

1-1-1995

Women's practice of breast self examination following surgical intervention for breast cancer

Carol Ann Rayfield
University of Nevada, Las Vegas

Follow this and additional works at: <https://digitalscholarship.unlv.edu/rtds>

Repository Citation

Rayfield, Carol Ann, "Women's practice of breast self examination following surgical intervention for breast cancer" (1995). *UNLV Retrospective Theses & Dissertations*. 554.
<http://dx.doi.org/10.25669/lzwf-p4s8>

This Thesis is protected by copyright and/or related rights. It has been brought to you by Digital Scholarship@UNLV with permission from the rights-holder(s). You are free to use this Thesis in any way that is permitted by the copyright and related rights legislation that applies to your use. For other uses you need to obtain permission from the rights-holder(s) directly, unless additional rights are indicated by a Creative Commons license in the record and/or on the work itself.

This Thesis has been accepted for inclusion in UNLV Retrospective Theses & Dissertations by an authorized administrator of Digital Scholarship@UNLV. For more information, please contact digitalscholarship@unlv.edu.

INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each original is also photographed in one exposure and is included in reduced form at the back of the book.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.

UMI

A Bell & Howell Information Company
300 North Zeeb Road, Ann Arbor, MI 48106-1346 USA
313/761-4700 800/521-0600

Women's Practice of Breast Self Examination
Following Surgical Intervention
For Breast Cancer

by
Carol Rayfield

A thesis submitted in partial fulfillment
of the requirements for the degree of

Master of Science
in
Nursing

Department of Nursing
University of Nevada, Las Vegas
December, 1995

UMI Number: 1377655

**Copyright 1995 by
Rayfield, Carol Ann**

All rights reserved.

**UMI Microform 1377655
Copyright 1996, by UMI Company. All rights reserved.**

**This microform edition is protected against unauthorized
copying under Title 17, United States Code.**

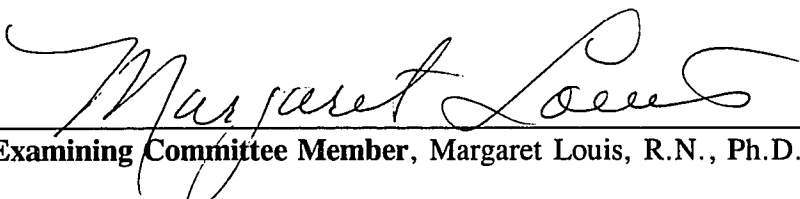
UMI
300 North Zeeb Road
Ann Arbor, MI 48103

Approval Page

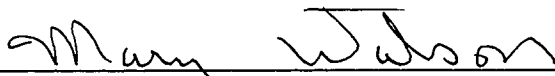
The thesis of **Carol A. Rayfield** for the degree of Master of Science in Nursing is approved.



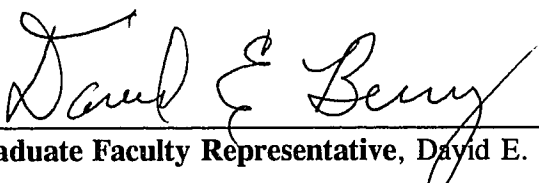
Chairperson, Carolyn E. Sabo, R.N., Ed.D.



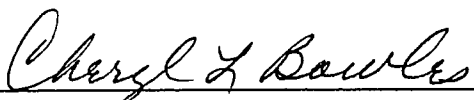
Examining Committee Member, Margaret Louis, R.N., Ph.D.



Examining Committee Member, Mary Watson, R.N., M.S.



Graduate Faculty Representative, David E. Berry, Ph.D.



Interim Graduate Dean, Cheryl Bowles, R.N., Ed.D.

University of Nevada, Las Vegas
December, 1995

© 1995 Carol A. Rayfield
All Rights Reserved

ABSTRACT

Many women have undergone surgical intervention in an attempt to treat carcinoma of the breast. The potential for recurrence of cancer is, however, still present after this intervention. The chance for recurrence is 50% for the first two years and continues to be present for five years following initial diagnosis and treatment (Harris, Hellman, Henderson, and Kinne, 1987) .

The purpose of this study was to explore and describe the breast self examination practices of women with the diagnosis of breast cancer who have undergone surgical intervention. Since 1950, monthly breast self examination has been recommended for all women to aid in the detection of breast cancer. Haagensen (1950) stressed the importance of educating women concerning examination techniques of the breast. Haagensen was concerned with detecting breast cancer at the earliest possible stage, instead of waiting for the classical signs of breast cancer. It has been found that this practice may result in earlier detection of small tumors.

A descriptive design was employed to address the problem under study, specifically: the BSE practices of women who have experienced surgery for breast cancer. Participants were obtained from several general surgical practices in a major metropolitan city in a southwestern state (N=97). The women were English speaking, who were at least three months post surgical intervention. The data was collected by way of two questionnaires that were mailed to the participants. The Toronto Breast Self Examination Instrument permitted discrimination between BSE performers and nonperformers with emphasis on health background, motivation, proficiency and knowledge. The reported reliability coefficients were (0.47, 0.87, 0.70) for each subscale of the instrument. The Lauver Belief and Attitudes Scale consisted of 55 questions that provided information regarding the participant's perceptions concerning BSE within a three month interval.

The variables of knowledge and motivation did not provide evidence for an association with the frequency of BSE. The variable proficiency was found to be associated with the high frequency of BSE, but did not assist with explaining the unusually high performance rate. Demographic variables were considered in this study, however statistical verification was not achieved.

Of the sample, 91.8% stipulated that their last physical exam included a breast exam. However, 59.1% and 65.9% indicated the physician did not teach or review BSE respectively. Nursing was also remiss in reviewing or teaching BSE in this sample.

Table of Contents

Abstract	iii
List of Tables	viii
Acknowledgements	ix
Chapter One – Introduction	1
Statement of the Problem	3
Purpose of the Study	3
Significance of the Study	3
Chapter Two – Review of the Literature and Conceptual Framework	4
Health Belief Model	4
High Risk Women	13
Women with Breast Cancer	19
Conceptual Framework	26
Summary	30
Research Questions	30
Definition Of Terms	31
Assumptions of the Study	32
Chapter Three – Methodology	33
Design	33
Population and Sample	33
Human Subjects Rights	35
Data Collection	35
Instruments	35
Reliability Analysis of Instruments	38
Data Analysis	39

Chapter Four – Results	41
Demographics	41
Reproductive History	43
Family History of Breast Cancer	43
Profile of Surgical Intervention	45
Post Surgical Examination	52
Performance of BSE	52
Beliefs and Attitudes	59
Relationship of Demographic Variables to Performance of BSE	59
Knowledge of BSE Practice	62
Proficiency Level of BSE Performance	62
Motivation of BSE.....	63
Relationship of Beliefs and Attitudes with Performance of BSE	63
Chapter Five – Discussion	66
Performance of BSE	68
Beliefs and Attitudes	69
Relationship of Demographic Variables to Performance of BSE	70
Knowledge of BSE Practice	70
Proficiency Level of BSE Performance	70
Motivation of BSE.....	71
Relationship of Beliefs and Attitudes regarding BSE and Performance of BSE	71
Summary	72
Limitations	73
Recommendations	74
Appendix A – Surgical Collaboration.....	76
Appendix B – Data Form	81

Appendix C – Informed Consent 83

Appendix D – Instrument Consent Letters 87

Appendix E – Instruments 90

Bibliography 116

List of Tables

1. Marital Status of Patient Population	42
2. Educational Status of Patient Population	44
3. Family History of Breast Cancer in Patient Population	46
4. History of Breast Cancer in Multiple Family Members	47
5. Tumor Type in Patient Population	48
6. Sources of BSE Education	51
7. Physician Investigation of BSE: Did the Doctor Ask	53
8. Physician Investigation of BSE: Did the Doctor Teach	54
9. Physician Investigation of BSE: Did the Doctor Review	55
10. Nurse Investigation of BSE: Did the Nurse Ask	56
11. Nurse Investigation of BSE: Did the Nurse Teach	57
12. Nurse Investigation of BSE: Did the Nurse Review	58
13. Wilcoxon Rank Sum Scores for Lauver Subscales	60
14. Spearman Rank Correlation for Lauver Subscales with Frequency of BSE	64

Acknowledgements

The acquisition of knowledge is never a solitary task that occupies only one individual. Numerous people influence our dreams and aspirations through their actions and words.

First, I wish to thank my parents, Joe and June for allowing and encouraging the exploration of life with my numerous questions. For instilling in me that knowledge was not the objective, but the act of searching was the important facet. I can remember on several occasions both of you saying “you can do it”. To my sister and my nephew thank you for listening and providing humor on many occasions. To my nieces, you will never know how much I wanted to participate in our summer rituals. I could hear and feel an abundance of understanding in your hearts and voices.

To my committee members, thank you for your support and guidance in completing this project. Mary Watson exposed the path and provided an example many years ago. Throughout my graduate education Carolyn Sabo, Ed.D and Margaret Louis, Ph.D provided the inspirational component in this journey. I thank you for your patience, good humor and faith.

I wish to extend my gratitude to the participants, physicians, and office personnel who gave of themselves in contributing to this study.

Most importantly, I finally wish to express my deepest appreciation to my husband, Mort, for the countless hours of brainstorming, arguing, supporting, and cheer-leading me in obtaining this twenty year goal. You truly are my greatest contributor, collaborator and soul mate in my life. You are my greatest treasure in my life.

Chapter One

INTRODUCTION

Breast cancer remains the most prevalent form of cancer in women. Costanza (1992) reported that one in nine women will develop breast cancer, with rates increasing with age. This increase occurs between the mid thirties and early fifties or before menopause. The mortality rate for this disease has not significantly declined in the last forty years. The United States ranks 16th in breast cancer mortality. Fintor (1992) reported the mortality rate for this disease to be estimated at 22.4 per 100,000 females in the United States. Peacock (1993) has estimated that in the United States alone 181,000 new cases will occur this year. Approximately 45,000 deaths are attributed to breast cancer each year.

Research concerning the development of breast cancer has revealed both personal and environmental risk factors. The personal risk factors identified are: age at which menarche started, the earlier the age the greater the risk; age at birth of first child, an increase in the relative risk is associated with nulliparity and being 30 years of age at birth of first child; age at which menopause started, menopause occurring after age 55 is considered a greater risk than menopause occurring before age 45 or surgical intervention that induces menopause. Benign breast disease that exhibits atypical hyperplasia is regarded as another personal risk factor according to Pressman (1992). The current use of oral contraceptives as compared to past utilization of this method has been demonstrated to increase the threat of developing breast cancer. Exposure to high dose radiation of 100 rads or more either through repeated fluoroscopy or a nuclear accident is indicative of an

environmental risk. Research has also stipulated that women who have an intake of three drinks of alcohol a day are more likely to develop breast cancer as compared to women who do not consume alcohol. Obesity has also been identified as a risk factor, women who are 40 percent or more above ideal body weight have a greater risk of developing breast cancer (Mettlin, 1992).

The treatment of breast cancer requires surgical intervention. The threat of recurrence of the disease remains a distinct possibility even with this intervention. Unfortunately, of all women with breast cancer, there is a likelihood of recurrence within five years ranging from three to 19% according to Winchester and Cox (1992). These postoperative recurrences are most prevalent in the chest wall or in regional lymph nodes. Harris, Hellman, Henderson, and Kinne (1987) found that 50% of all recurrences will do so within two years of original diagnosis, and 80% within five years of original diagnosis. The most important indicators for recurrence are size of the primary tumor, presence of positive axillary lymph nodes, tumor multicentricity, and cell type.

Preventing and detecting all types of cancer has been a major national concern for decades. Both the American Cancer Society and The National Cancer Institute have concentrated their energies toward the goal of early detection and prevention (Dodd, 1992). Over the years, these agencies have recommended cancer related health examinations. The recommendations have been updated when new information and technologies have become available. One recommendation regarding breast cancer has not changed, the monthly practice of breast self examination. This screening technique, along with medical consultation and mammography, has been found to result in earlier detection of breast cancer (Salazar and Carter, 1993). Earlier detection has resulted in increased survival. Studies conducted between 1977 and 1989 have addressed the issue of breast self examination and its association with smaller tumor size. These studies suggest evidence of the benefit associated with women doing breast self examination as indicated

by several researchers (Hill, White, Jolley, and Mapperson, 1988; Costanza and Foster, 1984; Huguley and Brown, 1981).

Statement of the Problem

As reported by the United States Department of Health and Human Services (1992), breast cancer ranks as the second leading cause of cancer mortality in women. Despite progress in treatment advances, the mortality trend has remained unchanged. Having undergone surgical abatement in hope of a cure, risk of recurrence remains a potential threat for the next five to ten years. Breast self examination has been demonstrated to be an effective measure of detection of primary or recurring tumors (Foster, Worden, Costanza, and Solomon, 1992). Measures that will contribute to diminishing the recurrence of cancer are an integral component of self-care for the client who previously had surgery for breast cancer. BSE has been identified as the most important method of early detection for breast cancer and should be encouraged among these post surgical clients.

Purpose of the Study

The purpose of this study was to explore the breast self examination practices reported by women who have undergone surgical intervention for breast cancer. Variables such as age, family history of breast cancer, and educational level were measured with regards to the performance level of BSE.

Significance of the Study

In view of the limited data on BSE practices following surgical intervention for the diagnosis of cancer, there exists a gap in nursing knowledge. This gap results in decreased prevention and patient education. Nurses are responsible for discharge teaching instructions and may be omitting a vital component of the survival process.

Chapter Two

REVIEW OF THE LITERATURE AND CONCEPTUAL FRAMEWORK

Literature analyzing all phases of breast self examination (BSE) is abundant. A large portion of this literature concerns itself with BSE practices in healthy women who use these techniques as a preventive tool. Another large section of the published data concerns women who have an increased risk for developing breast carcinoma. There is a paucity of material on BSE habits after surgery has taken place for the diagnosis of breast cancer.

The literature review begins with an overview of women's health beliefs regarding BSE. The review will focus next on women with an increased risk for developing breast cancer and their BSE practices. The conclusion of the review will compare BSE practices based upon stage of disease at diagnosis.

Health Belief Model

The Health Belief Model is the most frequently incorporated model used to explain the preventive behavior of BSE. The model includes four perceived concepts: susceptibility, seriousness, benefits, and barriers. The individual's perceptions of these concepts are suggested as the compelling influences that prompt preventive action.

Champion (1985) conducted a study with 301 women. The author queried the participants concerning attitudes about BSE, breast cancer, and frequency of BSE. The researcher postulated that certain combinations of the health belief model constructs would influence the frequency of BSE practice.

Champion developed the instrument in a Likert type format to test the four constructs of the model. Content validity was evaluated by faculty and colleagues. The

reported internal consistency ranged from .60 to .78. Test-retest reliabilities ranged from .47 to .86. The findings suggested that 60% of the sample did BSE infrequently. Thirty percent of the sample performed the behavior on a monthly basis and 11% examined their breasts more frequently than the recommended interval. Twenty-six percent of the variance for BSE was explained by the concepts of susceptibility, seriousness, benefits, barriers, and health motivation. The largest variance, 23%, was accounted for by barriers. Individuals with fewer perceived barriers reported conscientious monthly practice. The concepts of benefits, susceptibility, and seriousness did not contribute significantly to the explanation of monthly BSE practice.

Calan and Rutter (1986) investigated 1134 women who were offered BSE classes. Specific information concerning BSE techniques was offered to these participants through an instructional film, a lecture by a nurse, and a discussion period. Information concerning the variables of the health belief model was obtained by interviews scheduled one month before classes and twelve months after conclusion of the classes. Reported findings suggested that the classes influenced the attender group ($n = 278$) in relation to technique, ($t = 17.8, p < 0.001$). However, the group's change in frequency of BSE is noted to be minor, ($t = 3.9, p < 0.001$). The nonattender group ($n = 262$) also experienced a change in their technique, ($t = 4.5, p < 0.001$). The control group ($n = 594$) was not offered the opportunity to attend the classes. This group also reflected a change in BSE technique, ($t = 2.3, p < 0.05$). Further findings suggest a change in frequency of BSE for the groups of attenders and nonattenders, ($t = 3.9, p < 0.001$) and ($t = 2.9, p < 0.001$) respectively. The authors offered the interpretation that classes were responsible for the improvement. However, one must consider the highly publicized nature of the classes prior to initiation of the investigation. The explained variance of 25% was accounted for by perceived susceptibility of cancer. The control group, which did not attend the classes, experienced the greatest change in frequency and technique. Beliefs concerning the value of BSE did not change between the two interviews.

Attender's beliefs regarding the value of BSE reflect the following means between the interviews, $M = 22.4$ (time one), $M = 22.9$ (time two). Nonattender's beliefs $M = 21.2$ (time one), $M = 23.0$ (time two). Control group's beliefs $M = 22.3$ (time one), $M = 22.2$ (time two).

Massey (1986) conducted a study involving 225 women from a rural southern community. The researcher examined the effect of perceived susceptibility to breast cancer and whether this motivated the respondent to practice BSE during the previous year. The sample was stratified based upon the numerical value of performance of BSE. Most of the respondents were married, under 50, and were high school graduates. Participants reported they had friends with breast cancer, but no family or personal history of the disease.

The two questionnaires used by Massey consisted of demographic information and the Health Belief Questionnaire adapted from Stillman (1977), which measured perceived susceptibility. The questionnaire consisted of five statements that addressed the belief of susceptibility to breast cancer. Scores had a range of five, reflecting the lowest belief, to 19, reflecting the highest belief. Reported reliability for the instrument was $r^2 = .70$.

Results indicated that women who practiced BSE six or more times during the previous year had a significantly higher mean perceived susceptibility score, ($n = 223$, $t = 2.65$, $p < .005$). Analysis of variance was used to measure the effects of age, education, and race in relation to the susceptibility and frequency of BSE. Statistically significant differences were obtained concerning age and race among the two groups. (Age, $F(3, 221) = 3.792$, $p < .01$. Race, $F(3, 221) = 3.15$, $p < .025$). Women who practiced BSE were younger than 50 years of age and had higher perceived susceptibility scores. The less frequent practitioners were older than 50 years of age and had lower susceptibility scores. Caucasian women also had higher susceptibility scores compared to

nonwhite women. Nevertheless, 40% of the sample practiced BSE less than the recommended monthly interval.

Champion (1988) was interested in the intent, frequency, and proficiency of BSE practice in 380 women. Demographic information revealed that 81% of the sample population were Caucasian, 18% were African American, and three percent were Asian. The mean age of the sample was 50.8. The mean educational level was 12.97 years. Marital status figures revealed that 69% were married, 17% were divorced or separated, and 11% were widowed.

