement Phase

This phase conducted in two stages included the content validation using the content validity index (CVI) and response process using face validity index (FVI). The following details the steps.

Content Validation

Content validation assessed the content validity of the items via the expert review. Content validity assesses the degree to which an instrument is reasonably representative of all the aspects of the construct and the relevance and representativeness of each item of the BSES to a specific domain by the expert panel (18). The content validation process carried out according to the six steps (18):

1. Preparing content validation form
2. Selecting a review panel of experts
3. Conducting content validation
4. Reviewing domain and items
5. Providing a score on each item
6. Calculating CVI

Step 1: Preparing Content Validation Form

We prepared the content validation form with the rating scale of the relevance for rating individual items. The scale ranged from 1 (the item is not relevant to the measured domain) to 4 (the item is very relevant to the measured domain) (18-22). Besides, a clear definition of each of the domain provided on the content validation form to aid the scoring process by the panel of experts.

Step 2: Selecting a Review Panel of Experts

The minimum number of experts acceptable for content validation is two persons (18). In the current study, a panel of three experts from the Department of Surgery and Breast Cancer Support Group, Miri Hospital invited to rate each item. Besides, the experts were responsible to review, provide recommendation and critique to refine the items.

Step 3: Conducting Content Validation

The content validation was conducted through a face-to-face approach as it was more efficient, convenient and the response rates were higher (18).

Step 4: Reviewing Domain and Items

The panel of experts critically reviewed the domain and items. Written comments or verbal feedback welcomed, to refine the domain and relevance of its items.

Step 5: Providing a Score on Each Item

The panel of experts scored each item independently based on the relevance of the items, after reviewing domains and items.

Step 6: Calculating CVI

The ratings of the expert panel were collected and analysed using Microsoft Excel. There are two types of CVI, namely item-level CVI (I-CVI) and scale-level CVI (S-CVI). The relevance rating of 3 or 4 recoded as 1, where as rating of 1 or 2 recoded as 0. The I-CVI was based on the average scorings for each item that were rated by the experts (18). S-CVI calculated by using two methods which are the average of the I-CVI scores for all items on the scale (S-CVI/Ave) or based on Universal Agreement (UA), which is the proportion of items on the scale that obtain a relevance rating of 3 or 4 by all experts (S-CVI/UA) (18,24). CVI values of 1 was considered acceptable for validation involving three expert (18).

Questionnaire Translation

The researchers developed the initial version of questionnaire in English language. After obtaining satisfactory evidence for content validity, the English version of questionnaire were translated into

the Malay language version using the forward and backward translation: (1) A bilingual researcher forward translated the English version into Malay language version, based on the principle of retaining meaning, rather than literal word-for-word translation, (2) A bilingual local Malay who was competent in both Malay and English back translated the Malay version to English, (3) A panel consisted of three members carefully reviewed both the forward and backward translations. All panel members were competent users of both languages.

Face Validation

The second stage was determination of FVI to assess the face validity of the developed questionnaire. The instrument judged by subjective assessment and based on the comprehensibility and clarity of each item of the questionnaire to the target respondents (23). We conducted the face validation according to the steps described by Yusoff (23):

1. Preparing response process validation form
2. Selecting a panel of raters
3. Conducting response process validation
4. Reviewing items for clarity
5. Providing a score on each item
6. Calculating FVI

Step 1: Preparing Face Validation Form

Face validation is also known as response process validation (23). We prepared a face validation form to ensure that the raters have a clear understanding and expectation about the task assigned. The instruction and rating scale of clarity and comprehension provided on the form to rate individual items (19-22). They could also provide any comment on the wording and questionnaire presentation.

Step 2: Selecting a Panel of Raters

We recruited the panel of ten raters from the pool of intended respondents to review and critique the BSES. The minimum acceptable number of raters for face validation is ten respondents (23). Each version of questionnaire were pre-tested among ten sample of women recruited over the pharmacy counters in Miri Hospital. The raters were women above 18 years old and able to read

and understand English or Malay language. A total of 20 raters rated the English and Malay language versions of questionnaire. The result of the process response validation was found to be good with two comments on the demographics question on the gravidity, and long term contraception use. No modification was necessary for items from the three domains. Subsequently, another panel of ten raters invited to rate the revised questionnaire.

