THE COMPREHENSIVE BREAST CANCER KNOWLEDGE TEST: VALIDITY AND RELIABILITY

by

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College of Nursing
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This thesis has been read by each member of the following supervisory committee and by majority vote has been found to be satisfactory.

Royce Moser
To the Graduate Council of the University of Utah:

I have read the thesis of Jennifer Lou in its final form and have found that (1) its format, citations, and bibliographic style are consistent and acceptable; (2) its illustrative materials including figures, tables, and charts are in place; (3) the final manuscript is satisfactory to the Supervisory Committee and is ready for submission to the Graduate School.

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ABSTRACT

Two subscales for a breast cancer knowledge test were developed and tested to be used (a) in determining a woman's general knowledge of breast cancer (i.e., risk factors and epidemiology) and her knowledge of breast cancer curability, and (b) in exploring the relationship between knowledge of breast cancer and utilization of screening practices. These subscales were designed to be used in conjunction with the Breast Cancer Knowledge Test (BCKT), which assesses screening and detection knowledge.

The instrument was submitted to four experts in the field of oncology to establish content validity. Reliability testing was conducted on a random sample of 182 women. Internal consistency reliability for the posttested General Knowledge subscale was .60, and for the Curability subscale was .62. The overall alpha coefficient was .71. In combination with the BCKT, these subscales can be used by researchers studying the relationship between knowledge and screening practices.
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CHAPTER I

INTRODUCTION

Estimates by the American Cancer Society indicate that one in nine women will have breast cancer at some point in their life (American Cancer Society 1991). Further, breast cancer is one of the leading causes of death in women over age 34 (Silverberg & Lubera 1989). In spite of advances in cancer therapeutics over the past several decades, no change in the breast cancer mortality rate has been realized (Shapiro 1989). Although several risk factors for breast cancer are widely accepted, researchers have been unable to develop an effective preventive program. Three major risk factors, i.e., sex, age, and family history, are not amenable to primary prevention. Approximately 75% of women with breast cancer do not have any of the known risk factors (Strax 1989). If detected after spreading to adjacent lymph nodes, the 5-year survival rate is 62% in Anglo-American women with breast cancer and 47% in African-American women. However, there is a 90% five-year survival rate in Anglo-American women and an 86% five-year survival rate in African-American women if breast cancer is detected and treated early, while still localized (Silverberg & Lubera 1989).
Therefore, early detection is currently the best weapon in the fight against breast cancer. Unfortunately, only 48% of cases are diagnosed while the disease is still localized (Silverberg & Lubera 1989).

A combination of Breast Self Exam (BSE), professional examinations, and screening mammography has been shown to lead to early detection of breast cancer (Huguley & Brown 1981, Miller et al. 1985, Moskowitz & Gartside 1982, Shapiro et al. 1982). Unfortunately, screening techniques are woefully underused, particularly in the older population. For example, one recent breast cancer study reported that less than 6% of their sample (i.e., 320 women over age 60) had ever had a mammogram (Brown & Hulka 1988). Data from the 1987 National Health Interview Survey (women ages 50 to 74) indicated that during the preceding year only 47% had had a professional breast examination, and only 25% had had a mammogram. Only 45% of surveyed women had ever had a mammogram (NCI Breast Cancer Screening Consortium 1990).

In the past 15 years, numerous studies have been conducted in an attempt to determine what factors promote or inhibit breast cancer screening behaviors in women. Factors correlated with screening behaviors include sufficiency of instruction in BSE, perceived susceptibility, barriers to screening, level of confidence in performing BSE, breast cancer knowledge, demographic

It is interesting that few tools have been published to measure the above-mentioned factors. The purpose of this study was to develop a tool that would measure one of these factors: breast cancer knowledge. In 1987, Mooney and McCance developed and tested a Breast Cancer Knowledge Test (BCKT). They have published the screening and detection subscale only (McCance et al. 1990). This study builds on the BCKT, revising the two weaker subscales (i.e., General Knowledge and Curability), to improve their reliability.
CHAPTER II

REVIEW OF LITERATURE

A review of health care literature yielded three published instruments for assessing breast cancer knowledge (McCance et al. 1990, Roberts et al. 1984, Stillman 1977). Several other researchers refer to breast cancer knowledge tests developed and utilized as portions of more comprehensive questionnaires. None of these, however, was published, nor was specific reliability or validity measures reported (e.g., Brailey 1986, Champion 1984, Champion 1987, Reeder et al. 1980, Zapka et al. 1989).