The instruments for the study were the Champion Health Belief Questionnaire developed by the researcher (1984), and a developed questionnaire regarding control and intent. Content validity for the control scale was established by a panel of national experts. Six scales of the two instruments are reported to have a Cronbach's alpha ranging from .64 to .89. The scales consisted of 33 items and had a seven point Likert type format. The intent scale consisted of five items obtained from a study conducted by Ronis (1985). The intent scale examined participants' expectation of breast examination in the coming year, how useful this practice would be, and the affective response regarding the performance of BSE. Cronbach's alpha was .78 for this instrument. Frequency, proficiency, and thoroughness of BSE were concluded from the participants' verbal reports.

The results of the study specify 27% of the sample practiced BSE once a month or more. Seventy-three percent of the sample had practiced infrequently or not at all. Participants expressed moderate susceptibility to breast cancer with a reported mean of 3.3. However, perceived seriousness of breast cancer resulted in a reported mean of 5.51 and perceived benefits returned a mean of 6.21. Participants reported few barriers to practicing BSE, as reflected by a mean of 2.51. Multiple regression analysis was performed with the dependent variable of intent being predicted by seriousness, susceptibility, control, health motivation, and barriers. These five variables accounted for

37% of the association with intent to practice BSE. The greatest variance, 22%, was accounted for by barriers to practice. Infrequent examiners perceived many barriers to performing BSE. Barriers were influenced by embarrassment concerning the behavior, fear of discovering a mass, and difficulty assessing one's body. Unfortunately, no statistical evidence was presented for these variables. Frequency of BSE was decided by barriers, health motivation, and susceptibility. Three groups of frequency resulted: low performance (every 5-6 months or less), medium performance (every 2-4 months), and high performance (once a month or more frequently). Discriminant Analyses revealed that barriers accounted for 93% of the variance for group membership. Proficiency of BSE was interpreted by the variables of health motivation, susceptibility, and barriers. The author found these to be significant in predicting proficiency, $R = .51, p < .001$. Health motivation accounted for 34% and barriers accounted for 31% of the explained variance between the groups. Respondents had recently been exposed to publicity regarding BSE practices and breast cancer and these cue variables influenced the intent, proficiency, and frequency scores of the participants.

The body of knowledge was further expanded by Redeker (1989) by examining the health beliefs and the health locus of control of an individual. The Multidimensional Health Locus of Control instrument attempts to offer an interpretation of the causal relationship of health related outcomes. The instrument separates individuals based upon their attributes. An individual is categorized as having an internal locus of control when self-directed behavior is witnessed. A person with an external locus of control abdicates responsibility to another person.

The author surveyed 48 women to detect the relationship between locus of control, health beliefs, and the frequency of BSE. The instruments for this study were combined into a four-part survey. The Stillman Health Belief instrument was modified by omitting the questions that addressed knowledge and BSE behavior. This modification yielded nine questions that related to perceived susceptibility to breast cancer and

perceived benefits of BSE. The reported alpha coefficient was .64. The Multidimensional Health Locus of Control consisted of 18 statements reflecting a center of control. This control center is either internal, in the hands of powerful others, or left to chance. The reported coefficients for the three subscales were .67 (internal locus of control), .17 (powerful others locus of control), and .69 (chance locus of control). The author elected to omit the powerful other's subscale due to the low internal consistency.

Redeker developed the BSE performance instrument to determine frequency of performance of BSE. This instrument was fashioned with open-ended questions to elicit data relating to history of breast lumps and cancer, sources of BSE information, and reasons for practice or nonpractice of the behavior. Pretesting of the entire questionnaire was initiated before the study. There was no indication of the validity or reliability produced by the effort of pretesting this instrument. Reported findings indicated 31% of the sample were nonpractitioners, 38% were moderate practitioners, and 31% were considered high practitioners. Health beliefs explained 13% of the variance in breast self examination frequency, $F(2, 45) = 3.189, p < .05$. A significant difference was noted between nonpractitioners and high practitioners, $F(1, 45) = 6.062, p < .01$. The author reported health beliefs and internal locus of control accounted for 18% of the variance between high and nonpractitioners, though no statistical significance was achieved.

In 1990, Shepperd, Solomon, Atkins, Foster, and Frankowski conducted a survey of 122 women who had low levels of income and education. These participants were recruited through a pediatric practice. The researchers believed the pediatric practice setting would ensure that the women would not be concerned about their health, but the health of their children. Fifty-eight percent of the sample were Medicaid recipients whose education was at the tenth grade level or less. Forty-two percent of the remaining sample had private insurance and an education of high school level or more.

The tool used to evaluate the participants' responses was developed by Strauss, Solomon, Costanza, Worden, and Foster (1987). This tool was administered by interview

and addressed multiple variables: frequency of breast self examination; quality of breast self examination practice; knowledge of correct technique; attitudes concerning severity of breast cancer and susceptibility; barriers to performing breast self examination; anxiety concerning breast cancer and the performance of breast self examination; and demographics. In the lower income group ($n = 71$), 31% regularly practiced BSE and 69% practiced infrequently or not at all. In the higher income group ($n = 51$), 37% reported regular practice of BSE and 63% practiced infrequently or not at all. There was no relationship between income and educational level as revealed by a Pearson's chi square test, ($r^2 = .52, p > .47$). It is of note that there was a significant relationship between income and educational level and those respondents who had never performed BSE, ($r^2 = 13.43, p < .0002$).

After analyzing the information to determine quality of BSE, the research indicated that 19% of the lower income group correctly performed all three components of the technique. The author's offered no indication of how this group acquired the knowledge concerning the components of BSE. The quality index also indicated that 21% of the higher income group correctly performed the three recommended components of BSE. The difference between the means of the two groups did not reveal a statistically significant difference, $t(1, 93) = 1.26, p > .2$.

A stepwise multiple regression analysis was conducted employing BSE frequency as the dependent variable, and utilizing knowledge, severity, susceptibility, benefits, barriers, and anxiety as the independent variables. This analysis revealed several reasons for the low rate of BSE frequency for the lower income group. Seventy percent of the variance was explained by barriers and benefits. Fifty-seven percent of this variance was explained by three reasons: forgetting to do the exam contributed 44%, relying on medical personnel to conduct the procedure added 11%, and detecting no benefit in performing the exam accounted for 2%.

Performing stepwise multiple regression analyses concerning the same variables for the high income group resulted in similar results. Perceived barriers accounted for 67% of the explained variance in frequency. Again, forgetting to perform the exam resulted in 65% of the explained variance.

The authors were interested in predicting the quality of breast self examination for each group. Information was collected from any individual who stated they had done BSE regardless of interval. The lower income group ($n = 46$) and the higher income group ($n = 48$) both revealed that knowledge affected quality. Knowledge accounted for 49% and 40% of the explained variance, respectively. The results of this study suggest performance of breast self examination was comparable between the two groups. Education and income level were not associated with higher performance levels of breast self examination as some research studies have indicated (Huguley and Brown, 1981; Celentano and Holtzman, 1983; Smith and Burns, 1985).

Champion (1992) was interested in the breast self examination practices of women in three separate age groups. The researcher questioned if there were differences among the age groups regarding attitudes, knowledge level, and frequency of the behavior. The study consisted of a probability sample of 322 women who were selected by a process of random digit dialing. The participants were assigned to the following age groups, Group one (35-44), $n = 142$, Group two (45-54), $n = 80$, and Group three (55 and older) $n = 100$.

The instruments for the study were the Champion Health Belief Questionnaire (1984) revised for this project, a Likert scale for confidence that assessed magnitude, strength, and generalizability. Two items from the confidence scale were borrowed from previous research of Lauver and Angerame (1988). Internal consistency reliabilities ranged from .76 to .92. An instrument to assess knowledge was developed by the researcher. Multiple choice questions for this tool were obtained from an Opinion Research Poll completed in 1980 and the American Cancer Society booklets produced

during 1989. The reported internal consistency for this scale was .66. Additional items were designed to obtain information about total BSE behavior, thoroughness of techniques, and length of time the examination required. The reported internal consistency for this scale was .83.

Analysis of the variance indicated that there was no significant difference in total BSE behavior among the three age groups. Champion then correlated attitudinal items, knowledge, and breast self examination behavior. The first two groups indicated a difference between susceptibility, seriousness, and BSE behavior, $r = .15$ to $.26$. Benefits of performing the activity were analyzed. The third group indicated the following were benefits of doing BSE: not worrying about cancer; feeling good about themselves; and finding a lump early, $r = .23$ to $.26$. All three age groups agreed that BSE took time, BSE was difficult to remember, and BSE was unpleasant. Unfortunately, no statistical analysis was available concerning these conclusions.

The combination of knowledge, susceptibility, barriers, confidence, and seriousness was significant for Group one, $F = 6.5$, $p < .000$. These five variables accounted for 32% of the explained variance of BSE behavior. In Group two, confidence and barriers offered 37% of the explained variance in their BSE behavior, $F = 3.90$, $p < .00$. In Group three the only predictor variable that offered an explanation for their BSE behavior was barriers, $F = 3.67$.

These findings suggested that seriousness and susceptibility are more of a concern for younger women as compared to older women. As cited by the author, "This may have to do with a greater concern in these groups with maintaining a positive body image or the fact that breast cancer would interfere with a busy life-style. Another possibility is that as a woman ages she develops a more fatalistic view of life and does not perceive the threat of death in the same manner as would a younger person" (Champion, 1992, p. 6). Barriers to performing BSE universally effected all three age groups, in that BSE was designated as unpleasant, difficult to remember, and took time to perform correctly.

As evidenced by the broad spectrum of literature related to the Health Belief Model, components of the model have been utilized by various researchers in studies related to breast self examination. Further, data collection instruments have been developed from selected foci of the model. Information gained from use of this model and related tools have contributed significantly to the general knowledgebase of women and their beliefs and attitudes concerning breast self examination.

High Risk Women

Literature concerning women who have had previous benign breast disease suggests that these women may be at a greater risk for developing breast cancer. Women with a personal or family history of breast cancer are at an even greater risk. Benign breast disease is typically classified as nonproliferative or atypical proliferative. Whatever the estimated risk, women with benign breast disease should be concerned with the mass being potentially cancerous.

Alagna, Morokoff, Bevett, and Reddy (1987), decided to specifically examine and compare the BSE practices of women at high risk for breast cancer to women at low risk. The authors were interested in the frequency of BSE, knowledge and quality of BSE, and their attitudinal variables. The risk factor was defined as a family history of breast cancer. To meet these criteria women had to have, (a) at least one female relative in the immediate family with the diagnosis of breast cancer, (b) a documented presence of five or more breast cancers in the family, or (c) one or more second generation female relatives with breast cancer. Family history is considered to be a major risk factor due to its strong association with an early stage of onset of breast cancer. The high risk group ($n = 32$) was obtained through a computer database system involving cancer patients. The low risk group contained no family history of breast cancer. Women forming the low risk group ($n = 61$) were enlisted from a local health fair.

Respondents completed a questionnaire that requested information concerning demographic, personal and family history of breast disease. Questions addressing

attitudes were adapted from Grady, Kegeles, and Lund (1980). Items addressed included: the participant's breast cancer focus; perceived severity of breast cancer; self-confidence about performing BSE; confidence in detecting a mass; confidence with a physician performing BSE; fear of doing BSE; and embarrassment when doing BSE. The authors did not present any information regarding validity or reliability of the tool. Analyses of the information presented by the respondents revealed no significant differences regarding the demographic data. The majority of the two groups were married, Caucasian, and had at least attended "some college." Analysis of variance was conducted between the two groups concerning frequency of performing BSE. There was no reported significant statistical difference. The practice rate for both groups was about twice during the six months prior to the study. Chi square analysis conducted on the question "Do you practice BSE regularly?" resulted in a significant difference, $\chi^2 = 14.57, p < .001$. Fifty-three percent of the low risk group who practiced BSE on fewer than three occasions indicated this was "regular" practice. Twenty-nine percent of the high risk group regarded fewer than three occasions as "regular" practice. Further analysis of the scoring of the knowledge questions revealed that the high risk group displayed more knowledge concerning BSE. Additionally, this group was aware of each component of BSE. Proficiency was not significantly different between the groups.

Scrutiny of the attitudinal variables revealed that the high risk group was more focused on breast cancer than the low risk group. The high risk group spent more time verbalizing concerns and fears with relatives and friends. The perception of severity, self confidence about performance of BSE, or belief in BSE as a detection method were statistically nonsignificant. F ratios were reported regarding perceived severity, $F = 2.24$, self confidence about performance, $F = .51$, and detection belief, $F = 2.43$. Stepwise multiple regression analyses were conducted to discover the importance of psychological variables as predictors of the frequency of BSE. The following variables were incorporated into the analyses: breast cancer focus; perceived severity; knowledge

of BSE technique; self-confidence in performing BSE; confidence in a physician performing an exam; belief in BSE as a detection method; fear of conducting an exam; and embarrassment in doing BSE. In the high risk group the single variable of self-confidence in performing BSE accounted for 35% of the variance in frequency of BSE, $F(1, 24) = 13.02, p = .001$. Three variables contributed significantly in the low risk group in frequency of BSE. Self confidence, knowledge, and breast cancer focus accounted for 57% of the difference, $F(3, 47) = 21.08, p < .001$.

Despite the breast cancer risk status, the frequency of monthly breast self examination was low in this study. Women who were considered at a greater risk as indicated by a strong family history, were more fearful of performing the exam. This study also dispels the idea that high risk women rely more on medical exams. The high risk group did not express confidence in physician examinations. The general avoidance of BSE may be the result of anxiety and fear due to the predominate personal and family history of breast cancer.

Fletcher, Morgan, O'Malley, Earp, and Degnan (1989), investigated whether sociodemographic characteristics, knowledge, attitudes, and beliefs were associated to sensitivity, specificity, and frequency of BSE practice among women in an age group at risk for breast cancer. These investigators were specifically interested in which variables of BSE frequency might also be associated with breast self examination accuracy.

Participants were recruited from a medical practice in a large southeastern city. Women were excluded from the study by the following: any breast complaint; the diagnosis of breast cancer; any mental or physical disability; or any terminal illness. Home interviews were conducted by a research assistant. The interview included a twenty minute examination of six silicone breast models. These breast models had nodules that varied in size, depth, and hardness. Following this portion of the interview process, an additional forty minute interview was conducted to assess the individual's accuracy and frequency of breast self examination.

The instrument for this study was adapted from a previous research study conducted by Grady, Kegles, and Lund during 1982. The instrument addressed 54 variables. The authors stipulated that in ten instances, variables were combined into scales. There was no mention of validity or reliability for the instrument. The authors indicated validation had been achieved in previous research on health status, health interest or concern, or the Health Belief Model.

The sample consisted of 300 participants with a mean age of 54 years. Fifty-eight percent of the sample were nonwhite. Sixty percent had less than a high school education. Seventy-three percent of the sample had health insurance. Nearly half the sample reported an annual income below the poverty level.

Breast self examination sensitivity, specificity, and frequency were examined. The findings reported the participants were able to detect a mean of 7.3 of the 18 lumps in the breast models. The mean specificity was reported at 66%. Sixty-seven percent of the sample indicated they had infrequently performed or never performed the exam in the preceding six months. Thirty-two percent of the sample had done breast self examination within the six-month period on a monthly basis. Results of the investigation showed out of the 54 variables considered, 17 variables suggested an association with breast self examination concerning sensitivity, specificity, and frequency.

The researchers indicated that the “best” model explaining sensitivity incorporated employment status, the health interest scale, and belief about vulnerability to breast cancer. This model accounted for 16% of the variance related to sensitivity. The “best” model of variables for frequency included intention to perform BSE, knowledge concerning performance of BSE, use of correct methods of BSE, self confidence in the ability to perform BSE, and self confidence in the ability to find masses by BSE. This model accounted for 27% of the variance in the frequency of performing breast self examination.

Dunbar, Begg, Yasko, and Belle (1991), researched the breast cancer screening practices of high risk women offered mailed educational material. Data was collected from 470 women within three age groups. Group one ($n = 165$) 50-59 years of age. Group two ($n = 187$) 60-69 years of age. Group three ($n = 118$) over 70 years of age. Information was collected by a ninety-eight item structured interview concerning their practices of BSE. Researchers were interested in the association between the stimulus, initiation, and source of BSE. The participants were also questioned regarding attitudes, knowledge, and confidence about breast self examination. Results suggested less than 30% of the sample practiced BSE at the recommended interval. The practice was started in the previous ten years, regardless of the respondent's age. The respondents cited the following situations as the catalysts for breast self examination: a relative with breast cancer; a physician's encouragement; a friend with breast cancer; and advice offered through a magazine article or television.

Attitudes concerning breast self examination revealed that over one-third of the sample feared finding a lump while doing BSE. This finding was more of a concern for the middle aged group than the older aged group, $\chi^2 = 3.6, p < .06$.

Knowledge of the importance of breast self examination in women with a history of breast disease was demonstrated by 94% of the sample. Eighty-four percent were aware of the essential step of examining the entire breast. The remainder of the essential components of the examination as identified by the American Cancer Society were identified by less than 30% of the sample population. It is striking that 62% of these respondents obtained instruction from health professionals or medical journals and another 32% from the media. A total of 94% claimed to have been educated, but less than 30% could correctly identify the proper steps in the examination.

Salazar and Carter (1993) conducted exploratory interviews with women to identify the causes of BSE performance and nonperformance. The study was conducted in two phases. The first phase of the study involved mailing a letter to 271 participants

that were enrolled in a breast cancer control program. The mailing resulted in 59 women willing to participate in the interviewing process. The authors selected 19 women for exploratory indepth taped interviews. The selection process was based upon the respondents reply to questions regarding: frequency of BSE practice; age; race; height; weight; family and personal breast health history. There is no available evidence of the type of questions presented to the participants. Content analyses of the transcribed interviews were conducted by the investigators. This process resulted in identification of 12 categories of factors that indicated BSE performance and nonperformance. The 12 categories were: daily activities; other health examinations; perceived health consequences; perceived likelihood of disease; too much time to do; too difficult; embarrassment about self touch; embarrassment resulting from a possible false alarm; role model; responsibility to maintain good health; family and friend opinion about BSE performance; and health care provider opinion regarding BSE performance. These 12 categories were grouped according to common characteristics that resulted in six third level categories: other means of knowing; usefulness of BSE; time and difficulty; embarrassment concerns; roles and responsibilities; and other people's opinions. The authors conducted further content analyses of the six categories which offered the second level categories: knowledge and attitudes, performance issues and concerns about others. The researchers concluded the hierarchy served as the foundation for the questions employed in the second phase of the study. The investigators offered no statistical evidence of the validity or reliability for the questions.

The second phase of the study consisted of a new sample of 52 female employees from an unspecified Federal agency. The respondents were asked to indicate the extent to which item "argued for or against performing BSE regularly." Respondents were divided into two groups, performers and nonperformers based upon their subjective response to questioning which reflected the number of times BSE was performed within a six month

interval. Seventy-one percent of the sample were categorized as nonperformers. Twenty-nine percent of the sample performed BSE within the specified time frame.