Step 3: Conducting Response Process Validation

We carried out the validation via face-to-face approach by distributing the face validation form to the invited raters.

Step 4: Reviewing Items for Clarity

The raters rated all the items on the face validation form. The raters were requested to review all the items and provide verbal or written comments to improve the clarity and comprehensibility of the items. All the comments and ratings noted to refine the items.

Step 5: Providing a Score on Each Item

Upon reviewing all the items, we asked the raters to provide the scores for each item independently based on the clarity and comprehension scale of each item. Subsequently, they need to submit their responses upon completion.

Step 6: Calculating FVI

We used a Likert scale ranging from 0 to 4, from the least comprehensibility to the easiest comprehensibility, respectively (24). The data obtained was analysed using Microsoft Excel. The clarity rating of 3 or 4 recoded as 1, where as rating of 1 or 2 recoded as 0. There are two types of FVI, namely item-level FVI for scale (I-FVI) and scale-level FVI (S-FVI). The I-FVI was based on the average scorings for each item that were rated by the raters (23). S-FVI calculated by using two methods which are the average of the I-FVI scores for all items on the scale (S-FVI/Ave) and the proportion of items on the scale that obtain a clarity rating of 3 or 4 by all raters (S-FVI/UA) (23). In this study, we performed FVI computation for all items, including the demographics items to ensure the clarity of all items.

RESULTS

Content Validity

The I-CVI calculated based on the scorings for each item that were rated by the experts and then divided by the total number of experts (18). Items would be removed from the questionnaire if the I-CVI values are 0 as the items might not be relevant to the particular topic. In the current study, all items received relevance rating of 3 or 4, hence relevant as evident by I-CVI, S-CVI/Ave and S-CVI/UA for Practice domain (Table 1), Knowledge domain (Table 2) and Attitude domain (Table 3).

Table 1: Ratings on Breast Self-Examination Scale (Practice Domain) by Three Experts

	Expert 1	Expert 2	Expert 3		Experts in agreement	I-CVI	UA
Item							
Q1	1	1	1		3	1	1
Q2	1	1	1		3	1	1
Q3	1	1	1		3	1	1
Q4	1	1	1		3	1	1
Q5	1	1	1		3	1	1
Q6	1	1	1		3	1	1
					S-CVI/Ave	1	
Proportion relevance	1	1	1		**S-CVI/UA**		1
Average proportion of items judged as relevance across the 3 experts				1			

Table 2: Ratings on Breast Self-Examination Scale (Knowledge Domain) by Three Experts

	Expert 1	Expert 2	Expert 3		Experts in agreement	I-CVI	UA
Item							
Q1	1	1	1		3	1	1
Q2	1	1	1		3	1	1
Q3	1	1	1		3	1	1
Q4	1	1	1		3	1	1
Q5	1	1	1		3	1	1
Q6	1	1	1		3	1	1
Q7	1	1	1		3	1	1
Q8	1	1	1		3	1	1
Q9	1	1	1		3	1	1
					S-CVI/Ave	1	
Proportion relevance	1	1	1		**S-CVI/UA**		1
Average proportion of items judged as relevance across the 3 experts				1			

Table 3: Ratings on Breast Self-Examination Scale (Attitude Domain) by Three Experts

	Expert 1	Expert 2	Expert 3		Experts in agreement	I-CVI	UA
Item							
Q1	1	1	1		3	1	1
Q2	1	1	1		3	1	1
Q3	1	1	1		3	1	1
Q4	1	1	1		3	1	1
					S-CVI/Ave	1	
Proportion relevance	1	1	1		**S-CVI/UA**		1
Average proportion of items judged as relevance across the 3 experts				1			

Face Validity

We invited ten raters to rate the items of questionnaires in English and Malay versions, first and revised version, respectively. A total of 40 raters involved in the response process validation. In the initial versions, the FVI ranged between 0.94-1.00, suggesting that the items were clear and understandable. However, the raters commented on the demographics question on the gravidity, and long term contraception use. In the revised version, we modified the demographic item "Number of pregnancies" as it the initial version, was freqently omitted during the response process validation of the initial version. Hence, the it was rephrased to "Number of pregnancies: ____ *(If you have never been pregnant before, please specify "0")"* to differentiate no prior pregnancy from response omission. Besides, we also modified the word "long term contraception use" to "long term hormonal contraception use" to avoid confusion. Although no modification needed for items from the three domains, another panel of ten raters invited to rate the revised questionnaire. The revised version required no further modification. The following tables summarise the FVI values.