Stillman’s (1977) breast cancer knowledge test is a four-item subscale of a larger questionnaire based on Rosenstock’s Health Belief Model. It was designed to test women’s knowledge of the prevalence and possible causes of breast cancer, as well as the age groups affected. To establish content validity, items were read for clarity, readability, and understandability by five graduate nursing students. Reliability was, however, determined using only 20 women.

In 1984, Roberts et al. published a structured interview designed and utilized to determine the level of
knowledge of Scottish women regarding breast cancer and BSE. It includes five items on breast anatomy, physiology, and breast cancer, and four questions relating to breast cancer curability, screening, and detection. No validity or reliability measures were reported.

The McCance et al. (1990) BCKT is an 18-item, multiple-choice test developed to measure a woman's knowledge of screening and detection measures for breast cancer. Four experts in the field of oncology were used to establish content validity. Reliability testing was conducted on a convenience sample of 101 women aged 50 or older. In this sample, the reported internal consistency reliability using the Kuder-Richardson 20 statistic (KR20) was 0.81 (McCance et al. 1990). Their other two knowledge subscales, i.e., General Knowledge and Curability, were not published--pending further revision and reliability testing.

Many studies have examined breast cancer knowledge in specific populations of women and the effect of this knowledge on screening behaviors. Amsel et al. (1984) found that knowledge of the etiology of and risk factors for breast cancer had a statistically significant association with BSE performance. Champion (1987) reported knowledge to be the second highest predictor of frequency of BSE. Gray (1990) noted a significant relationship between knowledge of breast cancer and BSE
and BSE practice. Mamon and Zapka (1986) studied undergraduate and graduate students and found knowledge of risk factors to be associated with frequency of BSE in graduate students and with proficiency of BSE in both categories of students. Dickson et al. (1986) similarly found more knowledge to be predictive of greater frequency of BSE practice. Roberts et al. (1984) found knowledge to be related to preventive health behavior. In a study by Reeder et al. (1980), breast cancer knowledge was found to be the only factor significantly correlated with BSE.

Other researchers have found no correlation between breast cancer knowledge and screening behavior (Magarey et al. 1977, Schlueter 1982). Brailey (1986) tested BSE instructional strategies and found that when BSE technique and frequency improved, there was no corresponding increase in breast cancer knowledge. Zapka et al. (1989) found screening knowledge, but not risk factor knowledge, to be related to obtaining mammograms. Nemcek (1989) found knowledge scores to be low and found no relationship between knowledge scores and BSE frequency.

The relationship of knowledge of curability to screening behavior has not been as extensively studied. One study reported that "feeling that once a woman finds a breast lump, it is not too late to do anything about it" was predictive of a self-report of monthly BSE (National Institute of Health 1980, p. 156). In comparing acceptors
and rejectors of an invitation to a breast cancer screening clinic and self-referred women, 37% of rejectors (compared to 17% of acceptors and no self-referred women) stated that cancer could never be cured (Hobbs et al. 1980). Magarey et al. (1977), however, found fear of death or breast loss to be unrelated to BSE practice.

Several researchers have considered the effects of both breast cancer general knowledge and knowledge of curability on screening behavior. However, to date, no tools to measure these factors individually have been published. It was the intent of this study to develop and test a tool to measure knowledge of breast cancer risk factors, incidence, and curability.
CHAPTER III

METHOD

Item Generation

Initially, 24 true/false/don't know items for the General Knowledge subscale and 17 for the Curability subscale were generated. Item content was based on a review of literature, on a review of the McCance et al. (1990) pilot-tested subscales, on the researcher's clinical knowledge, and on interviews with 20 women who met the sampling characteristics.

A convenience sample of women was interviewed to ascertain current perceptions and misconceptions regarding breast cancer risk factors and curability. Items were written addressing misconceptions that were mentioned frequently or that seemed plausible enough to be answered incorrectly by many women. Using these criteria, four misperceptions were addressed in the General Knowledge subscale and four in the Curability subscale.

A review of literature covered the past 5-10 years regarding breast cancer epidemiology, risk factors, and curability/treatment. Risk factors accepted by most experts and researchers were included. Highly controversial risk factors were not included in order to
produce a more valid instrument. Factors included were age, family history, radiation exposure, early onset of menses, late age at menopause, overweight, nulliparity, late age at first pregnancy, previous history of breast cancer, some types of fibrocystic breast disease, living in the U.S., and race. Diet, alcohol and tobacco usage, breast feeding history, height, and oral contraceptive and hormonal use were not addressed. An attempt was made to include two or more items on factors considered highly significant in order to ensure at least one reliable item for each of these factors (e.g., primary family history as a risk factor and the potential for use of lumpectomy vs. mastectomy for very early breast cancer).