The findings of the study indicate further differences between the two groups. Performers were slightly older; widowed; more educated; frequently utilized health care services and either reported a family member with breast cancer or a personal history of breast disease as compared to nonperformers.

Four categories differentiated performers from nonperformers. The analyses of variance indicated daily activities $F = 7.07$, $p = .01$, health consequences $F = 6.59$, $p = .01$, likelihood of disease $F = 5.73$, $p = .02$, and too much time to do $F = 4.93$, $p = .03$. The reported multivariate F for the 12 categories was significant, $F(12, 39) = 2.13$, $p < .05$. Discriminant function analyses revealed the most powerful discriminators between the groups were; the health care provider's opinion (-.85), concern for false alarms (.49), daily activities as another means of knowing (.47), likelihood of disease (.46) and too much time to do (.42). The reported canonical correlation was .63 ($C^2 = 22.20$, $p = .04$). Thus 40% of the variance was explained between performers and nonperformers.

Research does offer some insight into understanding an individual's beliefs and attitudes concerning BSE behavior and the motivating factors that are involved with performance of BSE. The problem which remains, is the transfer of this knowledge for effective performance of BSE.

Women with Breast Cancer

Haagensen and Wyndham (1943) reported during the 1800s the approach to treating breast cancer was limited to removal of only the tumor. The axilla was not violated unless it contained obviously significant enlarged lymph nodes. The limited intervention was the result of a predominant theory concerning cancer of the breast. The medical establishment believed that cancer was a generalized and multi-centric disease process. Thus, it was believed that surgery served no purpose because to remove one

focus of the disease would allow other sites to appear in the breast. It was not until 1872 that this theory was disproved. The knowledge of breast cancer being a local disease prompted the medical community to treat breast cancer with the radical mastectomy. It is interesting to note that from 1874 to 1878 a total of 200 simple mastectomies were performed in one clinic. Three years later, only 11 percent of the patients were considered well. In 1889 the radical mastectomy involved excision of the entire breast, a full axillary node dissection, and removal of both pectoral muscles. This new extensive technique performed by William S. Halstead suggested a promise of a cure. The first 50 cases treated with this radical procedure showed a six percent incidence of local recurrence. This figure was considered a drastic improvement as compared to 50 to 60 percent recurrence rate of the previous years. This procedure was advocated for the control of the disease and prevention of the recurrence until 1972 (Kinne, 1987).

Beginning in 1970, the radical mastectomy was determined to be excessive and disfiguring (Kinne, 1987). Thus, research led to the modified radical mastectomy and wedge resection for removal of breast cancer. Currently, these women are offered the possibility of breast reconstruction on the effected breast. Consequently, methods to treat breast cancer have improved. Regardless of the treatment options early diagnosis of this disease and subsequent recurrences is as important as the surgical intervention. Research regarding the practices of breast self examination after surgical intervention has not kept pace with other interventions.

Hill and Shugg (1989) chose to examine the health belief model constructs among female breast cancer patients ($n = 117$), benign breast disease patients ($n = 208$), and general practice patients ($n = 329$). The researchers designed the questionnaire for the study based upon Fishbein and Ajzen's Theory of Reasoned Action and the Health Belief Model. There was no statistical evidence of reported validity and reliability for this instrument.

The sample reflects that the cancer patients were older and less educated as compared to the other two groups. The cancer patients also had a higher number of first degree relatives with breast cancer.

Frequency of breast self examination during the previous twelve months was examined among the three groups. Twenty-three percent of the cancer patients had never practiced BSE. This percentage was higher than the percentage in the control (14%) or benign (13%) groups. Thirty-four percent of the cancer patients did perform the examination. A similar result was obtained for the control group. The benign breast disease patients had the highest practice rate with nearly half of the group practicing monthly.

Analysis of variance was conducted with age as a covariant on the attitudinal and health belief variables. This statistical method resulted in the cancer and benign patients indicating a stronger intention to perform BSE in the future, $M = 4.25, p = .001$. Examination of the barriers for breast self examination indicated forgetting and laziness were the inhibitors for the control group. Fear of finding a lump interfered with the benign and cancer groups doing the exam.

The significant variable for the three groups concerning the consequence of breast self examination was finding a curable cancer. The benign breast disease group were significantly more likely to believe in this aspect as compared to the other groups. Susceptibility to breast cancer was not a statistically significant motivator for the three groups.

A stepwise multiple regression analyses indicated the variables predicting future BSE behavior for the respondents were: attitude; BSE frequency; emotional incentives; personal disorganization; cognitive barriers; emotional barriers; and social referents. These variables assisted with explaining 54% of the variance associated with intention, $\text{Multiple } R^2 = .54, F(8, 598) = 86.8, p < .0001$. A similar analysis was conducted on

patients who infrequently practiced BSE. Attitudes, emotional incentives, and personal disorganization explained 57% of the variance related to intention, Multiple $R^2 = .57$, $F(5, 202) = 52.8$, $p < .001$.

These findings assist in describing the motivating and inhibiting factors that are associated with the behavior of breast self examination. Attitude was the strongest predictor variable related to intention and performance of breast self examination. The health profession may need to change its' focus from dispensing knowledge to changing attitudes concerning this behavior.

Haughey, Marshall, Nemoto, Krolbart, Mettlin, and Swanson (1988) undertook an investigation concerning 334 women who had been diagnosed with breast cancer. The investigators were interested in the womens' BSE frequency and proficiency prior to the diagnosis. The participants completed a one page questionnaire designed for the study. This questionnaire addressed demographic characteristics, circumstances concerning discovery of the breast cancer, frequency and number of years of BSE practice prior to presentation of the disease, BSE technique, and delays in obtaining medical attention for the mass. There was no statistical information regarding the tool.

Proficiency of BSE was measured by having the participants demonstrate their skills on a silicone breast model. The breast model contained five masses. The individual was instructed to use the same technique as in doing their own exam prior to diagnosis of breast cancer. Results of the study indicated that 87% of the sample had discovered their breast cancer. Thirty-six percent of the sample had not practiced BSE prior to discovery of the lesion. Of the remaining sample, 26% performed BSE less than once per month. Thirty-eight percent revealed that they had conducted BSE at least monthly. Nearly 75% of the sample had been diagnosed with Stage I or II breast cancer. Performance concerning nodule detection in the silicone breast model indicated that 41% of the sample were unable to detect any nodules. Thirty-five percent of the sample found only one

lesion. Two individuals detected all five nodules. Success in detection was positively associated with size of the nodule.

The correlation of the participants' demographic characteristics, breast self examination practices, and model examination techniques to nodule detection skills were analyzed. Women who were younger (less than 46 years of age, and between 46-55) were more likely to have performed an accurate examination. Education, number of years performing breast self examination, correct procedures during breast self examination did not correspond to either low or high performance during detection of lesions in the breast model.

The findings suggested a relationship between frequency of breast self examination practice and pathologic stage of disease. The association was considered not statistically significant. Of all women with Stage I disease, 39% of the participants were regular practitioners of BSE, while 38% never examined. Of all women with Stage IV disease, 27% examined regularly, as contrasted to 46% who never examined.

Newcomb, Weiss, Storer, Scholes, Young, and Voigt (1991) initiated a study involving 642 women with advanced breast cancer. Advanced breast cancer was defined as a breast cancer with a TNM staging classification of III or IV. The primary tumor was either five centimeters in size or two centimeters with invasion of adjacent tissue, with fixed axillary lymph nodes or distant metastases. The investigators were interested in the breast self examination practices of these women. Additionally, these researchers sought to clarify what other breast cancer screening modalities were being used by these women.

The authors selected the participants from a group health insurance plan yielding a case group ($n = 209$) and a random sample, control group ($n = 433$). The case group was experiencing physical symptoms due to the advanced stage of the breast cancer. The control group, though diagnosed with advanced breast cancer, were experiencing no physical symptomatology.

The participants were interviewed about their performance, adequacy, and frequency of breast self examination. The researchers used two methods to evaluate the adequacy of BSE. Open-ended questions on techniques were utilized. These questions were modeled after the National Cancer Institute's Survey on Breast Cancer. The investigators also designed five specific questions related to BSE techniques and frequency. The reliability of the tool was evaluated by a telephone survey on a 20% random sample of case and control respondents. The authors offered no statistical evidence of the reliability.

Results of the study's population revealed both groups were similar in age, with reported ages ranging from 34 to 80 years. The case group had more risk factors prevalent. These were identified as family history of breast cancer, earlier age of onset of menarche, and later age of onset of menopause. Fourteen percent of the case group had not sought a medical evaluation in five years prior to their diagnosis. Whereas, seven percent of the control group did not receive a medical evaluation. Seventy-nine percent of the case group and 81% of the control group reported never having had a mammogram. Sixty-six percent of the case group initially had been diagnosed at an early stage of breast cancer.

Breast self examination frequency was determined at 25% for both groups. Nineteen percent of the case group reported never having practiced BSE as compared to 21% for the control group. Infrequent practitioners for the case group and the control group were 39% and 46%, respectively. The effect of BSE frequency was also evaluated according to the frequency of use of other screening methods. Women that reported BSE were more likely to have mammographic and medical examinations.

Proficiency of BSE was low among both groups. For practitioners of BSE, the mean scores were greater for the control group, $M = 2.2$, $p = .003$. The reported mean for the case group was, $M = 1.8$, $p = .003$. Twice as many case participants who reported practicing BSE were judged to have performed none of the recommended techniques.

The results of this study indicates the examination practices of these women prior to their diagnosis. The results reflect the low compliance rate and the advanced size of the tumor.

Morris, Corder, and Taylor (1992) conducted a study involving 402 women who were recurrence free of cancer. These women attended a breast clinic over a three month interval. The researchers were interested in the effectiveness of follow-up in the detection of a recurrence. In addition, the authors were interested in the patients attitudes and degree of social and domestic disruption as a result of the follow-up process.

The researchers developed the questionnaire which the respondents completed during their scheduled clinic visit. There was no reported validity or reliability for the questionnaire. The results of the study indicate the median age of the sample was 62 years. The median duration of follow-up was two years. The designated histological types of cancer were: 78% invasive ductal; 8% invasive lobular; 6% ductal; and 3% tubular and medullary. The two predominant treatments were mastectomy with axillary node dissection, $n = 203$ and wide excision with axillary node dissection, $n = 145$.

During the time of the study, patients palpated 11 possible recurrences and requested an additional clinic visit. During a routine appointment 19 possible recurrence were identified. A total of 30 lesions were suggested as suspicious. Seven lesions were surgically confirmed as recurrences. The other 23 lesions were classified as benign disease. The authors did not indicate whether the lesions were identified in women who had received a mastectomy or a wide excision.

The questionnaire resulted in a 78% return rate. The findings indicated that 78% did not have to take time off from work to attend the appointment. Sixty-four percent of the sample had their own transportation. Eighty-five percent of the participants were taught how to examine their breasts or the remaining breast. There is no indication in the study if the education included the mastectomy site. However, 74% of the sample performed BSE monthly or more frequently. Eighty-one percent of the participants felt more reassured and less anxious when attending the clinic. The researchers suggest that

interval appointments yield a higher percentage of recurrences than routine follow-up visits. The researchers offer no statistical evidence for this conclusion. It is interesting to note that 85% of the participants had been taught BSE. The same percentage requested to continue to attend the clinic for examination. There is further need for exploration as to why the participants were not confident in their ability to identify a potential problem.

Research concerning women with breast cancer indicates women discover their disease, instead of relying upon physician examinations or radiologic procedures. “Old wives tales” and the fears of women with breast cancer can adversely influence performance, or may even paralyze the woman from participating in her own care.

Conceptual Framework

The Betty Neuman Health Care Systems Model was utilized to analyze the BSE practices of women with the diagnosis of breast cancer after surgical intervention. Neuman conceptualizes the client as a system composed of a core with a basic structure of survival factors. The basic structure is a composite of variables; physiological, psychological, sociocultural, developmental, and spiritual. The core or basic structure consists of fundamental factors common to all organisms: genetic heredity as represented by family history of breast cancer in any first degree relative and organ strength as depicted by the results of liver, brain and bone scans. These characteristics represent the physiological variable inherent to the core. A woman’s beliefs and attitudes can influence the individual to perform breast self examination, thus enhancing the protection to the core. The beliefs and attitudes an individual expresses represent the psychological component of the core. The core is surrounded by a series of concentric rings. These concentric rings perform the function of protection for the core and basic structure. The strength or weakness of these rings will either deny access or permit stressors to penetrate to the core, resulting in an alteration of the equilibrium of the client system. The core is initially surrounded by a set of rings known as the lines of resistance. These lines are activated involuntarily when a stressor has invaded the core or escapes detection by the

basic survival characteristics of the core. The results of cancer research suggests there is a common pathway for the development of all cancers. This concept is the result of the discovery of two families of genes, the growth-promoting protooncogenes and the growth-retarding tumor suppressor genes. A single cell can be altered into a life threatening mass of tissue by the alteration of these two genes (McAllister, 1993).

Initially, what begins the process are changes in the deoxyribonucleic acid (DNA) of a single cell. It is believed that the cell and the DNA in the nucleus of the cell are constantly exposed to substances or stressors that can alter the two genes. Generally, these alterations are under surveillance and are repaired. However, if the changes in the cell go undetected, the resulting cells will contain the altered DNA. All cells are surrounded by a membrane. This membrane is composed of many proteins that behave as gates or receptors. These gates lead to various routes which communicate to the interior of the cell or the cell membrane. The gates allow ions, energy stores, hormones and genes to function and carry out their work. It is currently theorized the cell membrane contains communication channels to permit cell to cell exchange of information and nutrients to limit their number. A defect in these channels may result in uncontrolled cell growth.

Protooncogenes are present in normal cells. The main responsibility is to promote cells to proliferate and differentiate into specialized cells. Protooncogenes contain the protein products that are involved in transmitting information from the cell membrane to the nucleus. It is the protein products that assist with functions of cell growth, differentiation and division. The protooncogenes are subjected to a large array of environmental assaults such as: foods; drugs; chemicals; and X-rays. The interaction with the environment results in the altered protooncogene producing different protein products, thus leading a cell to an abnormal growth pattern. Tumor suppressor genes are the inhibitors for the unwanted cell growth. Currently, one tumor suppressor gene known as p53 located on chromosome 17 is the most common mutated gene found in human cancers. The inability

of this gene to function correctly is detected in 50% of the cancers in the United States and the United Kingdom (McAllister, 1993).

An individual cell can escape the detection of the homeostatic mechanisms of the internal environment of an individual. The external environment can provide an additional threat through the continuous bombardment of various factors. Both environments may lead to the accumulation of alterations in the DNA of an individual cell. The lines of resistance provide evidence to the client system that a stressor is present. The client becomes aware of a lump, discharge, retraction of a nipple, or a painful tender area. According to Neuman, if the lines of resistance are effective in providing protection the client will reconstitute and retain their health. The second defense layer is a solid ring external to the lines of resistance. This solid ring is labeled the normal line of defense. The normal line of defense indicates the client's usual state of health. The normal line of defense demonstrates variance in the health of the client. In this study, the normal line of defense for the client was represented by histological differentiation of breast cancer, tumor size, and regional or distant metastases. The outermost ring of preservation is known as the flexible line of defense. This ring has the maximum potential for change. New behavior can be integrated into the core once the stressor has been identified. Utilizing BSE practices post surgical intervention is an example of strengthening the flexible line of defense. Neuman theorizes that the client and the environment are in constant interaction. The ultimate goal of the client is stability with their individual environment. This stability serves the purpose of client survival and optimal wellness. Survival of the client is achieved by the open interaction between the client system and the internal or external environment. This interaction is viewed as dynamic with energy being produced or depleted from the client. This energy exchange results from the process of stress upon the client and the resulting response produced by the client. Neuman (1989), defined stressors as existing either in the internal or external environment. These stressors are observable and identifiable and can infringe upon the

client's ability to reconstitute following treatment of their symptoms. The stressors may be either "noxious or beneficial, depending on their nature, timing, degree, and potential for ultimate change." (Neuman, 1989). The discovery of a breast mass, subsequent surgical intervention, and the diagnosis of cancer are viewed as stressors. If the client recognizes these as stressors, will this provide the client with the impetus to perform BSE?

Prevention within the context of this model has three forms and is required to "attain or maintain stability and integrity of the client." (Neuman, 1989). The three forms of prevention are primary, secondary, and tertiary. Primary prevention is performed to prevent an initiation of a stressor from impacting upon a client. This primary prevention may result in the early detection of a tumor or mass. Secondary prevention is conducted to eliminate or contain a stressor. In this context, surgery, chemotherapy, and radiation therapy are seen as methods of secondary prevention. Tertiary prevention is incorporated by the client to prevent further recurrence of a stressor. Clearly, the performance of BSE following surgical intervention is a form of tertiary prevention.

The review of the figures available describing womens' awareness of BSE revealed that 96% know of this technique. Studies indicate only 19% to 40% perform BSE at least once a month (Coleman, 1991). Conversely, the literature indicates that 80% of breast tumors are initially discovered by women themselves suggests that women are utilizing this technique (Grover, Amsel, Balshem, Kulpa, and Engstrom, 1983). BSE is considered effective when this behavior results in the detection of a tumor at the earliest stage of growth. This early detection is suggested to be associated with increased survival rate (Alexanian, 1991). Careful analyses of the literature repeatedly demonstrates mistaken beliefs and attitudes about BSE. Breast cancer is viewed as detrimental and therefore is a unique form of stress.

Summary

A review of the literature has been presented, focusing on women with and without a cancer diagnosis and the associated factors that influence their BSE practice. Conflicting results have been indicated in relation to the Health Belief Model. The concepts, barriers, seriousness, and susceptibility have demonstrated some influence on breast self examination. However, the frequency of BSE practice remains low. Literature was also presented regarding women at an increased risk for developing breast cancer and their performance of BSE. Again, the compliance rate for this group was low, even though the women were knowledgeable concerning their risk status. Barriers and confidence in performing the procedure inhibited the behavior. Literature concerning the BSE practices of breast cancer patients, reveals that their practice of breast self examination prior to their diagnosis was similar to that of the general population.

Research Questions

The Betty Neuman Systems Model was the conceptual framework for this study. The research questions were derived from this model and were answered from analyses of data collected by the survey instruments, the Toronto Breast Self Examination Instrument and the Lauver Beliefs and Attitudes tool.

1. What are the BSE practices of women who have undergone the stress of surgical intervention for breast cancer?
2. What are the psychosocial variables as represented by beliefs and attitudes concerning BSE for women who have experienced the threat of breast cancer?
3. Does age, educational level, family history of breast cancer, and marital status influence performance of BSE?
4. Does knowledge of BSE practice alter the flexible lines of defense and thus influence the performance of BSE?
5. What is the proficiency level of women who report performing BSE?