Table 4: Ratings on Initial Malay version of Breast Self-Examination Scale by Ten Raters

	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5	Rater 6	Rater 7	Rater 8	Rater 9	Rater 10		Raters in agreement	I-FVI	UA
Demographics														
Q1	1	1	1	1	1	1	1	1	1	1		10	1	1
Q2	1	1	1	1	1	1	1	1	1	1		10	1	1
Q3	1	1	1	1	1	1	1	1	1	1		10	1	1
Q4	1	1	1	1	1	1	1	1	1	1		10	1	1
Q5	1	1	1	1	1	1	1	1	1	1		10	1	1
Q6	1	1	1	1	1	1	1	1	1	1		10	1	1
Q7	1	1	1	1	1	1	1	1	1	1		10	1	1
Q8	1	1	1	1	1	1	1	1	1	1		10	1	1
Q9	1	1	1	1	1	1	1	1	1	1		10	1	1
Q10	1	1	1	1	1	1	1	1	1	1		10	1	1
Q11	1	1	1	1	1	1	1	1	1	1		10	1	1
Q12	1	1	1	1	1	1	1	1	1	1		10	1	1
Q13	1	1	1	1	0	1	1	1	1	1		9	0.9	0
Q14	1	1	1	1	1	1	1	1	1	1		10	1	1
Q15	1	1	1	1	1	1	1	1	1	1		10	1	1
Q16	1	1	1	1	1	1	1	1	1	1		10	1	1
												S-FVI/Ave	0.99	
Proportion clarity and comprehensibility	1	1	1	1	0.94	1	1	1	1	1		**S-FVI/UA**		0.94
Average proportion of items judged clarity and comprehensibility across the 10 raters											0.99			

	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5	Rater 6	Rater 7	Rater 8	Rater 9	Rater 10		Raters in agreement	I-CVI	UA
Practice of BSE														
Q1	1	1	1	1	1	1	1	1	1	1		10	1	1
Q2	1	1	1	1	1	1	1	1	1	1		10	1	1
Q3	1	1	1	1	1	1	1	1	1	1		10	1	1
Q4	1	1	1	1	1	1	1	1	1	1		10	1	1
Q5	1	1	1	1	1	1	1	1	1	1		10	1	1
Q6	1	1	1	1	1	1	1	1	1	1		10	1	1
												S-FVI/Ave	1	
Proportion clarity and comprehensibility	1	1	1	1	1	1	1	1	1	1		**S-FVI/UA**		1
Average proportion of items judged clarity and comprehensibility across the 10 raters											1			

	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5	Rater 6	Rater 7	Rater 8	Rater 9	Rater 10		Raters in agreement	I-CVI	UA
Knowledge of BSE														
Q1	1	1	1	1	1	1	1	1	1	1		10	1	1
Q2	1	1	1	1	1	1	1	1	1	1		10	1	1
Q3	1	1	1	1	1	1	1	1	1	1		10	1	1
Q4	1	1	1	1	1	1	1	1	1	1		10	1	1
Q5	1	1	1	1	1	1	1	1	1	1		10	1	1
Q6	1	1	1	1	1	1	1	1	1	1		10	1	1
Q7	1	1	1	1	1	1	1	1	1	1		10	1	1
Q8	1	1	1	1	1	1	1	1	1	1		10	1	1
Q9	1	1	1	1	1	1	1	1	1	1		10	1	1
												S-FVI/Ave	1	
Proportion clarity and comprehensibility	1	1	1	1	1	1	1	1	1	1		**S-FVI/UA**		1
Average proportion of items judged clarity and comprehensibility across the 10 raters											1			