**Content Validation**

Content validity was established utilizing four experts in the field of oncology, two each from the fields of oncologic nursing and medical oncology. They were asked to provide input as to the relevancy, adequacy, accuracy, and wording of the items. Based on their comments, one item considered irrelevant was deleted, as was one item considered too difficult. Ten items were reworded to improve accuracy or clarity.

One expert expressed concern that only certain major issues (e.g., age, family history, incidence, and screening recommendations) should be addressed and that including others may only confuse women. The researcher
believed, however, that most information used in item writing was accessible to women in lay literature and media. It was further thought that by restricting domain sampling that the instrument's reliability and validity would be jeopardized. Each issue of concern expressed by this content expert had already been addressed by one or more items, with the exception of one issue properly belonging in the screening and detection domain. As screening and detection was not within the scope of this research, no items were added.

**Pilot Testing**

The entire instrument, including demographic and screening practice questions, was printed in large bold print and pilot tested on a convenience sample of 20 women. The women were asked to complete the instrument, noting any items that were ambiguous, poorly worded, or unclear, or any use of uncommon medical terminology. These women took an average of 11 minutes to complete the instrument. Following completion, they were asked for any comments or suggestions regarding the instructions, items, or format. Based on their input, two items were deleted, seven were reworded, and a section was added to enable respondents to indicate a desire for breast cancer information from the researcher.
Reliability

A random sample of 182 women 50 years and older was used for reliability testing. This particular age group was selected because of the increase in breast cancer risk, the researcher's interest in the older population, and to correspond with the BCKT. Nurses, physicians, and women with a positive family history (i.e., sister, mother, or self) of breast cancer were excluded because of the potential effect on breast cancer knowledge. Also, women unable to read and write English or physically unable to complete the questionnaire were excluded.

Items answered correctly were given a score of "1"; and items marked "don't know" and those answered incorrectly were given a score of "0." Items were deleted or retained using biserial correlations (i.e., a form of the Pearson product-moment statistic used when one variable is dichotomous). Items with low biserial correlations ($r < 0.20$) were deleted, and those with biserial correlations ($r > 0.40$) were retained. (If the correlation was between 0.20 and 0.40, clinically significant items were retained [McCance et al. 1990]). Biserial correlations were rerun using only retained items. Internal consistency reliability was then established for each subscale using the KR20 statistic, a form of Cronbach's alpha when one variable is dichotomous.
CHAPTER IV

RESULTS

Sample Characteristics

Random digit dialing was utilized to obtain a random sampling of women in Salt Lake County. At least 10 callbacks were made to obtain an interview, including morning, afternoon, evening, and weekend attempts. One thousand three households were contacted, 291 of which contained 1 or more women age 50 or over, and 75 of which refused participation before household characteristics could be determined. Of the 291 households with women 50 or over, 73 were disqualified: (a) 47 with a close family history of breast cancer, (b) 17 medical professionals, (c) 8 with a language barrier, and (d) 1 with a physical disability. Fourteen of the qualifying women refused to participate in the study. In households with more than 1 woman meeting the sample criteria, 1 subject was randomly chosen.

Two hundred four women agreed to receive instruments through the mail and return them in addressed, stamped envelopes. They were asked to use only their personal knowledge to answer the questions, consulting no other person or written material. If questionnaires were not
returned within 2 1/2 weeks, subjects were contacted by phone to remind them or to answer any concerns regarding the study. They were called 2 1/2 weeks later if they still had not returned the questionnaire.

One hundred eighty-two questionnaires were returned and used in data analysis. A call was made to women who missed an entire page of items, and answers were obtained for this page. However, if a woman skipped an occasional question, she was not contacted. A woman's responses were not used to determine reliabilities for a subscale in which she left any item unanswered. It was believed that not enough was known about a participant's knowledge of this domain to use her responses to determine subscale reliabilities. Therefore, less than the full sample of women was used for determining reliabilities for each subscale.