6. What is the motivation level of women who report performing BSE?
7. What is the relationship between beliefs and attitudes concerning BSE and the performance of BSE?

Definition Of Terms

Breast Self Examination - Examination of the breast(s) by the subject to determine the presence of lumps, dimpling or discharge from the nipples.

Attitudes - The feeling a woman has regarding breast self examination practice that can be ascertained by the Lauver questionnaire.

Beliefs - A woman's opinions regarding breast self examination practices that can be determined by responses to the Lauver questionnaire.

Knowledge - The awareness a woman has regarding the facts of breast self examination practices that can be demonstrated by responses to items designated 49 through 68 of the TBSEI questionnaire

Motivation of Breast Self Examination - The intention of performing breast self examination which can be demonstrated by the responses to TBSEI questions, specifically questions 33 through 48.

Proficiency of Breast Self Examination - The performance of breast self examination as recommended by the American Cancer Society. Proficiency was measured by the participants response to the TBSEI questionnaire, specifically questions 22 through 32.

Mastectomy - Surgical intervention performed for the treatment of breast cancer.

Radical - excision of the breast, including nipple-areola complex, axillary lymph nodes and pectoralis major muscle.

Modified Radical - excision of the breast, including nipple-areola complex, axillary lymph nodes, but excluding pectoralis major muscle.

Simple (Total) - excision of the breast, including nipple-areola complex, but excluding axillary lymph nodes and pectoralis major muscle.

Segmental (Lumpectomy) - wide local excision of tumor, excluding nipple-areola complex, and pectoralis major muscle. Should be accompanied by separate axillary node dissection and followed by radiation therapy.

Post Mastectomy BSE Practice - The performance of examination of the skin, chest wall, axilla and contralateral breast. Occasionally includes examination of reconstructed breast. Examination should be performed monthly.

Assumptions of the Study

1. BSE is an inexpensive, useful procedure to detect early breast cancer and recurrence.
2. Participants have a level of knowledge of BSE, which can be ascertained by the proposed questionnaire.
3. Participants have certain beliefs and attitudes concerning BSE which effect performance of the technique. These beliefs and attitudes can be determined by the proposed questionnaire.
4. Participants will complete the questionnaire truthfully.

Chapter Three

METHODOLOGY

Design

A descriptive correlational design was utilized to address the problem of the study. This design permitted an investigation of the BSE practices, including: proficiency; frequency; motivation; and knowledge of BSE, following surgical intervention for breast cancer. In addition, women's thoughts and feelings concerning BSE were explored. Research has focused primarily on healthy women and high risk women in relation to performing BSE. Studies concerning BSE have suggested the following inhibitors: lack of knowledge concerning the techniques of BSE; fear of finding a mass; difficulty in remembering to conduct the examination on a regular basis; and lack of proficiency in performing the required steps of BSE. Do these variables impact and hinder individuals who have the diagnosis of breast cancer?

Population and Sample

The population considered for this research project were women who were at least eighteen years of age, who read and spoke English, and had experienced surgical intervention for breast cancer. The participants were recruited from the medical practices of four general surgeons in a major metropolitan city within a southwestern state. The researcher composed a letter that was mailed to the selected general surgeons explaining the purpose of the research project (Appendix A). An endorsed letter returned to the researcher represented access to the general surgeons' patient population. Once collaboration was established with the general surgeons, a preliminary survey was conducted. The preliminary survey was conducted to obtain information regarding

several factors: personal information; date of surgery; date of last office appointment; tumor type and size; axillary node status; presence or absence of metastases as reflected by results of scintiscans; estrogen and progesterone receptor status; surgical procedure; and chemotherapy and/or radiation therapy. The researcher developed the preliminary assessment form to obtain the information (Appendix B). The form accompanied the letter mailed to the general surgeons. The participants were at least three months postsurgical intervention and not more than ten years post surgery. The time frame of three months was selected to insure physiological recovery from the acute phase of the disease. The time period of ten years has been stipulated because physician interaction with the patient is practiced on a quarterly basis for the first three years, biannually for the next three years and annually for the remaining four years. Research has indicated variable recurrence rates for individuals diagnosed with breast cancer. Incidence of recurrences can range from sixty percent to twenty percent depending upon the reference utilized. Hayes (1993) indicates a recurrence rate at five years of five to ten percent for early stage cancers treated with conservative surgery and radiation therapy, with a ten year recurrence of seven to twenty percent utilizing both modalities of treatment. The National Cancer Institute recommends frequent examinations during the first five years after initial treatment and continuing examinations as recommended by the physician. During the immediate three months after surgical intervention, the physicians will be primarily interested in: wound healing; arm mobility; gathering of additional laboratory data for staging purposes; and preparing the patient for subsequent radiation or chemotherapy. A random sample was drawn from the potential participants obtained from the general surgeons. The preliminary survey yielded two hundred and ninety-five medical records. Upon further investigation, eight potential subjects had expired, fifteen were beyond the ten year post operative period and three resided out of state. The remaining two hundred and sixty-nine possible candidates were randomized with a toss of a coin. A pamphlet containing the two questionnaires were mailed to the one hundred

and eighty-one randomized candidates. One hundred participants responded, resulting in a 55% return.

Human Subjects Rights

The research project was submitted to the Department of Nursing to obtain committee approval. Following committee approval, the research proposal, including consent forms, cover letter, questionnaires, and letters of agreement from participating surgeons was evaluated by the Human Subjects Rights committees of both the Department of Nursing and the University committee for biomedical research involving human subjects. Approval to conduct the research was obtained prior to the initiation of data collection.

Data Collection

The target population was identified by surveying a computer generated printout submitted to this researcher from each surgeon. The printout identified potential participants who had the diagnosis of breast cancer. This researcher performed an initial assessment of the medical record which corresponded to the name which was furnished from the computer generated printout. A cover letter was designed to explain the purpose of the research project (Appendix C), two questionnaires were mailed to potential participants in this study, the questionnaires were the Toronto Breast Self Examination Instrument (Appendix E) and the Lauver Beliefs and Attitudes About Breast Self Examination Instrument (Appendix E). The two questionnaires were coded to assure confidentiality. The questionnaires were mailed to the potential participants with a return, self addressed, stamped envelope. Two weeks after the initial mailing, a post card was mailed as a reminder to participants to complete the questionnaire. The returned questionnaires were stored in a locked drawer in the locked office of the researcher.

Instruments

The Toronto Breast Self Examination Instrument (TBSEI) elicited information concerning: proficiency; frequency; motivation; and knowledge in association with

breast self examination. The instrument consisted of 68 items: 21 items requesting sociodemographic and health history information; 11 items addressing the frequency and proficiency of practice involving BSE; 16 items requiring the participant to provide information consisting of perceived susceptibility and reasons for performing BSE; the remaining 20 items focused on the individual's knowledge of breast cancer and breast self examination.

The respondent had various options available for reply regarding the sociodemographic and health history questions. The two scales, proficiency and motivation, were scored with a five point Likert format. The knowledge scale was scored with a two point Likert option. The maximum score possible for the three scales were: proficiency equaled 57; motivation equaled 64; and knowledge equaled 40.

The researchers established face and content validity for the TBSEI with physicians and nurses who were practicing in oncology, family medicine, or who had conducted clinical trials in BSE or breast cancer. The TBSEI subsequently was tested to establish reliability and validity. A total of 729 volunteers were initially selected. This resulted in four samples: ambulatory patients ($n = 162$, 22%), community ($n = 256$, 35%), college or university ($n = 164$, 23%), and non-health related industries ($n = 147$, 20%) (Ferris, Shamain, and Tudiver, 1991). The reported internal consistency reliabilities for the three scales were: proficiency, 0.912; motivation, 0.694; and knowledge, 0.854. The researchers performed systematic removal of each item to verify internal consistency. The resulting change in the Cronbach alpha ranged from 0.015 to 0.006 for the proficiency scale, 0.038 to 0.001 for the motivation scale, and 0.012 to 0.000 for the knowledge scale. Further, a test-retest reliability was conducted using an additional sample of 48 women. The time frame between test-retest was two weeks. The reported reliability coefficient was 0.89.

The Lauver Beliefs and Attitudes About Breast Self Examination was the second instrument proposed for this research project. This instrument consisted of 55 items: four

items addressed remembering to perform BSE; 12 items focused on compliance of the individual conducting BSE; six items queried the individual concerning comfort with self exam; four items addressed interference of BSE with daily activities; six items pertained to the general efficacy of BSE; and six items concerned the specific beliefs regarding efficacy of BSE for the individual. All 55 items were arranged on a five point Likert response set : strongly agree; mildly agree; neither agree nor disagree; mildly disagree; and strongly disagree.

Lauver and Angerame (1988), submitted the instrument to 20 nurses to assess content validity. These nurses were from faculty in women's health care ($n = 9$), clinicians in oncology nursing ($n = 9$), and postdoctoral fellows ($n = 2$). "Ninety-five percent of the nurses judged the items to be relevant, eighty-five percent judged the representation of attitudes about BSE to be adequate, and 85% judged there to be an even distribution of items across content areas" (Lauver, 1988, p. 53).

The researcher tested the developed instrument with 59 women recruited from: teaching sessions offered at an industrial setting ($n = 21$); a shelter for battered women ($n = 16$); and health fairs ($n = 22$). The reported reliability coefficients for the six subscales of the instrument were: remembering (.70); competence (.89); comfort (.80); interference (.74); general efficacy (.65); and specific efficacy (.72).

This researcher verified the readability levels of the TBSEI and the Lauver instruments with the computer program Grammatik™. This program indicated the readability level for the TBSEI is at a grade level of eight. The readability level for the Lauver instrument was at a grade level of six. The program reported the statistic known as the Flesch Reading Ease. This statistic was computed by adding the average number of words and the number of syllables per 100 words. The reported Flesch Reading Ease score for the TBSEI was sixty, representing six to ten years of schooling. The reported Flesch Reading Ease score for the Lauver instrument was eighty-two, indicating that less than six years of schooling would be required to complete this instrument. These

instruments were considered to pose no difficulty for the participants (Grammatik 5 User's Guide, 1992).

Reliability Analysis of Instruments

A reliability analysis was run on the Toronto Self Breast Examination Instrument to assess and validate the internal consistency of the instrument. This tool was developed in 1991 and tested with 729 women. The entire instrument consisted of 68 items, however, the first 21 items were not submitted for reliability testing, because these items dealt with sociodemographic and health history. The remaining 47 items resulted in a total Cronbach alpha .7273 and a standardized alpha .6682. The Cronbach alphas for the subscales were; proficiency, .8704; motivation, .4723; and knowledge, .7044.

A reliability analysis was run on the Lauver Beliefs and Attitudes About Breast Self Examination instrument to assess the same qualities. This instrument was initially tested with women from teaching sessions offered at an industrial setting, a shelter for battered women, health fairs in an affluent suburban area, and in an underprivileged urban area. This tool was tested initially with 59 women, who were considered healthy.

The Lauver Beliefs and Attitudes About Breast Self Examination resulted in Cronbach's alphas ranging from 0.65 to 0.89. The original study was comprised of six separate scales. The reliability analysis of the 55 items for this study indicated a Cronbach's alpha of .9359 and a standardized alpha of .9415. The Cronbach's alphas for the subscales were Remembering, .7509; Fear, .5267; Pain, .6136; Perceived competence, .7453; Comfort, .5381; Interference, .8342; General efficacy, .7630; Specific efficacy, .7457; Attitude of others, .4874; Lack of necessity, .3990, and Control, .7239.

In summary, of the two instruments used in the study, the Lauver Beliefs and Attitudes About BSE reflects the strongest reliability factor with an alpha of .9359. The author of this instrument does not present information concerning the alpha for the total tool. Additionally, there are no documented reliability coefficients for five of the eleven subscales. The reliability coefficients for the documented subscales of the Lauver

instrument are comparable with the exception of the comfort subscale. The values for the reliability coefficients should be viewed with caution due to the minimal number of items associated with each subscale. The reliability coefficient for the TBSEI was .7273 for this study. The author of the TBSEI did not offer the total reliability coefficient for comparison. The results of the present study demonstrated lower coefficients for the TBSEI subscales. There are two possible explanations for this discrepancy. In this study, all participants had a diagnosis of malignant breast disease, whereas the original TBSEI had a random cross section of the population. Furthermore, analysis of the level of readability of both instruments reveals that the TBSEI tool contains words and phrases with a greater degree of language difficulty. This is of significance when one considers that 39.2% of the sample had an educational level of high school or less.

Data Analysis

To organize the information obtained from the researcher developed assessment form and the questionnaire, descriptive statistics were utilized. This permitted representation of the characteristics of the sample designated in the frequency tables.

The first research question was analyzed with the Chi Square statistic. This nonparametric statistic addressed the issue of identifying an association between age and performance level of BSE.

The Wilcoxon Rank Sum statistic was performed to identify whether performers and nonperformers differed with regards to beliefs and attitudes. This is a nonparametric test that is used to investigate two independent groups. It does not require a normal distribution.

A Stepwise Multiple Regression analysis was planned to address the third research question. This statistical procedure provided examination of age, marital status, educational level, and family history of breast cancer in relation to frequency of BSE. Nominal level variables were dummy coded to permit examination of the dependent variable, frequency of BSE.

Separate Chi Square analyses were conducted to determine the associations of knowledge, motivation and proficiency with the performance level of BSE. The resulting information from the knowledge, motivation and proficiency scales provided interval level data which were skewed. This information was subsequently placed into categories of low, medium, and high for each of the scales.

A Spearman Rank Correlation was performed to identify the relationship between beliefs and attitudes concerning frequency of BSE. This nonparametric test was conducted due to skewed distributions resulting from the eleven subscales of the Lauver instrument.

Chapter Four

RESULTS

The medical records of all the female breast cancer patients from two surgical practices served as the source of initial data collection. The preliminary survey yielded two hundred and ninety-five medical records. Upon further investigation, eight potential subjects had expired, fifteen were beyond the ten year post operative period and three resided out of state. The remaining two hundred and sixty-nine possible candidates were randomized with a toss of a coin. A pamphlet containing the two questionnaires were mailed to the one hundred and eighty-one randomized candidates. One hundred participants responded, resulting in a 55% return. Three participants were excluded from the study due to incomplete questionnaires. One participant supplied written communication reflecting that the questions did not apply, due to the fact that “both breasts were removed”. Information was available from the medical record for this individual reflecting that reconstructive surgery had been performed.

Demographics

The characteristics of the sample population were obtained through the use of the Demographic Data Sheet and the first twenty-one questions of the TBSEI instrument. Descriptive statistics were used to organize the information available from these two sources.

The total $N = 97$. The participants ranged in age from 33 to 87 years of age, with the mean age at 60.08, $SD = 12.351$. The sample indicated 59 participants (60.8%) were married and 19 (19.6%) were divorced. The marital status for the participants are demonstrated in Table 1. The educational background responses indicated that 34

Table 1

Marital Status of Patient Population

Marital Status	<i>n</i>	%
Single	1	1.0
Married	59	60.8
Divorced	19	19.6
Widowed	18	18.6
Total	97	100

(35.1%) had a high school diploma, 25 (25.8%) had attended some community college courses. Refer to Table 2 for comparable demographic data on educational status. The core of the individual consists of fundamental factors common to all organisms: genetic heredity as represented by family history of breast cancer in any first degree relative and organ strength as depicted by the results of liver, brain and bone scans. These characteristics represent the physiological variable inherent to the core. Risk factors documented in the literature were considered in this frame of reference.

Reproductive History

Forty-four participants (47.3%) of the sample started menarche under the age of 13. Forty-six (49.5%) started menarche between the ages of 13 and 15. Three (3.2%) started menarche between the ages of 16 and 18. This information was not available for four participants.

Eighty (86%) participants of the sample had experienced at least one pregnancy, and 13 (14%) were nulliparous. This information was missing for four (4.1%) cases.

Age at first pregnancy ranged from under 25 to 36. Sixty-three (79.7%) individuals were under 25 years of age at first pregnancy. Thirteen (16.5%) were between the ages of 25-30 at the time of first pregnancy. Three (3.8%) were first pregnant between the ages of 31 to 36. This information was missing for 18 individuals of the sample.

Current menopausal status indicated 24 of the respondents (29.6%) were under 40 years of age when menopause occurred. Twenty-two (27.2%) were between the ages of 40 to 46. Twenty-six (32.1%) were between the ages of 47 and 52. Nine participants (11.1%) were over 52 years of age. This information was missing for 16 participants.

Family History of Breast Cancer

A family history of breast cancer in a first degree relative occurred in 26 participants (27.9%). The breakdown indicated that seven participants (7.2%) had at least one grandmother diagnosed with breast cancer, six (6.2%) had a mother diagnosed with breast cancer, five (5.1%) had one or more sisters diagnosed with the disease, and eight

Table 2

Educational Status of Patient Population

Level of Education	<i>n</i>	%
Less than high school	4	4.1
High School	34	35.1
Some community college	25	25.8
Community college diploma	4	4.1
Some university	11	11.3
University degree	6	6.2
Some graduate study	3	3.1
Graduate degree	6	6.2
Other	4	4.1
Total	97	100

participants (8.2%) had an aunt with a history of breast cancer. Refer to Table 3 for detailed comparative data regarding family history of breast cancer.

Additionally, ten of the sample had more than one type of first degree relative afflicted with breast cancer. One participant had three distinct family members with a history of breast cancer. The results of the multiple member data are found in Table 4.

Forty-four (47.3%) of the participants indicated they had been treated for benign breast disease before being diagnosed with breast cancer. Forty-nine (52.7%) had not been diagnosed with any type of breast disease. This information was not available for four individuals.

Profile of Surgical Intervention

The results indicated that the left breast was affected with breast cancer for 52 participants (53.6%) as compared to the right breast for 45 participants (46.4%).

Sixty-nine respondents (71.1%) underwent a modified radical mastectomy, 21 (21.6%) had a partial mastectomy (lumpectomy) with axillary node dissection, four (4.1%) received a partial mastectomy alone, and three (3.1%) had a simple (total) mastectomy. Thus, in 92.7% of the sample, axillary lymph nodes were retrieved for pathologic evaluation.

Tumor type and size, morphology, S phase fraction, estrogen and progesterone receptor status, ploidy, and DNA index are reported as tumor associated markers. These are of importance for determining the prognosis of the individual and the adjuvant therapies required to assist with treating breast cancer.