	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5	Rater 6	Rater 7	Rater 8	Rater 9	Rater 10		Raters in agreement	I-CVI	UA
Attitude Towards BSE														
Q1	1	1	1	1	1	1	1	1	1	1		10	1	1
Q2	1	1	1	1	1	1	1	1	1	1		10	1	1
Q3	1	1	1	1	1	1	1	1	1	1		10	1	1
Q4	1	1	1	1	1	1	1	1	1	1		10	1	1
												S-FVI/Ave	1	
Proportion clarity and comprehensibility	1	1	1	1	1	1	1	1	1	1		**S-FVI/UA**		1
Average proportion of items judged clarity and comprehensibility across the 10 raters											1			

Table 5: Ratings on Modified Malay version of Breast Self-Examination Scale by Ten Raters

	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5	Rater 6	Rater 7	Rater 8	Rater 9	Rater 10		Raters in agreement	I-FVI	UA
Demographics														
Q1	1	1	1	1	1	1	1	1	1	1		10	1	1
Q2	1	1	1	1	1	1	1	1	1	1		10	1	1
Q3	1	1	1	1	1	1	1	1	1	1		10	1	1
Q4	1	1	1	1	1	1	1	1	1	1		10	1	1
Q5	1	1	1	1	1	1	1	1	1	1		10	1	1
Q6	1	1	1	1	1	1	1	1	1	1		10	1	1
Q7	1	1	1	1	1	1	1	1	1	1		10	1	1
Q8	1	1	1	1	1	1	1	1	1	1		10	1	1
Q9	1	1	1	1	1	1	1	1	1	1		10	1	1
Q10	1	1	1	1	1	1	1	1	1	1		10	1	1
Q11	1	1	1	1	1	1	1	1	1	1		10	1	1
Q12	1	1	1	1	1	1	1	1	1	1		10	1	1
Q13	1	1	1	1	1	1	1	1	1	1		10	1	1
Q14	1	1	1	1	1	1	1	1	1	1		10	1	1
Q15	1	1	1	1	1	1	1	1	1	1		10	1	1
Q16	1	1	1	1	1	1	1	1	1	1		10	1	1
												S-FVI/Ave	1	
Proportion clarity and comprehensibility	1	1	1	1	1	1	1	1	1	1		**S-FVI/UA**		1
Average proportion of items judged clarity and comprehensibility across the 10 raters											1			

	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5	Rater 6	Rater 7	Rater 8	Rater 9	Rater 10		Raters in agreement	I-CVI	UA
Practice of BSE														
Q1	1	1	1	1	1	1	1	1	1	1		10	1	1
Q2	1	1	1	1	1	1	1	1	1	1		10	1	1
Q3	1	1	1	1	1	1	1	1	1	1		10	1	1
Q4	1	1	1	1	1	1	1	1	1	1		10	1	1
Q5	1	1	1	1	1	1	1	1	1	1		10	1	1
Q6	1	1	1	1	1	1	1	1	1	1		10	1	1
												S-FVI/Ave	1	
Proportion clarity and comprehensibility	1	1	1	1	1	1	1	1	1	1		**S-FVI/UA**		1
Average proportion of items judged clarity and comprehensibility across the 10 raters											1			

	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5	Rater 6	Rater 7	Rater 8	Rater 9	Rater 10		Raters in agreement	I-CVI	UA
Knowledge of BSE														
Q1	1	1	1	1	1	1	1	1	1	1		10	1	1
Q2	1	1	1	1	1	1	1	1	1	1		10	1	1
Q3	1	1	1	1	1	1	1	1	1	1		10	1	1
Q4	1	1	1	1	1	1	1	1	1	1		10	1	1
Q5	1	1	1	1	1	1	1	1	1	1		10	1	1
Q6	1	1	1	1	1	1	1	1	1	1		10	1	1
Q7	1	1	1	1	1	1	1	1	1	1		10	1	1
Q8	1	1	1	1	1	1	1	1	1	1		10	1	1
Q9	1	1	1	1	1	1	1	1	1	1		10	1	1
												S-FVI/Ave	1	
Proportion clarity and comprehensibility	1	1	1	1	1	1	1	1	1	1		**S-FVI/UA**		1
Average proportion of items judged clarity and comprehensibility across the 10 raters											1			