The mean age of responding women was 62.3 years (SD = 8.5 years). Women ranged in age from 50 to 89; 45% were 50-59 years-old, 33% were 60-69 years-old, 18% were 70-79 years-old, and 4% were 80-89 years-old. Most women were married (72.8%); 15.6% were widowed; 9.4% were divorced; and 2.2% were single. The predominate ethnic group was Anglo American (91%), with 5% Native American, 3% Hispanic American, 0.6% Asian American, and 0.6% other. The predominate religion was Latter-day Saints (LDS) (71%), with 12% Catholic, 11.1% Protestant, and 7% other. Most
responding women (51.4%) had 12 years of formal education (i.e., high school graduates). Fifteen women (8.4%) had less than 12 years, 22.2% had 13-15 years, 15.6% had 16 years, and 3.4% had more than 16 years of formal education. With respect to income, 36.6% reported a household income of below $20,000; 42.9% reported an income of between $20,000 and $39,999; and 20.1% reported an income of $40,000 or more. "Homemaker and mother" was listed as the main occupation in 46.2% of cases; 39.6% listed skilled positions; 10.7% listed professional positions; and 3.6% listed unskilled positions as their main occupation.

Women also were asked about their screening practices. Most women said they do BSE (74.7%). Of these women, 44.3% reported doing BSE monthly; 45% reported doing BSE at least every few months but less than monthly. The majority of women (75.7%) also reported having had mammograms, with 78% of these women having had them within the past year (11% more than 5 years ago). Most women also reported obtaining professional examinations (89.2%): (a) 54.7% of these at least yearly, (b) 20.8% every 2 years, and (c) 14.5% within 2 to 5 years.

Women in this sample had more knowledge of breast cancer curability than of risk factors and incidence of breast cancer. Table 1 shows the percentage of correct answers for each subscale and for the total score. Sixty-
Table 1

Percentage of Correct Answers for Each Subscale and Total Score

<table>
<thead>
<tr>
<th></th>
<th>Percentage of correct answers</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>≥25</td>
<td>≥50</td>
<td>≥75</td>
<td>100</td>
<td>Valid cases</td>
<td></td>
</tr>
<tr>
<td>General Knowledge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>174</td>
</tr>
<tr>
<td>(12 items)</td>
<td>86</td>
<td>42</td>
<td>10</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Curability</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>177</td>
</tr>
<tr>
<td>(8 items)</td>
<td>97</td>
<td>85</td>
<td>62</td>
<td>14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total score</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>170</td>
</tr>
<tr>
<td>(20 items)</td>
<td>95</td>
<td>65</td>
<td>16</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

two percent of women gave correct answers for 75% or more of the Curability items, while only 10% answered 75% of the General Knowledge items correctly. All Curability items were answered correctly by 14% of the women. No women answered all General Knowledge items correctly. Only 65% of the women were able to answer at least 50% of all items correctly.

Reliability

In the General Knowledge subscale, 7 items had biserial correlations greater than .40 and were retained. Two items had correlation coefficients less than .20 and were deleted. Of the 13 items with biserial correlations...
between .20 and .40, 5 were considered clinically significant and were therefore retained (McCance et al. 1990).

In the Curability subscale, 7 items had correlation coefficients greater than .40 and were retained. Two items were deleted for biserial correlations less than .20, and 1 item with a correlation between .20 and .40 was considered clinically significant and retained. Table 2 shows the final correlation coefficients of the retained items for both subscales.

The KR20 for internal consistency reliability was then calculated for the posttested subscales, using retained items only. The KR20 (i.e., standardized item alpha) for the General Knowledge subscale was .60 and for the Curability subscale was .62. The overall KR20 for the two subscales combined was .71. Correlations were run between use and frequency of screening methods and scores on the subscales. No significant correlation was found between women's scores and use or frequency of mammography or professional examinations. There was a weak but significant correlation between subscale scores and utilization of BSE. For the General Knowledge subscale, the correlation with BSE utilization was .17 (N = 177, p = .01). The correlation of the Curability subscale with BSE utilization was .18 (N = 178, p = .01).
Table 2