Information regarding tumor type reflects that 73 women (75.3%) were diagnosed with infiltrating ductal carcinoma. The remainder of the comparative data regarding tumor type is presented in Table 5. The participants had tumors ranging in size from in situ (microscopic) to ten centimeters, with a mean size of 2.19 cm. diameter and a $SD = 1.56$. Twenty-three participants' (23.7%) tumors were estrogen receptor negative, 7

Table 3

Family History of Breast Cancer in Patient Population

Relationship	<i>n</i>	%
Your mother's mother	4	4.1
Your father's mother	3	3.1
Mother	6	6.2
One sister	4	4.1
Two or more sisters	1	1.0
Your mother's sisters	4	4.1
Your father's sisters	4	4.1
Other blood relative	10	10.3
None	53	54.6
Do not know	5	5.2
Missing data	3	3.1
Total	97	100

Table 4

History of Breast Cancer in Multiple Family Members

Tumor Type	<i>n</i>	%
Mother	1	1.0
One sister	1	1.0
Your mother's sisters	1	1.0
Your father's sisters	4	4.1
Other blood relative	3	3.1
None	87	89.7
Total	97	100

Table 5

Tumor Type in Patient Population

Tumor Type	<i>n</i>	%
Infiltrating ductal	73	75.3
Lobular	5	5.2
Inflammatory	5	5.2
Intraductal (in situ)	8	8.2
Medullary	2	2.1
Mucinous-Colloid	1	1.0
Unknown cell type	3	3.1
Total	97	100

participant's (7.2%) results were classified as weakly positive, 44 (45.4%) were interpreted as estrogen receptor positive tumors, and ten participants (10.3%) reflected strongly positive ERA status.

The progesterone (PR) status of the participants tumors indicated 20.6% of the sample had a negative status, 9.3% had a weakly positive PR status, 29.9% of the participants had a positive PR status, and 27.8% had a strongly positive PRA tumor marker.

Tumor morphology was determined from the tissue pathology reports of the participants. The tumors of three participants (3.1%) were reported as well differentiated. Twenty-three participants (23.7%) had tumors which were moderately differentiated. Poorly differentiated tumors were found in twenty-nine participants (29.9%). One participant (1.0%) had a tumor morphology indicating Signet Ring cells, suggesting that the breast cancer was of metastatic origin as compared to being a primary focus. This information was not available or not reported for 41 participants (42.3%). Twenty-nine participants (30.2%) had tumors determined to be diploid. Aneuploid tumors were diagnosed for 39 participants (39.6%), and eight participants (8.3%) had tumors classified as tetraploid. Twenty-two individuals (21.9%) had unknown ploidy status.

S phase fraction indicates the percentage of cells actively synthesizing DNA and assists with providing an estimation of the growth rate of the tumor. Twenty-nine participants (29.9%) had a low S phase index, four participants (4.1%) had an intermediate S phase index, and 30 participants (30.9%) had a high S phase index. This information was not available for 34 participants (35.1%). The DNA Index ranged from .850 to 3.30, the mean DNA Index was 1.42 with a $SD = .492$.

Twenty-seven individuals (27.8%) did not choose to have immediate reconstructive surgery as compared to 29 participants (29.9%) who did have immediate reconstructive surgery. Reconstruction status was unknown for 41 participants (42.3%). It is important to note, that those individuals who undergo partial mastectomy, are not

candidates for reconstructive surgery because this minimally invasive procedure does not require reconstruction. Furthermore, those who are candidates for reconstruction, i.e. Those who have undergone either modified radical mastectomy or simple (total) mastectomy, may elect to have delayed reconstruction.

Information was gleaned from the medical records regarding metastatic spread according to radiologic examination. Seventy-six respondents (78.4%) had no radiographic evidence of metastatic disease, two participants did demonstrate evidence of metastatic disease in the area of lung and bone. Evidence of metastases was unknown according to the medical record for 19 individuals (19.6%). These findings, along with pathologic analysis of the tumor and/or axillary node dissection results determine the need for adjuvant therapy. The medical records reflected that 21 individuals (35.6%) received postoperative radiation therapy. Two participants (2.3%) received chemotherapy preoperatively as well as postoperatively. Sixty-eight participants (78.2%) received postoperative chemotherapy. There was no medical record evidence of the specific chemotherapeutic protocols the participants were receiving at the time of this study. Twenty-eight (28.9%) participants were diagnosed with Stage I disease, 24 (24.7%) with Stage IIA, ten (10.3%) with Stage IIB, two participants (2.1%) with Stage IIIA, four (4.1%) with Stage IIIB, and two participants (2.1%) with Stage IV. Twenty-seven participants (27.8%) had undetermined staging classification at the time of data collection. The mean time since surgery for the sample was 3 years, with a *SD* of 2 years.

The respondents supplied information concerning how they first learned breast self examination. Thirty-seven individuals (38.1%) learned BSE from a brochure or a pamphlet, while 32 individuals (33%) acquired this skill from a physician. These respondents were not tested to verify whether they correctly performed BSE, either at the time of learning the technique or since. For complete information regarding the source of BSE education, refer to Table 6.

Table 6

Sources of BSE Education

Educational source	<i>n</i>	<i>%</i>
Brochure or pamphlet	37	38.1
Television show	8	8.2
Friend	1	1.0
Doctor	32	33.0
Nurse	2	2.1
Relative	1	1.0
Breast CA Education Program	4	4.1
Other	3	3.1
Never learned BSE	7	7.2
Missing	2	2.1
Total	97	100

Post Surgical Examination

Eighty-one respondents (91.8%) noted that their last physical exam had included a breast exam. Eight respondents (8.2%) indicated that they did not receive a breast exam as part of the physical examination. Forty-nine respondents (50.5%) stipulated that the doctor inquired if they practiced BSE. Thirty-nine respondents (40.2%) were not asked if they practiced BSE. Three respondents (3.1%) could not recall if the physician inquired concerning their BSE practice. Three respondents indicated this information was not applicable to their situation. This information was missing for three participants.

Questions from the Toronto Breast Self Examination Inventory queried the participants regarding the physician and nurse interaction about their BSE practices. Specifically, respondents supplied information as to whether these health care providers asked about BSE practices, taught BSE practices, or reviewed BSE practices. Consult Tables 7 through 9 and Tables 10 through 12 for the complete data regarding these responses.

Performance of BSE

The first research question, “What are the BSE practices of women who have undergone the stress of surgical intervention for breast cancer?” was answered by question 56 of the Lauver instrument. The findings indicated that 20% of the participants had not performed BSE within the last three months. Performance of BSE was completed within the specified time frame by 80% of the sample. Monthly performance is the recommended performance level of this preventative measure. This was addressed by question 56C of the same instrument. The response rate to this question indicated 22% of the sample exhibited a performance level of one or two times within the three month time frame. Monthly practice was indicated by 27.1% of the sample. BSE performance of four or more times within three months was indicated by 50.8% of the sample. There was no response from 39.2% of the participants. A Chi-square analysis was conducted to test the association between grouped age data regarding frequency level of BSE. The findings of

Table 7

Physician Investigation of BSE: Did the Doctor Ask

Did the Doctor Ask	<i>n</i>	<i>%</i>
Yes	49	50.5
No	39	40.2
Do not remember	3	3.1
Not Applicable	3	3.1
Missing	3	3.1
Total	97	100

Table 8

Physician Investigation of BSE: Did the Doctor Teach

Did the Doctor Teach	<i>n</i>	<i>%</i>
Yes	31	32.0
No	55	56.7
Do not know	1	1.0
Do not remember	1	1.0
Not Applicable	5	5.2
Missing	4	4.1
Total	97	100

Table 9

Physician Investigation of BSE: Did the Doctor Review

Did the Doctor Review	<i>n</i>	%
Yes	19	19.6
No	60	61.9
Do not know	1	1.0
Do not remember	4	4.1
Not Applicable	7	7.2
Missing	6	6.2
Total	97	100

Table 10

Nurse Investigation of BSE: Did the Nurse Ask

Did the Nurse Ask	<i>n</i>	<i>%</i>
Yes	14	14.4
No	68	70.1
Do not know	1	1.0
Do not remember	7	7.2
Not Applicable	4	4.1
Missing	3	3.1
Total	97	100

Table 11

Nurse Investigation of BSE: Did the Nurse Teach

Did the Nurse Teach	<i>n</i>	%
Yes	5	5.3
No	82	84.5
Do not remember	3	3.1
Not Applicable	4	4.1
Missing	3	3.1
Total	97	100

Table 12

Nurse Investigation of BSE: Did the Nurse Review

Did the Nurse Review	<i>n</i>	%
Yes	5	5.2
No	74	76.3
Do not know	2	2.1
Do not remember	4	4.1
Not Applicable	8	8.2
Missing	4	4.1
Total	97	100

the analysis resulted in an $\chi^2 (4, N = 59) = 2.20, p = .69$. Thus the null hypothesis was retained. This does not support an association between age and frequency of BSE. However, the recommended minimum n of five per cell was not met for this analysis. Munro (1986) suggests larger tables may be appropriately analyzed with expected frequencies less than five per cell. This violation of the assumptions for the χ^2 test should be considered when interpreting the results of this analysis.

Beliefs and Attitudes

Identifying the psychological variables inherent to the basic core of the individual was accomplished by examining the Lauver instrument. The fifty-five items addressed the second research question, “What are the psychological variables as represented by beliefs and attitudes concerning BSE for women who have experienced the threat of breast cancer?” The fifty-five items were arranged on a five point Likert response set. These items produced interval level data for each subscale. Univariate statistics revealed skewed distributions for each of the subscales. Further examination was conducted, with regards to the differences between practitioners and nonpractitioners. The Wilcoxon rank sum test was selected for this analysis. The findings are indicated in Table 13. The null hypotheses were rejected for each subscale except for the subscale of fear. The null hypothesis was retained for the subscale of fear. Rejecting the null hypotheses for the subscales suggests practitioners and non-practitioners score differently with the exception of the subscale fear. The subscale fear may be unable to supply a difference between the groups due to the low item representation.

Relationship of Demographic Variables to Performance of BSE

Research regarding the Health Belief Model and high risk women has suggested that demographic factors assist in explaining BSE performance. However, the majority of these studies have dealt with performance of BSE in healthy individuals or prior to the diagnosis of breast cancer. The third research question examined the relationship of age, educational status, family history of breast cancer, and marital status with regards to the

Table 13

Wilcoxon Rank Sum Scores for Lauver Subscales

Group	<i>n</i>	Mean Rank
<u>General Efficacy</u>		
Nonperformers	18	27.67
Performers	71	49.39
	$z = -3.2077$	$p = .0013$
<u>Specific Efficacy</u>		
Nonperformers	18	32.86
Performers	72	48.66
	$z = -2.3080$	$p = .0210$
<u>Perceived Competence</u>		
Nonperformers	16	22.47
Performers	71	48.85
	$z = -3.7830$	$p = .0002$
<u>Remembering</u>		
Nonperformers	16	14.22
Performers	68	49.15
	$z = -5.1821$	$p = .0000$
<u>Interference</u>		
Nonperformers	16	22.44
Performers	72	49.40
	$z = -3.8794$	$p = .0001$

Table continues

Group	<i>n</i>	Mean Rank
<u>Comfort</u>		
Nonperformers	18	27.33
Performers	72	50.04
	$z = -3.3292$	$p = .0009$
<u>Fear</u>		
Nonperformers	18	38.11
Performers	70	46.14
	$z = -1.2068$	$p = .2275$
<u>Pain</u>		
Nonperformers	18	31.19
Performers	72	49.08
	$z = -2.7270$	$p = .0064$
<u>Attitude</u>		
Nonperformers	18	32.42
Performers	71	48.19
	$z = -2.3513$	$p = .0187$
<u>Control</u>		
Nonperformers	17	20.85
Performers	72	50.70
	$z = -4.4883$	$p = .0000$
<u>Lack of Necessity</u>		
Nonperformers	18	30.19
Performers	69	47.60
	$z = -2.8154$	$p = .0049$

performance level of BSE. A stepwise entry multiple regression was conducted to test the effects that the four independent variables: age, educational level, marital status, and family history of breast cancer have in predicting the level of performance of BSE. The independent variables failed to enter the equation at the criteria of F to enter at .05 or .10. This failure provides no explanation in relation to the demographic variables and whether they provide any relationship to the frequency of BSE.

Knowledge of BSE Practice

The fourth research question “Does knowledge of BSE practice alter the flexible lines of defense and thus influence performance of BSE?” was answered by questions 49 through 68 of the TBSEI instrument. Knowledge was scored as a three point option ranging from zero to two. The maximum score possible for this scale was 40. Knowledge had a range of scores 19 through 40, with a $M = 29.26$ and a $SD = 5.04$. The univariate statistics showed a skewed, or nonsymmetrical, distribution of data, with multiple modes. The knowledge scores were then subdivided into three groups by the researcher. The low level of knowledge was represented by scores of 19-25; medium level of knowledge was represented by scores of 26-32; and high level of knowledge was represented by scores of 33-40. A chi-square analysis was conducted to assess the association of level knowledge with the level of performance of BSE. The results were $\chi^2(4, N = 59) = 1.57, p = .813$. The null hypothesis was retained. This does not support an association between the levels of knowledge and the performance level of BSE.

Proficiency Level of BSE Performance

Answering the fifth research question “What is the proficiency level of women who report performing BSE?” was accomplished by items 22 - 32 of the TBSEI instrument. Proficiency was scored as a five point option. The maximum score possible for this scale was 57. The proficiency scale had a range of scores from zero to 55 with a $M = 29.48$ and a $SD = 16.37$. No individual in the study was able to achieve a perfect score of 57. The univariate statistics indicated a skewed distribution. The scores were

arranged to represent levels of proficiency by the researcher. The low level of proficiency was represented by scores of 0 - 20; medium level was represented by scores of 21 - 39; high level scores were 40 - 55. A χ^2 was performed to examine the association between the levels of proficiency and levels of performance of BSE. This analysis resulted in a $\chi^2(4, N = 59) = 9.92, p = .041$. This result is suggestive of an association between high level of proficiency and the performance level of four or more times. Caution should be exercised with interpretation of this result due to the violation of the minimum n of five per cell .

Motivation of BSE

Items 33 - 48 of the TBSEI supplied the information regarding the motivational level in performing BSE. These sixteen items were scored on a five point option and had a total possible score of 64. The results indicated a range of scores from 2 to 63 with a $M = 41.83$ and a $SD = 11.42$. The distributions of scores were skewed. Scores were arranged into categories of low (2 -32); medium (33 - 45); high (46 - 63) by the researcher. A Chi-square was initiated to assess motivational level and performance level of BSE. The results obtained were $\chi^2(4, N = 59) = 8.22, p = .083$. The null hypothesis of no association between level of motivation and performance level of BSE was retained.

Relationship of Beliefs and Attitudes with Performance of BSE

Research has postulated that beliefs and attitudes should be considered an influence prompting prevention. The seventh research question addressed “What is the relationship between beliefs and attitudes concerning BSE and the performance of BSE?” The eleven scales of the Lauver instrument provided the data for this question. The univariate statistics indicated skewed distributions for the eleven scales. A Spearman rank correlation coefficient was conducted to test the relationship of beliefs and attitudes concerning BSE and the performance of BSE based upon rankings. The findings are reported in Table 14. The null hypotheses were retained for all subscales with the exception of perceived competence and remembering. The interpretation of the

Table 14

Spearman Rank Correlation for Lauver Subscales with Frequency of BSE

Group	Spearman	<i>n</i>	Sig
General Efficacy	.1377	58	.303
Specific Efficacy	.2333	59	.075
Perceived Competence	.3866	58	.003
Remembering	.3743	55	.005
Interference	.1771	59	.180
Comfort	.0568	59	.669
Fear	-.0033	57	.980
Pain	.0767	59	.564
Control	.1745	59	.186
Attitude	.0919	58	.493
Lack of Necessity	.1715	56	.206

$r_s = .3866, p = .003$ for perceived competence and $r_s = .3743, p = .005$ for remembering are considered low and are restricted to the relationship of rankings between the two variables. The results suggest perceived competence and remembering do have a relationship with performance of BSE.

Chapter Five

DISCUSSION

Within the last decade, the general population has been bombarded with information concerning breast self examination. Public service announcements are regularly displayed and information concerning the techniques are available free of charge. There are pamphlets, commercials, and even a CD-ROM extolling the virtues and importance of breast self examination. Currently within the health care industry, focus has been placed upon expedient and cost effective care. Health care providers who move patients in and out of institutions and offices rapidly are praised. Unfortunately, the types of hands on training necessary to effectively teach breast self examination is considered time consuming and does not add dollars to the bottom line.

Past research has primarily focused on BSE within a population that has been regarded as healthy. These women know that breast cancer can occur, but because it has not yet occurred, they perceive no real threat. This study focused on women who have had the shock of learning that they had a malignancy, have undergone deforming surgery, and in some cases suffered through radiation and chemotherapy. These survivors are truly battle scarred. As the researcher of this study, I anticipated that these women would be more inclined to perform this simple yet potentially life saving technique.

Could this sample be considered a typical breast cancer population? The demographics obtained from medical record review revealed the expected ratios in regards to age, tumor type and size, type of surgery and utilization of radiation and chemotherapy. The sample conforms to the national norms as currently published in medical and nursing literature.

This study resulted in a 55% return rate of the initial mailed questionnaires. The mean age of 60.08 is consistent with other studies that suggest that breast cancer is a post menopausal disease. Menopausal status was present for 83.5% of the sample at the time of the study.

Considering risk factors associated with developing breast cancer revealed 47.3% had an earlier age at which menarche started. However, in this study, nulliparity was not a predominant factor. At least one pregnancy was experienced by 86% of the participants.

Benign breast disease has been indicated by Pressman (1992) as an associated risk factor. Benign breast disease was indicated by 47.3% of the sample. Caution should be exercised with the interpretation of this finding. Histologic parameters associated with this diagnosis were not addressed with this sample. Benign breast disease can have an ambiguous definition unless histologic verification is determined.

Preventative interventions have currently taken center stage within the healthcare industry. Previously, physicians and nurses alike have dealt with health care problems on a crisis oriented basis. Technology has been the major focus with the management of disease. Surgical procedures, radiologic and laboratory exams are primarily dispensed before and after a problem is under consideration. While 91.8% of the participants had a breast exam completed during their last office appointment, neither the physicians or the nurses are consistently asking the individuals if they are doing BSE. This may be due to the primary focus being directed towards treatment. However, the realization is present that these individuals are at a high risk for recurrence of breast cancer. The detection of recurrence will be conducted by physical exam, mammography and multiple scans. The additional detection by the patient may not be regarded as a significant factor when consideration is given to the utilization of technology, provision of care by multiple physicians, as well as the lukewarm encouragement offered on behalf of the BSE practice.

Performance of BSE

Numerous studies have been conducted to examine and explain frequency of BSE in healthy women. Age, motivation, proficiency, knowledge and attitudes have been some of the identified variables. Studies conducted by Champion, Massey, Redeker and Sheppard have concluded that these variables make a difference. This study selected similar variables to explore in relation to frequency of BSE in women who had breast cancer.