	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5	Rater 6	Rater 7	Rater 8	Rater 9	Rater 10		Raters in agreement	I-CVI	UA
Attitude Towards BSE														
Q1	1	1	1	1	1	1	1	1	1	1		10	1	1
Q2	1	1	1	1	1	1	1	1	1	1		10	1	1
Q3	1	1	1	1	1	1	1	1	1	1		10	1	1
Q4	1	1	1	1	1	1	1	1	1	1		10	1	1
												S-FVI/Ave	1	
Proportion clarity and comprehensibility	1	1	1	1	1	1	1	1	1	1		**S-FVI/UA**		1
Average proportion of items judged clarity and comprehensibility across the 10 raters											1			

Table 6: Ratings on Initial English version of Breast Self-Examination Scale by Ten Raters

	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5	Rater 6	Rater 7	Rater 8	Rater 9	Rater 10		Raters in agreement	I-FVI	UA
Demographics														
Q1	1	1	1	1	1	1	1	1	1	1		10	1	1
Q2	1	1	1	1	1	1	1	1	1	1		10	1	1
Q3	1	1	1	1	1	1	1	1	1	1		10	1	1
Q4	1	1	1	1	1	1	1	1	1	1		10	1	1
Q5	1	1	1	1	1	1	1	1	1	1		10	1	1
Q6	1	1	1	1	1	1	1	1	1	1		10	1	1
Q7	1	1	1	1	1	1	1	1	1	1		10	1	1
Q8	1	1	1	1	1	1	1	1	1	1		10	1	1
Q9	1	1	1	1	1	1	1	1	1	1		10	1	1
Q10	1	1	1	1	1	1	1	1	1	1		10	1	1
Q11	1	1	1	1	1	1	1	1	1	1		10	1	1
Q12	1	1	1	1	1	1	1	1	1	1		10	1	1
Q13	1	0	1	1	1	1	1	1	1	1		9	0.9	0
Q14	1	1	1	1	1	1	1	1	1	1		10	1	1
Q15	1	1	1	1	1	1	1	1	1	1		10	1	1
Q16	1	1	1	1	1	1	1	1	1	1		10	1	1
												S-FVI/Ave	0.99	
Proportion clarity and comprehensibility	1	0.94	1	1	1	1	1	1	1	1		**S-FVI/UA**		0.94
Average proportion of items judged clarity and comprehensibility across the 10 raters											0.99			

	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5	Rater 6	Rater 7	Rater 8	Rater 9	Rater 10		Raters in agreement	I-CVI	UA
Practice of BSE														
Q1	1	1	1	1	1	1	1	1	1	1		10	1	1
Q2	1	1	1	1	1	1	1	1	1	1		10	1	1
Q3	1	1	1	1	1	1	1	1	1	1		10	1	1
Q4	1	1	1	1	1	1	1	1	1	1		10	1	1
Q5	1	1	1	1	1	1	1	1	1	1		10	1	1
Q6	1	1	1	1	1	1	1	1	1	1		10	1	1
												S-FVI/Ave	1	
Proportion clarity and comprehensibility	1	1	1	1	1	1	1	1	1	1		**S-FVI/UA**		1
Average proportion of items judged clarity and comprehensibility across the 10 raters											1			

	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5	Rater 6	Rater 7	Rater 8	Rater 9	Rater 10		Raters in agreement	I-CVI	UA
Knowledge of BSE														
Q1	1	1	1	1	1	1	1	1	1	1		10	1	1
Q2	1	1	1	1	1	1	1	1	1	1		10	1	1
Q3	1	1	1	1	1	1	1	1	1	1		10	1	1
Q4	1	1	1	1	1	1	1	1	1	1		10	1	1
Q5	1	1	1	1	1	1	1	1	1	1		10	1	1
Q6	1	1	1	1	1	1	1	1	1	1		10	1	1
Q7	1	1	1	1	1	1	1	1	1	1		10	1	1
Q8	1	1	1	1	1	1	1	1	1	1		10	1	1
Q9	1	1	1	1	1	1	1	1	1	1		10	1	1
												S-FVI/Ave	1	
Proportion clarity and comprehensibility	1	1	1	1	1	1	1	1	1	1		**S-FVI/UA**		1
Average proportion of items judged clarity and comprehensibility across the 10 raters											1			