correlation Coefficients of the Retained Items for Both Subscales

<table>
<thead>
<tr>
<th>Question number</th>
<th>Percent answered correctly</th>
<th>Standard error</th>
<th>Biserial correlation</th>
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<tr>
<td><strong>General Knowledge</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>25</td>
<td>0.03</td>
<td>0.43</td>
</tr>
<tr>
<td>2</td>
<td>46</td>
<td>0.04</td>
<td>0.44</td>
</tr>
<tr>
<td>3</td>
<td>44</td>
<td>0.04</td>
<td>0.54</td>
</tr>
<tr>
<td>4</td>
<td>29</td>
<td>0.03</td>
<td>0.27</td>
</tr>
<tr>
<td>5</td>
<td>62</td>
<td>0.04</td>
<td>0.41</td>
</tr>
<tr>
<td>6</td>
<td>69</td>
<td>0.03</td>
<td>0.41</td>
</tr>
<tr>
<td>7</td>
<td>25</td>
<td>0.03</td>
<td>0.44</td>
</tr>
<tr>
<td>8</td>
<td>24</td>
<td>0.03</td>
<td>0.47</td>
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<td>9</td>
<td>19</td>
<td>0.03</td>
<td>0.44</td>
</tr>
<tr>
<td>10</td>
<td>61</td>
<td>0.04</td>
<td>0.51</td>
</tr>
<tr>
<td>11</td>
<td>34</td>
<td>0.03</td>
<td>0.56</td>
</tr>
<tr>
<td>12</td>
<td>87</td>
<td>0.03</td>
<td>0.25</td>
</tr>
<tr>
<td><strong>Curability</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>88</td>
<td>0.02</td>
<td>0.50</td>
</tr>
<tr>
<td>2</td>
<td>40</td>
<td>0.04</td>
<td>0.59</td>
</tr>
<tr>
<td>3</td>
<td>63</td>
<td>0.04</td>
<td>0.67</td>
</tr>
<tr>
<td>4</td>
<td>90</td>
<td>0.02</td>
<td>0.46</td>
</tr>
<tr>
<td>5</td>
<td>54</td>
<td>0.04</td>
<td>0.52</td>
</tr>
<tr>
<td>6</td>
<td>84</td>
<td>0.03</td>
<td>0.41</td>
</tr>
<tr>
<td>7</td>
<td>61</td>
<td>0.04</td>
<td>0.56</td>
</tr>
<tr>
<td>8</td>
<td>82</td>
<td>0.03</td>
<td>0.50</td>
</tr>
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</table>
Discussion

After examining item to total score correlations, 12 items in the General Knowledge subscale and 8 in the Curability subscale were retained. (See the Appendix for the posttested subscales.) The total instrument takes approximately 6 minutes to complete. Using the KR20 statistic, the internal consistency reliability for this sample of women was somewhat disappointing, but within an acceptable range for an instrument used to discriminate between groups (Polit & Hungler 1987).

In the General Knowledge subscale, two or more items were written on risk factors considered highly significant in order to ensure at least one reliable item for that factor. Three items were written addressing family history as a risk factor. One item was considered too difficult and was dropped based on the content experts' input. The other two items had biserial correlations of less than .20 (i.e., .17 and .18) and also were dropped. The high percentage of women in this sample who answered these two items correctly (i.e., 92% and 87%) may have contributed to the low correlations. Researchers using
the General Knowledge subscale should be aware of this deficiency and may want to add an item on family history for testing in their sample.

This study was an extension of the McCance et al. (1990) BCKT; and the methodology was similar. Unlike their study, random sampling was used, a larger sample obtained, women with a close family history of breast cancer were excluded, and reliability testing was conducted through the mail rather than in person. It was hoped that item selection based on random sampling would produce an instrument generalizable to various populations of women. The response rate was surprisingly good. Of households with qualifying women, 83% agreed to participate and returned completed questionnaires. The actual response rate is estimated to be approximately 76% (i.e., estimating the proportion of qualifying women in the 75 households who refused participation before household characteristics could be determined). The high response rate may be attributed to several factors: (a) concern about breast cancer among women, (b) level of community support for the university in the area, (c) general perception by the public of nursing as a helping profession, (d) less-threatening nature of completing an anonymous questionnaire through the mail versus having a researcher come into the home, and (e) brevity of the questionnaire and ease of completion.
One problem encountered with mailed questionnaires was missing responses. Because items were occasionally skipped by respondents, not all completed questionnaires were used in determining reliabilities for each subscale. This could have been avoided if the researcher had been physically present to check questionnaires after completion. However, response rate was projected to have been much lower if subjects faced a stranger coming to their home.