Performance of BSE was being conducted by 80% of the sample, while 20% were not conducting an exam. Health care professionals have further specified that performance be conducted on a monthly basis. This performance criterion was met by 27.1% of the sample. This requirement was not met by 22% of the sample. An abnormally high percentage, 50.8, were conducting the exam more frequently than monthly. The finding of 80% suggests these individuals are attempting to strengthen their flexible lines of defense. Though this figure is considered high when comparison is made with the monthly practice figure at 27.1%, this proportion is not any different than what was indicated by Coleman's review of BSE in healthy women. The review indicated that the monthly BSE rate was 19% to 40%. The diagnosis of breast cancer does not imply a promoting factor to practice. There is a difference with more frequent practice. This may suggest fear, concern, guilt, or compulsive behavior after the diagnosis of breast cancer. Further research is required to determine if a high percentage of women do BSE more frequently than monthly and to identify the underlying causes of the high performance.

Demographic variables such as age, marital status and educational level have been suggested in past research in providing an explanation for BSE performance, although conflicting results have been obtained with these variables. Age was considered within this study and no suggested association was derived with regards to frequency of BSE. This may be due to the fact that 81.4% of the sample was 50 years of age and older. The age range of 30 to 49 represented 18.6% of the sample.

Beliefs and Attitudes

Examining the psychological aspects of BSE resulted in differences of ranking of the various components between performers and nonperformers. These two groups were not identical regarding their beliefs and attitudes concerning BSE. General and specific efficacy suggests an individual feels that BSE can produce a desired outcome. The nonperformers did not view BSE in this manner nor did they perceive themselves as being competent to conduct an exam. Difficulty remembering to do an exam suggests that nonperformers had not developed a system of reminders and that the steps of conducting an exam may have been difficult. Frequently scheduled medical exams by health care professionals who are regarded as more knowledgeable may be a factor with this group. Interference, comfort, pain, attitude of others, control, and lack of necessity also implies the nonperformers had other perceptions of these concepts. Nonperformers may have actually performed BSE prior to their surgery and considered the activity useless. However, some research has indicated that nonperformers have larger tumor size at initial visit. This fact suggests that these individuals maintain the same behavior before and after surgery. Tumor size was examined for the nonperformers, but did not suggest they had larger tumors at the time of surgery. Fear is the one concept that was identical for both performers and nonperformers. Fear is inherent with the diagnosis of breast cancer, and once the diagnosis is rendered, anxiety is not diminished, but is typically exacerbated. Anecdotal information was obtained from the physicians regarding the nonperformers. They offered various explanations for nonperformance and that nonperformers fell into three groups. The first group were totally intimidated by the disease and would rather not know the status of the disease. The second group felt that their follow-up by the surgeon, possibly the oncologist and perhaps the radiation therapist, along with mammography, ultrasound and scans was more than sufficient to detect any tumor recurrence. The third group were convinced that the original intervention was a definitive cure and therefore felt that no further surveillance was necessary. It should be noted that the above opinions

are subjective impressions by the treating physicians and were not statistically verified. These opinions do offer some indirect pieces of evidence and suggest further research to include post survey interviews with respondents and their physicians.

Relationship of Demographic Variables to Performance of BSE

Demographic variables have been associated with BSE performance in studies concerning healthy women and those diagnosed with breast cancer. The variables of marital status, educational level, family history of breast cancer, and age were considered within this study. It was interesting these variables did not offer an explanation for performance level of BSE. The literature has suggested that being younger, married, and having a higher educational level offers some explanation for performance level of BSE. This can not be supported or denied with this research study.

Knowledge of BSE Practice

The level of knowledge concerning BSE was not found to be associated with the level of performance of BSE. It was anticipated that a person having a high level of knowledge would be conducting an exam on a monthly basis. A medium level of knowledge was attained by 52.5% of the sample and 32.3% had a high level of knowledge. Several factors could be interfering with performance of BSE. Although a person may have knowledge, this does not necessarily translate into a consistent health behavior. The emphasis placed upon BSE as being a preventative procedure may need to be mitigated in women for whom a diagnosis is rendered. The concerns of these individuals are focused upon recovering from surgery and the various treatments involved with combating the disease. Further research could focus on frequency of BSE before and after surgery to identify whether treatment of this disease alters BSE behavior.

Proficiency Level of BSE Performance

An association was found between the high level of proficiency and a performance level of four or more times. A medium skill level regarding BSE was found for 52.5%. A high skill level was seen in 35.6%. Low level of skill was represented by

11.9% of the sample. Considering that 77.9% of the sample were doing BSE three or more times within the three month interval, this finding suggests that these individuals perceive themselves as capable of detecting an abnormality. Though proficiency level was associated with performance level, this does not offer an explanation for only 27.1% of the sample doing the procedure monthly. If an individual is not only comfortable with examining their breasts, but is also confident in their ability to detect an abnormality, then a question is raised as to what is causing the monthly rate to be low. Why are 50.8 % doing BSE more frequently than is recommended? Additional information is required to describe the influencing factors with regards to this unusually high performance rate.

Motivation of BSE

It was interesting to note that motivation was not associated with the performance level of BSE. A medium to high motivation level was seen in 93.2% of the sample. It was anticipated that proficiency and motivation would have produced similar results. Confidence in skill level suggests an incentive to perform the behavior. Motivation in the performance group (regardless of the number of times BSE was performed) may be diminished due to the frequent physical examinations done by the multiple physicians. These participants can be seeing as many as four physicians on a quarterly basis or even more frequently in the earlier phases of treatment. This may interfere with motivation and the performance level of BSE. These women may feel that many highly trained professionals are performing their examinations, and see no need to do their own.

Relationship of Beliefs and Attitudes regarding BSE and Performance of BSE

Perceived competence and remembering were the two of the subscales that assisted with explaining frequency of BSE. Both of these subscales are considered weak in their providing evidence of association with frequency. Nine of the subscales of the Lauver instrument failed to explain the frequency of BSE. This study did not provide sufficient data to explain these weak associations. However, one explanation may be a

weakness in the tool itself because of the low item representation for the individual subscales.

Summary

This study was exploratory in regards to BSE practices of women who had undergone surgical intervention for breast cancer. Although the findings indicated that women were performing BSE, there are many unanswered questions as to why the monthly compliance rate is no different than that of healthy individuals. Since 1991, breast cancer has gained public attention within the United States, yet within the last several years, the compliance rate of BSE has remained essentially unchanged. This is evidenced by several studies dealing with healthy women: Champion (1984) found that the compliance rate for monthly practice was 27%; Champion (1985) also noted the monthly practice rate to be 30%; Strauss, Solomon, Costanza, Worden, and Foster (1987) revealed compliance rates for a lower income group to be 31% and a higher income group's rate at 37%; Redeker (1989) found that 38% practiced BSE three to eight times within a 12 month period. Champion (1992) theorized that age was a contributing factor in BSE practice, but unfortunately, there was no significant difference observed within the three designated age groups.

Research at the same time was focusing on high risk women. Consideration was directed towards the fact that either a personal family history of breast cancer or benign breast disease may be influencing women to practice BSE. Once again, there was no reported statistical difference between the high risk group and the low risk group in the study done by Alagna, Morokoff, Bevett, and Reddy (1987); Fletcher, Morgan, O'Malley, Earp, and Degnan (1989) revealed a 32% compliance rate; Dunbar, Begg, Yasko, and Belle (1991) also directed their research efforts towards high risk (fifty years of age and older individuals) and their compliance rate was 30%. Hill and Shugg (1989) selected to investigate BSE behavior in individuals diagnosed with breast cancer, benign breast disease, and individuals from a general practice. The monthly BSE compliance rate for

the group with benign breast disease was 49%, the cancer group was second at 34%, and control group exhibited a monthly rate of 32%.

Proficiency was found to be associated with the frequency of BSE and yet more than half of the participants were performing BSE more frequently than monthly. Morris, Corder, and Taylor (1992) analyzed the individuals diagnosed with breast cancer and their effectiveness in detecting a recurrence. Comparison of the variables age, histological type, and surgery performed reveal similarities between this study and the present study. Morris, Corder, and Taylor provided education for 85% of the sample and the same percentage preferred continuation of their clinic appointments. Reassurance and being less anxious were the reasons given by 81% of the sample. These same attributes could be influencing the hyperperformance in this study.

Knowledge and motivation were not associated with frequency of BSE. There may be some intervening variables such as the frequency of medical appointments and concerns with morbidity and mortality that could be addressed in future studies. Attitudes were investigated in this research effort with perceived competence and remembering having an association with BSE frequency. Attitudes may be difficult to separate due to the inherent components of cognition and affect. How an individual feels about an activity, question or picture can effect the responsive behavior. If an individual perceives BSE as a prevention with the result being early detection a favorable response could be initiated. However, if the individual perceives BSE as a diagnostic behavior, frequency of BSE could be accelerated or diminished. There was evidence that health care professionals are not reinforcing or teaching BSE, thus these participants may not view the technique as important.

Limitations

This study was limited to only four surgical practices within one metropolitan area in a southwestern state. This study also utilized participants who had insurance

coverage. These findings would not permit generalizability to women without insurance coverage.

The instruments utilized are considered to be another limitation. The format of the Beliefs and Attitudes regarding BSE could be improved to generate a larger item pool for the instrument. Polit and Hungler (1989) recommend that ten to twenty items per Likert scale may minimize response bias. The combination of the Lauver instrument along with the TBSEI was meant to obtain different information concerning BSE. The respondents may have viewed the instruments as a duplication of information. This may explain the drop off in answering the Lauver instrument. Both of these instruments had been previously implemented individually with healthy individuals and may not address the concerns of unhealthy individuals at various stages of recovery.

Recommendations

1. Duplicate this study obtaining a larger randomized sample from ten or more surgeons in another metropolitan area of the Southwest. A larger sample may provide findings that would be more applicable.

2. A study to be conducted comparing participants with and without insurance coverage. It would be interesting to note if reliance on technology and medical exams interferes with participants frequency of BSE.

3. Develop an instrument to assess breast cancer patients beliefs regarding morbidity and mortality. Are these women fatalists? Do they feel that their doom is sealed? Has a family member or a friend influenced their belief in the curability of the disease?

4. Revise both the TBSEI and the Lauver Beliefs and Attitudes concerning BSE . The subscales reflected reliability coefficients which indicated a substantial error variance. Improvement may minimize this effect and provide a clearer picture of these variables.

5. Conduct a study focusing on the BSE practices both prior to the diagnosis of breast cancer and after the diagnosis of breast cancer. This may help to determine what factors, if any, have modified BSE behavior. The magnitude of surgery, the knowledge of nodal spread, and the aftercare modalities of chemotherapy and radiation therapy may all be implicated in the profound effect that this experience has on the individual.

Appendix A
Surgical Collaboration

October 11, 1993

77

Joel Davidson, M.D.
3196 S. Maryland Parkway, Suite #204
Las Vegas, Nevada 89109

Dear Dr. Davidson:

I am preparing my Master's Thesis in the Graduate College of Nursing at the University of Nevada, Las Vegas. The thesis concerns women with the diagnosis of breast carcinoma and their performance of Breast Self Examination following surgical intervention.

I am seeking your collaboration to access your patient population. Enclosed you will find the form that I will be using to extract information from the medical record. The information contained within the form will be held in confidence and will be used for no other purpose than this research project.

Participants will be sent a cover letter which explains the purpose of the research. The participants will be sent three questionnaires exploring their thoughts and feelings concerning BSE, as well as their performance of Breast Self Examination. Participation in this study is entirely voluntary. The patient's consent to participate is implied by their return of the questionnaires. In addition, all returned questionnaires will be anonymous and maintained in a secure area at the University of Nevada, Las Vegas.

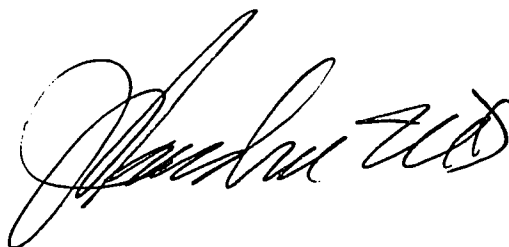
The final results of this study will be made readily available to you. Additionally, your participation will be acknowledged in the written publication.

Your signature on this form represents your consent and desire to collaborate on this project.

Respectfully,

Carol A. Rayfield

Carol A. Rayfield, R.N.



Joel Davidson, M.D.

October 11, 1993

Morton Rayfield, M.D.
700 Shadow Lane, Suite 335
Las Vegas, Nevada 89106

Dear Dr. Rayfield:

I am preparing my Master's Thesis in the Graduate College of Nursing at the University of Nevada, Las Vegas. The thesis concerns women with the diagnosis of breast carcinoma and their performance of Breast Self Examination following surgical intervention.

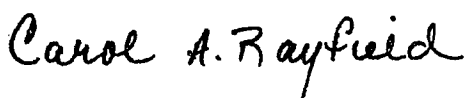
I am seeking your collaboration to access your patient population. Enclosed you will find the form that I will be using to extract information from the medical record. The information contained within the form will be held in confidence and will be used for no other purpose than this research project.

Participants will be sent a cover letter which explains the purpose of the research. The participants will be sent three questionnaires exploring their thoughts and feelings concerning BSE, as well as their performance of Breast Self Examination. Participation in this study is entirely voluntary. The patient's consent to participate is implied by their return of the questionnaires. In addition, all returned questionnaires will be anonymous and maintained in a secure area at the University of Nevada, Las Vegas.

The final results of this study will be made readily available to you. Additionally, your participation will be acknowledged in the written publication.

Your signature on this form represents your consent and desire to collaborate on this project.

Respectfully,



Carol A. Rayfield, R.N.



Morton M. Rayfield, M.D.

October 11, 1993

Mark Hoepfner M.D.
700 Shadow Lane, Suite 335
Las Vegas, Nevada 89106

Dear Dr. Hoepfner:

I am preparing my Master's Thesis in the Graduate College of Nursing at the University of Nevada, Las Vegas. The thesis concerns women with the diagnosis of breast carcinoma and their performance of Breast Self Examination following surgical intervention.

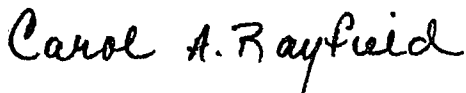
I am seeking your collaboration to access your patient population. Enclosed you will find the form that I will be using to extract information from the medical record. The information contained within the form will be held in confidence and will be used for no other purpose than this research project.

Participants will be sent a cover letter which explains the purpose of the research. The participants will be sent three questionnaires exploring their thoughts and feelings concerning BSE, as well as their performance of Breast Self Examination. Participation in this study is entirely voluntary. The patient's consent to participate is implied by their return of the questionnaires. In addition, all returned questionnaires will be anonymous and maintained in a secure area at the University of Nevada, Las Vegas.

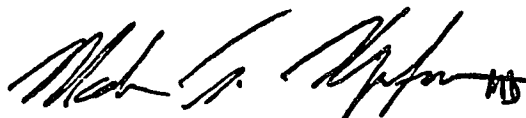
The final results of this study will be made readily available to you. Additionally, your participation will be acknowledged in the written publication.

Your signature on this form represents your consent and desire to collaborate on this project.

Respectfully,



Carol A. Rayfield, R.N.



Mark T. Hoepfner, M.D.

October 11, 1993

80

William Berliner M.D.
700 Shadow Lane, Suite 335
Las Vegas, Nevada 89106

Dear Dr. Berliner:

I am preparing my Master's Thesis in the Graduate College of Nursing at the University of Nevada, Las Vegas. The thesis concerns women with the diagnosis of breast carcinoma and their performance of Breast Self Examination following surgical intervention.

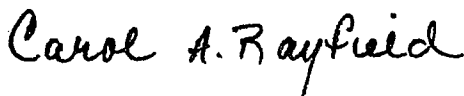
I am seeking your collaboration to access your patient population. Enclosed you will find the form that I will be using to extract information from the medical record. The information contained within the form will be held in confidence and will be used for no other purpose than this research project.

Participants will be sent a cover letter which explains the purpose of the research. The participants will be sent three questionnaires exploring their thoughts and feelings concerning BSE, as well as their performance of Breast Self Examination. Participation in this study is entirely voluntary. The patient's consent to participate is implied by their return of the questionnaires. In addition, all returned questionnaires will be anonymous and maintained in a secure area at the University of Nevada, Las Vegas.

The final results of this study will be made readily available to you. Additionally, your participation will be acknowledged in the written publication.

Your signature on this form represents your consent and desire to collaborate on this project.

Respectfully,



Carol A. Rayfield, R.N.



William P. Berliner, M.D.

Appendix B
Initial Data Form

Last Name:	<input type="text"/>
First Name:	<input type="text"/>
Middle Initial:	<input type="text"/>
Addr Line 1:	<input type="text"/>
Addr Line 2:	<input type="text"/>
City:	<input type="text"/>
State:	<input type="text" value="Nevada"/>
Zip Code:	<input type="text"/>
Home Phone:	<input type="text"/>
Work Phone:	<input type="text"/>
DOB:	<input type="text"/>
Age:	<input type="text"/>
Tumor type:	<input type="text"/>
Morphology:	<input type="text"/>
Tumor size:	<input type="text"/>
Multifocal/multicentric:	<input checked="" type="checkbox"/> Yes
ERA:	<input type="text"/>
ERA Status:	<input type="text"/>
PRA:	<input type="text"/>
PRA Status:	<input type="text"/>
DNA Index (DI):	<input type="text"/>
S Phase Fraction (SPF):	<input type="text"/>
Ploidy:	<input type="text"/>
S Phase Interpretation:	<input type="text"/>
Nodes Positive:	<input type="text"/>
Nodes Total:	<input type="text"/>
Metastases:	<input type="text"/>
Breast Affected:	<input type="text"/>
Surgery:	<input type="text"/>
Surgery Date:	<input type="text"/>
Surgeon:	<input type="text"/>
Reconstruction:	<input type="radio"/> Yes <input type="radio"/> No
Radiation Therapy:	<input type="text"/>
Chemotherapy:	<input type="text"/>
Oncologist:	<input type="text"/>
Last Oncologist Visit:	<input type="text"/>
Last Surgeon Visit:	<input type="text"/>
Months Postop:	<input type="text"/>
TNM Rating:	Clinical Stage: <input checked="" type="checkbox"/> Yes
T	N
X	M
X	X
Comments:	<input type="text"/>
Revised:	<input type="text" value="10/10/93"/>

Expired?