	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5	Rater 6	Rater 7	Rater 8	Rater 9	Rater 10		Raters in agreement	I-CVI	UA
Attitude Towards BSE														
Q1	1	1	1	1	1	1	1	1	1	1		10	1	1
Q2	1	1	1	1	1	1	1	1	1	1		10	1	1
Q3	1	1	1	1	1	1	1	1	1	1		10	1	1
Q4	1	1	1	1	1	1	1	1	1	1		10	1	1
												S-FVI/Ave	1	
Proportion clarity and comprehensibility	1	1	1	1	1	1	1	1	1	1		**S-FVI/UA**		1
Average proportion of items judged clarity and comprehensibility across the 10 raters											1			

Table 7: Ratings on Modified English version of Breast Self-Examination Scale by Ten Raters

	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5	Rater 6	Rater 7	Rater 8	Rater 9	Rater 10		Raters in agreement	I-FVI	UA
Demographics														
Q1	1	1	1	1	1	1	1	1	1	1		10	1	1
Q2	1	1	1	1	1	1	1	1	1	1		10	1	1
Q3	1	1	1	1	1	1	1	1	1	1		10	1	1
Q4	1	1	1	1	1	1	1	1	1	1		10	1	1
Q5	1	1	1	1	1	1	1	1	1	1		10	1	1
Q6	1	1	1	1	1	1	1	1	1	1		10	1	1
Q7	1	1	1	1	1	1	1	1	1	1		10	1	1
Q8	1	1	1	1	1	1	1	1	1	1		10	1	1
Q9	1	1	1	1	1	1	1	1	1	1		10	1	1
Q10	1	1	1	1	1	1	1	1	1	1		10	1	1
Q11	1	1	1	1	1	1	1	1	1	1		10	1	1
Q12	1	1	1	1	1	1	1	1	1	1		10	1	1
Q13	1	1	1	1	1	1	1	1	1	1		10	1	1
Q14	1	1	1	1	1	1	1	1	1	1		10	1	1
Q15	1	1	1	1	1	1	1	1	1	1		10	1	1
Q16	1	1	1	1	1	1	1	1	1	1		10	1	1
												S-FVI/Ave	1	
Proportion clarity and comprehensibility	1	1	1	1	1	1	1	1	1	1		**S-FVI/UA**		1
Average proportion of items judged clarity and comprehensibility across the 10 raters											1			

	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5	Rater 6	Rater 7	Rater 8	Rater 9	Rater 10		Raters in agreement	I-CVI	UA
Practice of BSE														
Q1	1	1	1	1	1	1	1	1	1	1		10	1	1
Q2	1	1	1	1	1	1	1	1	1	1		10	1	1
Q3	1	1	1	1	1	1	1	1	1	1		10	1	1
Q4	1	1	1	1	1	1	1	1	1	1		10	1	1
Q5	1	1	1	1	1	1	1	1	1	1		10	1	1
Q6	1	1	1	1	1	1	1	1	1	1		10	1	1
												S-FVI/Ave	1	
Proportion clarity and comprehensibility	1	1	1	1	1	1	1	1	1	1		**S-FVI/UA**		1
Average proportion of items judged clarity and comprehensibility across the 10 raters											1			

	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5	Rater 6	Rater 7	Rater 8	Rater 9	Rater 10		Raters in agreement	I-CVI	UA
Knowledge of BSE														
Q1	1	1	1	1	1	1	1	1	1	1		10	1	1
Q2	1	1	1	1	1	1	1	1	1	1		10	1	1
Q3	1	1	1	1	1	1	1	1	1	1		10	1	1
Q4	1	1	1	1	1	1	1	1	1	1		10	1	1
Q5	1	1	1	1	1	1	1	1	1	1		10	1	1
Q6	1	1	1	1	1	1	1	1	1	1		10	1	1
Q7	1	1	1	1	1	1	1	1	1	1		10	1	1
Q8	1	1	1	1	1	1	1	1	1	1		10	1	1
Q9	1	1	1	1	1	1	1	1	1	1		10	1	1
												S-FVI/Ave	1	
Proportion clarity and comprehensibility	1	1	1	1	1	1	1	1	1	1		**S-FVI/UA**		1
Average proportion of items judged clarity and comprehensibility across the 10 raters											1			