It is interesting that in contrast to the study by McCance et al. (1990) this study found no significant correlation between knowledge scores (on either subscale) and use or frequency of mammography or professional examinations. A small but significant correlation was found between knowledge scores and BSE practice. McCance et al. found more knowledge of screening and detection measures to be associated with having obtained mammography and professional examination in the past year, but not with the use of BSE. Perhaps women with greater knowledge of screening and detection measures are more likely to utilize mammography and professional examinations, but not BSE, whereas greater knowledge of risk factors, incidence, and curability is more likely to influence BSE practice. Alternately, sampling method and sampling characteristics may have influenced these results. A high percentage of women in this sample reported utilizing each of the three
screening methods. Correlations between screening practices and knowledge levels might have been different if there had been a more equal ratio of women who did and did not practice each screening modality. Further, the effect knowledge has on screening behavior may vary among groups of women. Mamon and Zapka (1986), for example, found an association between knowledge of risk factors and frequency of BSE in graduate but not undergraduate students. Differences in sample characteristics in this study, compared with the McCance et al. sample, likewise may have contributed to differences between the correlations found in the two studies. This sample, as compared to that studied by McCance et al., was comprised of a slightly older age group, none of whom had a close family history of breast cancer, with a smaller percentage being married or in professional occupations, and a larger proportion being LDS.

Knowledge is only one factor potentially influencing a woman's breast cancer screening practices. More research needs to be conducted with larger sample sizes in different populations of women to determine what factors influence screening practices in each population. Strategies to increase utilization of screening practices then can be tailored to specific populations of women.

At this point, the General Knowledge and Curability subscales, in combination with the McCance et al. (1990)
screening and detection subscale (i.e., BCKT), could be used by researchers to further study the relationship between knowledge in each of these areas and a given population's utilization of each of the three screening modalities. When used, reliabilities should be computed and reported. Reliability testing of the three subscales together in different populations of women, along with a test-retest procedure, is needed to strengthen the validity and reliability of the total instrument.

After further testing, several uses for the subscales are proposed. They could be administered to groups of women targeted for intervention to determine knowledge levels and deficits in a given group. Information obtained then could be used in planning intervention strategies. For example, women in this sample were fairly knowledgeable about the curability of breast cancer, but were lacking in knowledge of risk factors and incidence. Most disturbing was the lack of awareness of the relationship between breast cancer risk and advancing age. In planning intervention strategies for this target group, special emphasis could be placed on this relationship. The subscales also could be administered before and after an educational program to help determine the program's effectiveness. In addition, these subscales could be used to stimulate discussion of personal risk factors, screening and detection measures, and curability/treatment
options among women in a target group.

Conclusion

Nurses can have a significant influence in breast cancer education and in promotion of early detection practices in their clients and communities. Their strategies, however, must be based on sound and reliable research to be effective.

To that end, two subscales were developed to be used with the McCance et al. (1990) BCKT to measure a woman's general knowledge of breast cancer and her knowledge of breast cancer curability. The subscales were tested for content validity and internal consistency reliability. Reliability coefficients were modest: (a) 0.60 for the General Knowledge subscale, (b) 0.62 for the Curability subscale, and (c) 0.71 overall. Further testing is needed using the three subscales; however, they could now be used by researchers studying the relationship between breast cancer knowledge and screening practices.
APPENDIX

BREAST CANCER KNOWLEDGE TEST

General Knowledge

1. A hard blow to the breast may cause a woman to get breast cancer later in life.

2. The constant irritation of a tight bra can, over time, cause breast cancer.

3. One out of every 10 women in the United States will get breast cancer sometime during her life.

4. In some women, being overweight increases the risk of developing breast cancer.

5. A woman who bears her first child before the age of 30 is more likely to develop breast cancer than a woman who bears her first child after the age of 30.


7. Some types of fibrocystic breast disease (noncancerous breast lumps) increase a woman's risk of breast cancer.

8. Women in the United States have a higher risk of breast cancer than do women in Asia or Africa.


10. The most frequently occurring cancer in women is breast cancer.

11. Women over age 70 rarely get breast cancer.

12. Most breast lumps are cancerous.
Curability

1. For many women, breast cancer can now be successfully treated without breast removal (mastectomy).

2. By the time a cancerous breast lump is painful, it is too late to be successfully treated.

3. If all lymph glands around the breast and under the arm are not removed, breast cancer cannot be cured.

4. Breast cancer is sometimes treated successfully by removal of the lump (lumpectomy) and radiation therapy.

5. Breast cancer is less likely to be cured in women with a family history of breast cancer than in women with no family history of breast cancer.

6. By the time a woman can feel a cancerous breast lump, it is too late to treat it effectively.

7. Even if breast cancer is caught very early, the chances for cure are much better if the whole breast is removed.

8. Even if detected and treated early, a woman with breast cancer is unlikely to live a normal life span.
REFERENCES