Appendix C
Informed Consent



TO: Carol A. Rayfield
FROM: Dr. William E. Schulze, *Wm. Schulze* Director, Research Administration
DATE: 15 November 1993
RE: Status of human subject protocol entitled:
"Women's Practice of Breast Self Examination Following
Surgical Intervention"

The protocol for the project referenced above has been reviewed by the Office of Research Administration, and it has been determined that it meets the criteria for exemption from full review by the UNLV human subjects committee. Except for any required conditions or modifications noted below, this protocol is approved for a period of one year from the date of this notification, and work on the project may proceed.

Should the use of human subjects described in this protocol continue beyond a year from the date of this notification, it will be necessary to request an extension.

Consent To Participate In A Research Study
University Of Nevada-Las Vegas

Dear Ms. _____

I am a graduate nursing student at the University of Nevada at Las Vegas, studying the health care issues of women who have undergone surgical intervention for the treatment of breast cancer. This study will assist in obtaining information about the practice of breast self examination after surgery, as well as womens' thoughts and feelings concerning breast self examination. You are being asked to participate in a research study involving women who have been treated for breast cancer. I hope to learn whether women who have experienced surgery for this disease perform breast self examination. I also hope to learn the motivating and/or inhibiting influences for this behavior.

You have been chosen to participate because you are older than eighteen years of age, live in the Las Vegas area, have the diagnosis of breast cancer, and have received surgical intervention to combat this disease. Should you decide to participate in this study, you will be asked to complete a questionnaire pamphlet. The pamphlet is mailed to you in a return self-addressed envelope. The pamphlet asks you to describe your thoughts and feelings concerning breast self examination, how often you do breast self exam, and how comfortable you are doing breast exams. Some of the questions ask you to give information concerning yourself as a person. The pamphlet takes approximately 45 minutes to complete. All the information obtained by answering the questions will be held in the strictest of confidence and will not be used for any other purpose. The return of the mailed pamphlet will imply your consent to participate in this research project. Should you experience any anxiety as a result of completing the questions, please contact Dr. Rayfield, Dr. Hoepfner, or their nurse, Teri Rivela, to discuss your particular concerns. You may contact these individuals by calling 382-6591. Participating or refusing to

participate in this study will not have any effect on your medical care that you are currently receiving.

All information collected from this study will be kept confidential. All data will be reported as group data. No names will be used in the report of this study. Codes will be used on the pamphlets to collate the collected information belonging to the participant. The data will be maintained in a locked drawer in the locked office of the researcher.

Upon completion of the study, the results will be available to you. If you would like to obtain the results of this study please contact Carol A. Rayfield, R.N., B.S.N. through the University of Nevada, Las Vegas, Department of Nursing, 895-3360.

Carol A. Rayfield, R.N., B.S.N.

Appendix D
Instrument Consent Letters

ICES

PROGRAMS IN CLINICAL EVALUATION

G-2, 2075 Bayview Avenue, North York, Ontario M4N 3M5 Phone: (416) 480-4055 Fax: (416) 480-6048



October 4, 1993

Carol A. Rayfield, RN
5040 S. Pearl Street
Las Vegas, Nevada
89120-1225

Dear Ms. Rayfield,

Thank you for your letter concerning your interest in the Toronto Breast Self Examination Instrument (TBSEI). I am pleased to send you a copy of the inventory. Unfortunately, we no longer have a TBSEI in booklet form.

You have my permission to use the TBSEI in your own research. I ask that you reference the Instrument survey if you should decide to use it.

I will be very interested in learning of the results of your study. Please do not hesitate to contact me if I can be of any assistance.

Best wishes,

A handwritten signature in black ink, appearing to be 'L. Ferris'.

Lorraine E. Ferris, PhD., C.Psych.
Department of Behavioral Science,
Faculty of Medicine, University of Toronto and
The Institute for Clinical Evaluative Sciences (ICES) in Ontario





Center for Health Sciences
Clinical Science Center
600 Highland Avenue
Madison, Wisconsin 53792
FAX: 608/263-5332

April 18, 1991

Carol A. Rayfield, RN
5040 S. Pearl Street
Las Vegas, Nevada 89120-1225

Dear Ms. Rayfield:

Thank you for your interest in our publication, "Development of a questionnaire to measure beliefs and attitudes about breast self examination." I am glad for continued interest in BSE and specifically in specifying barriers to BSE. If you choose to pursue research on BSE, you are certainly welcome to incorporate our items. I would ask that you please cite us as the source of the items used and share your findings with us.

As stated in the article, we recognized that some of the items were confounded with the outcome measure, performance of BSE. Thus, we chose not to use items that reflected some dimension of performance of BSE when testing the association between selected items and performance; to do so would yield inflated relationships. To clarify, these items were: #30, 32, 34, & 36.

Also, two items were deleted from the remembering scale because they were confounded with performance (#30, 32). Deleting the one item about being reminded to do BSE by things seen and heard (#3) greatly improved the internal consistency of the scale.

In order that higher scale scores indicate a greater degree of agreement with the construct of interest, the following items can be reverse scored: 2, 9, 10, 18, 19, 21, 23, 24, 26, 28, 30, 32, 33, 35, 42, 46, 48, 50. You will also note that some of these items tap the opposite end of a given construct. For example, the items that were originally designed to tap embarrassment were found, not to our surprise, to be internally consistent with the scale we later called comfort.

I would like to call your attention to a typographical error, so that you do not become unnecessarily confused. In the article, Table 2 should read that the specific efficacy scale was comprised of 6 items, not 5. Thus, no item listed for the specific efficacy scale in Table 1 was deleted.

Regarding reliability and validity of the scales, please refer to the article that describes that Chronbach alphas were calculated for internal consistency, one measure of reliability, using SPSS programs. Content validity and criterion validity are both discussed in the article as well.

I hope these clarifications facilitate the development of your research. Please feel free to call me should you have further questions.

Sincerely,

Diane Lauver, Ph.D., R.N.C.
Assistant Professor

Appendix E

Instruments

Please indicate your answer to the following questions with an "X". Read each question carefully and use only one "X" per question.

1. My age group is:

- ☐ under 20
- ☐ 20-29
- ☐ 30-39
- ☐ 40-49
- ☐ 50-59
- ☐ 60-69
- ☐ over 69

2. My marital status is:

- ☐ single
- ☐ married
- ☐ divorced
- ☐ widowed
- ☐ common-law
- ☐ other

3. The highest level of education I have completed is:

- ☐ less than high school
- ☐ high school
- ☐ some community college
- ☐ community college diploma
- ☐ some university
- ☐ university degree
- ☐ some graduate study
- ☐ graduate degree
- ☐ other, please specify _____

4. When did you last have a physical examination by your doctor?

- ☐ Date: _____ (approximately)
- ☐ Do not know
- ☐ Do not remember
- ☐ Never

5. Did your last physical examination include a breast examination?

- ☐ Yes
- ☐ No
- ☐ Do not know
- ☐ Do not remember

6. Did the doctor ask if you practiced breast self examination?

- ☐ Yes
- ☐ No
- ☐ Do not know
- ☐ Do not remember
- ☐ not applicable

7. Did the doctor teach you breast self examination?

- ☐ Yes
- ☐ No
- ☐ Do not know
- ☐ Do not remember
- ☐ not applicable

8. Did the doctor review your breast self examination?

- ☐ Yes
- ☐ No
- ☐ Do not know
- ☐ Do not remember
- ☐ not applicable

9. Did the nurse ask you if you practiced breast self examination?

- ☐ Yes
- ☐ No
- ☐ Do not know
- ☐ Do not remember
- ☐ not applicable

10. Did the nurse teach you breast self examination?

- ☐ Yes
- ☐ No
- ☐ Do not know
- ☐ Do not remember
- ☐ not applicable

11. Did the nurse review your breast self examination technique?

- ☐ Yes
- ☐ No
- ☐ Do not know
- ☐ Do not remember
- ☐ not applicable

12. Where did you first learn the breast self examination technique?

- ☐ brochure, pamphlet, magazine, book
- ☐ television show
- ☐ a friend
- ☐ a doctor
- ☐ a nurse
- ☐ a relative
- ☐ breast cancer education program
- ☐ other, please specify_____
- ☐ do not remember
- ☐ never learned the technique
- ☐ not applicable

13. Have you ever been treated for breast cancer?

☐ Yes

☐ No

If Yes, are you currently receiving treatment?

☐ Yes

☐ No

14. Have you ever been treated for breast disease (other than cancer)?

☐ Yes

☐ No

☐ Do not know

☐ Do not remember

15. Have you ever had a noncancerous breast lump discovered?

☐ Yes

☐ No

☐ Do not know

☐ Do not remember

16. Have you ever been pregnant?

☐ Yes

☐ No

If "Yes", how old were you at the time of your first pregnancy (or only pregnancy)?

☐ under 25

☐ 25-30

☐ 31-36

☐ over 36

17. How old were you when you started having periods (menstrual periods)?

- ☐ have not started my period
- ☐ under 13
- ☐ 13-15
- ☐ 16-18
- ☐ 19-21
- ☐ over 21

18. Are you still having menstrual periods?

- ☐ Yes
- ☐ No

If "no", how old were you when you stopped menstruating (menopause)?

- ☐ under 40 ☐ 47-52
- ☐ 40-46 ☐ over 52

19. Have any (or several) of the following family members been told that they had breast cancer? (check as many as necessary)

- ☐ your mother's mother
- ☐ your father's mother
- ☐ mother
- ☐ one sister
- ☐ two or more sisters
- ☐ your mother's sister(s)
- ☐ your father's sister(s)
- ☐ other blood relative
- ☐ none
- ☐ do not know

20. Have any close friends (not relatives) been told that they had breast cancer?

- ☐ none
- ☐ one
- ☐ two
- ☐ three or more
- ☐ do not know

21. Have any acquaintances (not relatives) been told that they had breast cancer?

- ☐ none
- ☐ one
- ☐ two
- ☐ three or more
- ☐ do not know

22. How often in the Past twelve months have you done breast self examination?

- ☐ not at all ☐ 4-6 times ☐ 10-12 times
- ☐ 1-3 times ☐ 7-9 times ☐ 13 or more times

23. How often in the Past six months have you done breast self examination?

- ☐ not at all ☐ 4 times
- ☐ 1 time ☐ 5 times
- ☐ 2 times ☐ 6 times
- ☐ 3 times ☐ 7 or more times

24. How often in the Past one month have you done breast self examination?

- ☐ not at all ☐ 4 times
- ☐ 1 time ☐ 5 or more times
- ☐ 2 times
- ☐ 3 times

25. How sure are you that you are doing breast self examination correctly?

- ☐ I do not do breast self examination
- ☐ I am very sure
- ☐ I am sure
- ☐ I am somewhat sure
- ☐ I am unsure
- ☐ I am very unsure

26. How confident are you that by doing breast self examination you would be able to notice a breast lump?

- ☐ I do not do breast self examination
- ☐ I am very confident
- ☐ I am confident
- ☐ I am somewhat confident
- ☐ I am not confident
- ☐ I am very nonconfident

27. How confident are you that by doing breast self examination you would be able to notice a breast change?

- ☐ I do not do breast self examination
- ☐ I am very confident
- ☐ I am confident
- ☐ I am somewhat confident
- ☐ I am not confident
- ☐ I am very nonconfident

28. When DOING breast self examination, I stand in front of a mirror with the upper body unclothed.

- ☐ I do not do breast self examination
- ☐ all the time
- ☐ most of the time
- ☐ half of the time
- ☐ some of the time
- ☐ none of the time

29. When DOING breast self examination, I raise my arms over my head and observe both breasts while unclothed.

- ☐ I do not do breast self examination
- ☐ all the time
- ☐ most of the time
- ☐ half of the time
- ☐ some of the time
- ☐ none of the time

30. When DOING breast self examination, I stand in front of the mirror unclothed with my arms down, and look at my breast.

- ☐ I do not do breast self examination
- ☐ all the time
- ☐ most of the time
- ☐ half of the time
- ☐ some of the time
- ☐ none of the time

31. When DOING breast self examination, I lie flat on my back unclothed with a pillow or folded towel under the shoulder of the same side as the breast being examined.

- ☐ I do not do breast self examination
- ☐ all the time
- ☐ most of the time
- ☐ half of the time
- ☐ some of the time
- ☐ none of the time

32. When DOING breast self examination, I feel the area between the breast and the armpit.

- ☐ I do not do breast self examination
- ☐ all of the time
- ☐ most of the time
- ☐ half of the time
- ☐ some of the time
- ☐ none of the time

33. Compared with other women my age, I would rate my chances of getting breast cancer as higher than theirs.

- ☐ strongly disagree
- ☐ disagree
- ☐ neither agree or disagree
- ☐ agree
- ☐ strongly agree

34. I cannot discover breast cancer through doing breast self examinations.

- ☐ strongly disagree
- ☐ disagree
- ☐ neither agree or disagree
- ☐ agree
- ☐ strongly agree

35. I feel so uncomfortable with touching my breasts that I do not do breast self examinations.

- ☐ strongly disagree
- ☐ disagree
- ☐ neither agree or disagree
- ☐ agree
- ☐ strongly agree

36. I do not have time to do breast self examination.

- ☐ strongly disagree
- ☐ disagree
- ☐ neither agree or disagree
- ☐ agree
- ☐ strongly agree

37. It is important for me to do breast self examination because I should be involved in my own health care.

- ☐ strongly disagree
- ☐ disagree
- ☐ neither agree nor disagree
- ☐ agree
- ☐ strongly agree

38. It is important for me to do breast self examination because breast self examination contributes to early detection of breast cancer.

- ☐ strongly disagree
- ☐ disagree
- ☐ neither agree nor disagree
- ☐ agree
- ☐ strongly agree

39. It is important for me to do breast self examination because I can best discover breast lumps or changes myself.

- ☐ strongly disagree
- ☐ disagree
- ☐ neither agree nor disagree
- ☐ agree
- ☐ strongly agree

40. It is important for me to do breast self examination because my doctor does not examine my breast for abnormalities.

- ☐ strongly disagree
- ☐ disagree
- ☐ neither agree nor disagree
- ☐ agree
- ☐ strongly agree

41. It is not good for me to do breast self examination because it causes me to worry about breast cancer.

- ☐ strongly disagree
- ☐ disagree
- ☐ neither agree nor disagree
- ☐ agree
- ☐ strongly agree

42. It is not important for me to do breast self examination because I have only a slight chance of getting breast cancer.

- ☐ strongly disagree
- ☐ disagree
- ☐ neither agree nor disagree
- ☐ agree
- ☐ strongly agree

43. It is not important for me to do breast self examination because I am too young to have breast cancer.

- ☐ strongly disagree
- ☐ disagree
- ☐ neither agree nor disagree
- ☐ agree
- ☐ strongly agree

44. It is not important for me to do breast self examination because I have an annual check up with my doctor.

- ☐ strongly disagree
- ☐ disagree
- ☐ neither agree nor disagree
- ☐ agree
- ☐ strongly agree

45. Some women do not do breast self examination because they feel uncomfortable with touching their breasts.

- ☐ strongly disagree
- ☐ disagree
- ☐ neither agree nor disagree
- ☐ agree
- ☐ strongly agree

46. Some women do not do breast self examination because it would cause too much worry about breast cancer.

- ☐ strongly disagree
- ☐ disagree
- ☐ neither agree nor disagree
- ☐ agree
- ☐ strongly agree

47. Some women do not do breast self examination because they feel they will not be able to detect a breast change.

- ☐ strongly disagree
- ☐ disagree
- ☐ neither agree nor disagree
- ☐ agree
- ☐ strongly agree

48. I do not do breast self examination because I have never been shown how to do the technique.

- ☐ strongly disagree
- ☐ disagree
- ☐ neither agree nor disagree
- ☐ agree
- ☐ strongly agree
- ☐ not applicable (because I do breast self examination)

49. Before menopause, the best time to do monthly breast self examination is during the menstrual period.

- ☐ strongly disagree
- ☐ disagree
- ☐ neither agree nor disagree
- ☐ agree
- ☐ strongly agree

50. Before menopause, the best time to do monthly breast self examination is during the first week after the menstrual period.

- ☐ strongly disagree
- ☐ disagree
- ☐ neither agree nor disagree
- ☐ agree
- ☐ strongly agree

51. After menopause, breast self examination should be done weekly.

- ☐ strongly disagree
- ☐ disagree
- ☐ neither agree nor disagree
- ☐ agree
- ☐ strongly agree

52. After menopause, breast self examination should be done at the same time each month.

- ☐ strongly disagree
- ☐ disagree
- ☐ neither agree nor disagree
- ☐ agree
- ☐ strongly agree

53. The incidence of breast cancer increases with age.

- ☐ strongly disagree
- ☐ disagree
- ☐ neither agree nor disagree
- ☐ agree
- ☐ strongly agree

54. Older women who have never had a baby have a higher chance of developing breast cancer.

- ☐ strongly disagree
- ☐ disagree
- ☐ neither agree nor disagree
- ☐ agree
- ☐ strongly agree

55. Women who have their first baby late in life have a higher chance of developing breast cancer.

- ☐ strongly disagree
- ☐ disagree
- ☐ neither agree nor disagree
- ☐ agree
- ☐ strongly agree

56. Women who complete menopause late in life have a higher chance of developing breast cancer.

- ☐ strongly disagree
- ☐ disagree
- ☐ neither agree nor disagree
- ☐ agree
- ☐ strongly agree

57. Women who have a high fat diet have a higher chance of developing breast cancer.

- ☐ strongly disagree
- ☐ disagree
- ☐ neither agree nor disagree
- ☐ agree
- ☐ strongly agree

58. When doing breast self examinations, one should compare the two breasts.

- ☐ strongly disagree
- ☐ disagree
- ☐ neither agree nor disagree
- ☐ agree
- ☐ strongly agree

59. When doing breast self examination, one should lie down to examine the breasts.

- ☐ strongly disagree
- ☐ disagree
- ☐ neither agree nor disagree
- ☐ agree
- ☐ strongly agree

60. When doing breast self examination, one should look at the breast in the mirror.

- ☐ strongly disagree
- ☐ disagree
- ☐ neither agree nor disagree
- ☐ agree
- ☐ strongly agree

61. When doing breast self examination, one should examine the shape of the breasts.

- ☐ strongly disagree
- ☐ disagree
- ☐ neither agree nor disagree
- ☐ agree
- ☐ strongly agree

62. When doing breast self examination, one should use flattened finger tips to feel each breast for lumps or any changes.