	Rater 1	Rater 2	Rater 3	Rater 4	Rater 5	Rater 6	Rater 7	Rater 8	Rater 9	Rater 10		Raters in agreement	I-CVI	UA
Attitude Towards BSE														
Q1	1	1	1	1	1	1	1	1	1	1		10	1	1
Q2	1	1	1	1	1	1	1	1	1	1		10	1	1
Q3	1	1	1	1	1	1	1	1	1	1		10	1	1
Q4	1	1	1	1	1	1	1	1	1	1		10	1	1
												S-FVI/Ave	1	
Proportion clarity and comprehensibility	1	1	1	1	1	1	1	1	1	1		**S-FVI/UA**		1
Average proportion of items judged clarity and comprehensibility across the 10 raters											1			

DISCUSSION

BSE is a good practice to detect early alarming signs and symptoms of breast cancer (5). The purpose of developing the BSES is to assess women's practice, knowledge and attitude towards BSE among women in local community due to the lack of an international standardised questionnaire on BSE (17). We developed the tool in English and Malay language to suit the local population as the languages are two major languages used locally. The item development was based on a few other works of literature (4, 10-17). The questionnaire developed to include the majority aspects of breast cancer awareness such as knowledge, practice and attitude towards BSE.

Throughout the judgement phase, several items in the questionnaire critiqued and rephrased. We aimed to ensure the content and context of the items are relevant to the domains. Besides, we would like our target respondents to have acceptable clarity and comprehension about all the items under each domain. Based on the rating by the panel of experts, the questionnaire demonstrated acceptable content validity. It is worthy of highlighting that the content validity process is one of the priorities while developing a new tool as this step is a prerequisite step for any other forms of validation.

In the response process validation, the raters provided feedback on two of the demographics items, i.e the item related to gravidity and long term contraception. The 16 demographics items, 6 items in Practice domain, 9 items in Knowledge domain and 4 items in Attitude domain scored a high level of response process validity, indicated by the high FVI values. However, modification made to the items despite the I-FVI and both S-FVI/Ave and S-FVI/UA were acceptable (≥0.83) (23) following comments received. Following the modifications, we pre-tested the version among ten raters for the English and Malay language versions, respectively. The results demonstrated that the items in both versions are relevant, clear and understandable.

In our study, the response rate in response process validation phase was high, therefore face-to-face approach is efficient as suggested by the author, Yusoff (23). The rate of missing data was low, except for one of the questions related to gravidity, which prompted some modifications. This indicates that the questions are clear and understandable to the participants. Besides, there was no sensitive or probing question, which may lead to the refusal to respond to the questions.

There are several limitations in this study. The content validation study participated by three experts may not be representative of all professionals in the field of breast cancer. The reasons were mainly due to limited experts related to this field in our hospital. However, the indices obtained were acceptable for all domains. Therefore, the researchers were confident that the content suffices.

There was also concern regarding the language barrier that might be present during the face validation study. Some patients with different education background might not be able to understand some of the words in the questionnaire, thus difficult to make a reasonable judgement and provide constructive feedback. However, the study showed that the items were clear and understandable to the sample of women participated in the response process validation.

In conclusion, the results from this study showed that BSES is a valid tool for assessing the practice, knowledge and attitude of BSE among women. It is also culturally acceptable and used among different races in Malaysia. Healthcare professionals may utilise the questionnaire to evaluate the level of knowledge, the practice and their attitude towards practising BSE among Malaysian women. This could be used in breast cancer educational campaigns to identify the target group with low knowledge, improper practice or poor attitude in practising BSE. Subsequently, fill in the gap in order to raise the BSE awareness. By understanding the lacking elements, this could help to guide the authorities to implement effective intervention to improve women BSE practice for early detection to reduce the rate of morbidity and mortality associated with breast cancer.

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