- ☐ strongly disagree
- ☐ disagree
- ☐ neither agree nor disagree
- ☐ agree
- ☐ strongly agree

63. When doing breast self examination, one should contact a doctor if she believes she has found something abnormal.

- ☐ strongly disagree
- ☐ disagree
- ☐ neither agree nor disagree
- ☐ agree
- ☐ strongly agree

64. One should keep doing breast self examination after menopause.

- ☐ strongly disagree
- ☐ disagree
- ☐ neither agree nor disagree
- ☐ agree
- ☐ strongly agree

65. Puckering of the breast may be a sign or a symptom of breast cancer.

- ☐ strongly disagree
- ☐ disagree
- ☐ neither agree nor disagree
- ☐ agree
- ☐ strongly agree

66. A lump in the breast may be a sign or a symptom of breast cancer.

- ☐ strongly disagree
- ☐ disagree
- ☐ neither agree nor disagree
- ☐ agree
- ☐ strongly agree

67. A dimple in the breast may be a sign or a symptom of breast cancer.

- ☐ strongly disagree
- ☐ disagree
- ☐ neither agree nor disagree
- ☐ agree
- ☐ strongly agree

68. Before menopause, the best time to do monthly breast self examination is during the first week after the menstrual period.

- ☐ strongly disagree
- ☐ disagree
- ☐ neither agree nor disagree
- ☐ agree
- ☐ strongly agree

Thoughts and Feelings about Breast Self-Examination

Below are some statements that women have made about breast self-exam, also called BSE. Please answer each statement to reflect what you think or feel about breast exam (BSE). Next to each statement is a place to mark your answer, from strongly agree to strongly disagree. Please check the blank that best describes your thoughts or feelings. Please be aware that there are no right or wrong answers.

1. I find it easy to remember to do BSE.

_____ Strongly agree _____ Agree _____ Neither agree nor disagree _____ Disagree _____ Strongly disagree

2. I do not think I could find a lump in my breast with self-breast exam.

_____ Strongly agree _____ Agree _____ Neither agree nor disagree _____ Disagree _____ Strongly disagree

3. I'm reminded to do BSE by things I see or hear (for example, magazine, poster, TV)

_____ Strongly agree _____ Agree _____ Neither agree nor disagree _____ Disagree _____ Strongly disagree

4. I don't do BSE because I have physical discomfort in my breasts when I do it.

_____ Strongly agree _____ Agree _____ Neither agree nor disagree _____ Disagree _____ Strongly disagree

5. Doing BSE is worthwhile to find a lump which could be cancer so it can be treated early for the best results.

_____ Strongly agree _____ Agree _____ Neither agree nor disagree _____ Disagree _____ Strongly disagree

6. I do BSE so I can be in control of some aspect of my health.

_____ Strongly agree _____ Agree _____ Neither agree nor disagree _____ Disagree _____ Strongly disagree

7. By examining their own breasts, women have an effective way of finding changes in their breast.

_____ Strongly agree _____ Agree _____ Neither agree nor disagree _____ Disagree _____ Strongly disagree

8. Doing BSE can decrease my chance of early death from breast cancer.

_____Strongly agree _____Agree _____Neither agree nor disagree _____Disagree _____Strongly disagree

9. People with whom I am close would think it unusual if I did BSE.

_____Strongly agree _____Agree _____Neither agree nor disagree _____Disagree _____Strongly disagree

10. It is embarrassing for me to do monthly breast exams.

_____Strongly agree _____Agree _____Neither agree nor disagree _____Disagree _____Strongly disagree

11. Doing self breast exams prevents future problems for me.

_____Strongly agree _____Agree _____Neither agree nor disagree _____Disagree _____Strongly disagree

12. In order to do monthly breast exams, I have to give up quite a bit.

_____Strongly agree _____Agree _____Neither agree nor disagree _____Disagree _____Strongly disagree

13. I have a lot to gain by doing self breast exams.

_____Strongly agree _____Agree _____Neither agree nor disagree _____Disagree _____Strongly disagree

14. Self breast exams can be painful.

_____Strongly agree _____Agree _____Neither agree nor disagree _____Disagree _____Strongly disagree

15. Self breast exams can help me find lumps in my breasts.

_____Strongly agree _____Agree _____Neither agree nor disagree _____Disagree _____Strongly disagree

16. Self breast exams are time consuming.

_____Strongly agree _____Agree _____Neither agree nor disagree _____Disagree _____Strongly disagree

17. If I do monthly breast exams, I may find a lump before it is discovered by regular health exams.

_____Strongly agree _____Agree _____Neither agree nor disagree _____Disagree _____Strongly disagree

18. My family would make fun of me if I did self breast exams.

_____Strongly agree _____Agree _____Neither agree nor disagree _____Disagree _____Strongly disagree

19. I would not be so anxious about breast cancer if I did monthly exams.

_____Strongly agree _____Agree _____Neither agree nor disagree _____Disagree _____Strongly disagree

20. The practice of self breast exams interferes with my activities.

_____Strongly agree _____Agree _____Neither agree nor disagree _____Disagree _____Strongly disagree

21. I am not sure that I know how to do BSE properly.

_____Strongly agree _____Agree _____Neither agree nor disagree _____Disagree _____Strongly disagree

22. Doing self breast exams would require starting a new habit which is difficult.

_____Strongly agree _____Agree _____Neither agree nor disagree _____Disagree _____Strongly disagree

23. I believe that my doctor can detect a lump in my breast during an annual exam sooner that I can by BSE.

_____Strongly agree _____Agree _____Neither agree nor disagree _____Disagree _____Strongly disagree

24. I am afraid I would not be able to do self breast exams.

_____Strongly agree _____Agree _____Neither agree nor disagree _____Disagree _____Strongly disagree

25. I am very confident that I could find a lump if one was in my breast.

_____Strongly agree _____Agree _____Neither agree nor disagree _____Disagree _____Strongly disagree

26. I find it is difficult to remember to do self breast exams each month.

_____Strongly _____Agree _____Neither agree _____Disagree _____Strongly
agree nor disagree disagree

27. I believe that if I did regular BSE, I could protect my future health.

_____Strongly _____Agree _____Neither agree _____Disagree _____Strongly
agree nor disagree disagree

28. I find it difficult to do BSE at the recommended time each month.

_____Strongly _____Agree _____Neither agree _____Disagree _____Strongly
agree nor disagree disagree

29. I believe that I have a good chance of cure if I find a lump early by BSE.

_____Strongly _____Agree _____Neither agree _____Disagree _____Strongly
agree nor disagree disagree

30. When I think about doing BSE, it's not the recommended time of the month, so I don't do it.

_____Strongly _____Agree _____Neither agree _____Disagree _____Strongly
agree nor disagree disagree

31. I am comfortable with touching my breasts.

_____Strongly _____Agree _____Neither agree _____Disagree _____Strongly
agree nor disagree disagree

32. When I think about doing BSE, I am not in the right situation, so I don't do it.

_____Strongly _____Agree _____Neither agree _____Disagree _____Strongly
agree nor disagree disagree

33. I do not think that it is worth doing regular BSE because by the time that I could feel a lump, it would be too late.

_____Strongly _____Agree _____Neither agree _____Disagree _____Strongly
agree nor disagree disagree

34. I do not do BSE as often as I should, because I am afraid of finding a lump.

_____Strongly _____Agree _____Neither agree _____Disagree _____Strongly
agree nor disagree disagree

35. Discovering lumps in the breast at an early stage will not help improve the outcome of breast cancer.

_____Strongly _____Agree _____Neither agree _____Disagree _____Strongly
agree nor disagree disagree

36. I do not do BSE because I don't want to be unnecessarily worried.

_____Strongly _____Agree _____Neither agree _____Disagree _____Strongly
agree nor disagree disagree

37. It is not necessary for me to do BSE because I see a health care provider regularly for breast exams.

_____Strongly _____Agree _____Neither agree _____Disagree _____Strongly
agree nor disagree disagree

38. I would rather not know if something were wrong in my breast.

_____Strongly _____Agree _____Neither agree _____Disagree _____Strongly
agree nor disagree disagree

39. I do not do BSE because my breasts are so small that if a lump were there, I'd know it.

_____Strongly _____Agree _____Neither agree _____Disagree _____Strongly
agree nor disagree disagree

40. I do BSE because I like to know what's going on in my body.

_____Strongly _____Agree _____Neither agree _____Disagree _____Strongly
agree nor disagree disagree

41. I am sure of the steps to follow to do a BSE.

_____Strongly _____Agree _____Neither agree _____Disagree _____Strongly
agree nor disagree disagree

42. I don't think I should touch my breasts.

_____Strongly _____Agree _____Neither agree _____Disagree _____Strongly
agree nor disagree disagree

43. I am able to note normal breast tissue when I feel it.

_____Strongly _____Agree _____Neither agree _____Disagree _____Strongly
agree nor disagree disagree

44. I am able to note abnormal breast tissue when I feel it.

_____Strongly agree _____Agree _____Neither agree nor disagree _____Disagree _____Strongly disagree

45. There are highly effective ways of treating breast cancer today.

_____Strongly agree _____Agree _____Neither agree nor disagree _____Disagree _____Strongly disagree

46. It is embarrassing for me to look at my breasts in great detail.

_____Strongly agree _____Agree _____Neither agree nor disagree _____Disagree _____Strongly disagree

47. I am able to tell the difference between normal and abnormal breast tissue.

_____Strongly agree _____Agree _____Neither agree nor disagree _____Disagree _____Strongly disagree

48. My breasts are so lumpy that BSE is only confusing.

_____Strongly agree _____Agree _____Neither agree nor disagree _____Disagree _____Strongly disagree

49. I have my own way of reminding myself to do BSE (for example, marking a calendar).

_____Strongly agree _____Agree _____Neither agree nor disagree _____Disagree _____Strongly disagree

50. Because I cannot tell what I am feeling when I check myself, my breast self-exam is useless.

_____Strongly agree _____Agree _____Neither agree nor disagree _____Disagree _____Strongly disagree

51. If I found cancer early with BSE, the treatment would be less extreme and my body would be affected less.

_____Strongly agree _____Agree _____Neither agree nor disagree _____Disagree _____Strongly disagree

52. Because someone close to me encourages me to, I do BSE.

_____Strongly agree _____Agree _____Neither agree nor disagree _____Disagree _____Strongly disagree

53. I am comfortable with the thought of doing BSE.

_____Strongly agree _____Agree _____Neither agree nor disagree _____Disagree _____Strongly disagree

54. Because my nurse or doctor encourages me to, I do BSE.

_____Strongly agree _____Agree _____Neither agree nor disagree _____Disagree _____Strongly disagree

55. I am comfortable with looking at my breasts in detail.

_____Strongly agree _____Agree _____Neither agree nor disagree _____Disagree _____Strongly disagree

Given that many of us may not do BSE as regularly as recommended, would you say that:

You have done a BSE in the last 12 weeks/3months? _____Yes _____no

If so, how many times?_____

You have done a BSE in the last 8 weeks/2 months? _____Yes _____no

If so, how many times?_____

You have done a BSE in the last 4 weeks? _____Yes _____no

If so, how many times?_____

You have done a BSE in the last 2 weeks? _____Yes _____no

If so, how many times?_____

Bibliography

- Alagna, S. W., Morokoff, P. J., Bevett, J. M., & Reddy, D. M. Performance of Breast Self-Examination at High Risk for Breast Cancer. *Women and Health*, 12 (2), 29-45. 1987.
- Calnan, C., & Rutter, D. R. Do Health Beliefs Predict Health Behavior? An Analysis of Breast Self-Examination. *Social Science Medicine*, 22 (6), 673-678. 1986.
- Celentano, D. D., & Holtzman, D. Breast Self-Examination Competency: An Analysis of Self-Reported Practice and Associated Characteristics. *American Journal of Public Health*, 73 (11), 1321-1323. 1983.
- Champion, V. Use of the Health Belief Model in Determining Frequency of Breast Self-Examination. *Research in Nursing and Health*, 8, 373-379. 1985.
- Champion, V. Attitudinal Variables Related to Intention, Frequency and Proficiency of Breast Self-Examination in Women 35 and Over. *Research in Nursing and Health*, 11, 283-291. 1988.
- Champion, V. Relationship of Age to Factors Influencing Breast Self Examination Practice. *Health Care for Women International*, 13, 1-9. 1992.
- Coleman, E. Practice and Effectiveness of Breast Self Examination: A Selective Review of the Literature (1977-1989). *Journal of Cancer Education*, 6(2), 83-92. 1991.
- Costanza, M. Breast Cancer Screening in Older Women: Overview. *The Journal of Gerontology*, 47, 1-3. 1992.
- Costanza, M. C., & Foster, R. S. Relationship Between Breast Self Examination and Death From Breast Cancer by Age Groups. *Cancer Detection and Prevention*, 7, 103-108. 1984.

- Dodd, G. American Cancer Society Guidelines on Screening for Breast Cancer: An Overview. *Ca - A Cancer Journal For Clinicians*, 42 (3), 177-180. 1992.
- Dunbar, J., Begg, L., Yasko, J., & Belle, S. Breast Self-Examination Compliance Among Older High Risk Women. *Patient Education and Counseling*, 18, 223- 230. 1991.
- Ferris, L. E., Shamian, E., & Tudiver, F. The Toronto Breast Self Examination Instrument (TBSEI): Its Development and Reliability and Validity Data. *Journal of Clinical Epidemiology*, 44 (12), 1309-1317. 1991.
- Fintor, L. Worldwide Breast Cancer Mortality, 1986-1988. *Journal of National Cancer Institute*, 84 (11), 833. 1992.
- Fletcher, S. W., Morgan, T. M., O'Malley, M. S., Earp, J. L., & Degnan D. Is Breast Self-Examination Predicted by Knowledge, Attitudes, Beliefs, or Sociodemographic Characteristics? *American Journal of Preventative Medicine*, 5 (4), 207-215. 1989.
- Foster, R. S., Worden, J. K., Costanza, M. C., & Solomon, L. J. Clinical Breast Examination and Breast Self-Examination. *Cancer*, 69 (7), 1992-1998. 1992.
- Grammatik, 5. *The Easiest Way To Improve Your Writing* [Computer Program]. Reference Software International: San Francisco, California. 1992.
- Grover, P. L., Amsel, J., Balshem, A. M., Kulpa, B., & Engstrom, P. F. Breast Self-Examination Post Mastectomy: Empirical Findings and Their Implications. In C. Mettlin & G. P. Murphy (Eds.). *Progress in Cancer Control IV: Research in the Cancer Center* (pp. 293-303), New York: Alan, R. Liss. 1983.
- Haagensen, C. D., & Wyndham, E. B. Surgery Grows Up: The Most Important Conquests of Modern Surgery. In Haagensen, C. D. (Ed.), *Carcinoma of the Breast* (pp. 266-269). New York: New York. 1943.
- Haughey, B. P., Marshall, J. R., Nemoto, T., Kroidart, K., Mettlin, C., & Swanson, M. Breast Self-Examination: Reported Practices, Proficiency, and Stage of Disease at

Diagnosis. *Oncology Nursing Forum*, 15 (3), 315-319. 1988.

Hill, D., White, V., Jolley, D., & Mapperson, K. Self Examination of the breast: is it beneficial? Meta-analysis of studies investigating breast self examination and extent of disease in patients with breast cancer. *British Medical Journal*, 297, 271-275. 1988.

Hill, D. J., & Shugg, D. Breast self-examination practices and attitudes among breast cancer, benign breast disease and general practice patients. *Health Education and Research*, 4 (2), 192-203. 1989.

Huguley, C. M., & Brown, R. B. The Value of Breast Self-Examination. *Cancer*, 47, 989-995. 1981.

Humphrey, L. J., & Eiseman, B. Breast Cancer. In B. Eiseman, W. A. Robinson, & G. Steele (Eds.). *Follow-Up of the Cancer Patient* (pp. 111-113). New York: New York. 1982.

Kelly, P. T. Breast Self-Examinations: Who Does Them and Why. *Journal of Behavioral Medicine*, 2 (1), 31-37. 1979.

Kinne, D. Primary Treatment of Breast Cancer. In J. R. Harris, S. Hellman, I. C. Henderson, & D. W. Kinne. (Eds.), *Breast Diseases* (pp. 259-358). Philadelphia: Lippincott. 1987.

Lauver, D. & Angerame, M. Development of a questionnaire to measure beliefs and attitudes about breast self-examination. *Cancer Nursing*, 11 (1), 51-57. 1988.

Massey, V. Perceived Susceptibility to Breast Cancer and Practice Of Breast Self-Examination. *Nursing Research*, 35 (3), 183-185. 1986.

McAllister, R. M., Horowitz, S. T., & Gilden, R. V. (Eds.). *Cancer* New York: Harper Collins Publisher. 1993.

Mettlin, C. Breast Cancer Risk Factors. *Cancer*, 69(7), 1904-1909. 1992.

- Morris, S., Corder, A. P., & Taylor, I. What are the benefits of routine breast cancer follow-up? *Postgraduate Medical Journal*, 68, 904-907. 1992.
- Munro, B. H., Vistainer, M. A., & Page, E. B. *Statistical Methods For Health Care Research*. Philadelphia: J. B. Lippincott. 1986.
- Neuman, B. *The Neuman Systems Model*. Norwalk, Connecticut: Apple and Lange. 1989.
- Newcomb, P. A., Weiss, N. S., Storer, B. E., Scholes, D., Young, B. E., & Voigt, L. F. Breast Self-Examination in Relation to the Occurrence of Advanced Breast Cancer. *Journal of the National Cancer Institute*, 83 (4), 260-265. 1991.
- Peacock, J. L. Cancer Staging for Surgeons. *General Surgery and Laparoscopy News*, p. 17. 1993, February.
- Polit, D. F., & Hungler, B. P. *Nursing Research: Principles and Methods* Third Edition. Philadelphia: J. B. Lippincott. 1987.
- Pressman, P. I. Discussing Breast Cancer With the Patient. In M. E. Duafala (Ed.), *Changing Views in Surgical Oncology*, (pp. 1-16). Philadelphia, PA. 1992.
- Redeker, N. S. Health Beliefs, Health Locus of Control, and the Frequency of Practice of Breast Self-Examination in Women. *Journal of Obstetric, Gynecologic & Neonatal Nursing*, 18(1), 45-51. 1989.
- Salazar, M. K., & Carter, W. B. Evaluation of Breast Self-Examination Beliefs Using a Decision Model. *Western Journal of Nursing Research*, 15(4), 403-421. 1993.
- Shepperd, S. L., Solomon, L. J., Atkins, E., Foster, R. S., & Frankowski, B. Determinants of Breast Self-Examination Among Women of Lower Income and Lower Education. *Journal of Behavioral Medicine*, 13(4), 359-371. 1990.
- Smith, E. M., & Burns, T. L. The Effects of Breast Self-Examination in a Population-Based Cancer Registry: A Report of Differences in Extent of Disease. *Cancer*, 55, 432-437. 1985.

Smith, I. E. Recurrent Disease. In J. R. Harris, S. Hellman, I. C. Henderson, & D. W. Kinne (Eds.), *Breast Diseases* (pp. 369-384). Philadelphia: Lippincott. 1987.

Winchester, D. P., & Cox, J. D. Standards for Breast-Conservation. *Ca - A Cancer Journal for Clinicians*, 42(3), 134-158. 1992.