Mississippi University for Women
ATHENA COMMONS

MSN Research Projects | MSN Research

8-1-2001

Effects Of An Educational Program On Breast Health Promotion In Elderly Women

Patricia A. Bader

Follow this and additional works at: https://athenacommons.muw.edu/msn-projects

Part of the Nursing Commons

Recommended Citation

Bader, Patricia A., "Effects Of An Educational Program On Breast Health Promotion In Elderly Women" (2001). *MSN Research Projects*. 90.
https://athenacommons.muw.edu/msn-projects/90

This Thesis is brought to you for free and open access by the MSN Research at ATHENA COMMONS. It has been accepted for inclusion in MSN Research Projects by an authorized administrator of ATHENA COMMONS. For more information, please contact acpowers@muw.edu.

EFFECTS OF AN EDUCATIONAL PROGRAM ON BREAST HEALTH PROMOTION IN ELDERLY WOMEN

by

PATRICIA W. BADER

A Thesis
Submitted in Partial Fulfillment of the Requirements
for the Degree of Master of Science in Nursing
in the Division of Nursing
Mississippi University for Women

COLUMBUS, MISSISSIPPI

August 2001

ProQuest Number: 27919833

All rights reserved

INFORMATION TO ALL USERS
The quality of this reproduction is dependent on the quality of the copy submitted.

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

ProQuest 27919833

Published by ProQuest LLC (2020). Copyright of the Dissertation is held by the Author.

All Rights Reserved.
This work is protected against unauthorized copying under Title 17, United States Code
Microform Edition © ProQuest LLC.

ProQuest LLC
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106 - 1346

Effects of an Educational Program
on Breast Health Promotion
in Elderly Women

by

Patricia W. Bader

Instructor in Nursing
Director of Thesis

Professor of Nursing
Member of Committee

Assistant Professor of Nursing
Member of Committee

Director of the Graduate School

Abstract

Breast cancer risk increases with age, and disease mortality has a direct correlation to the stage of detection. Mammography remains the gold standard for early detection of the disease, yet females aged 65 and over have demonstrated a lack of compliance with recommended screening frequency. The purpose of this study was to determine the effects of an educational program on the variables of perceived susceptibility to breast cancer, benefits of and barriers to mammography, and intention to obtain mammography. The variables are constructs of the Health Belief Model which served as the theoretical framework for the study. The variables were assessed through use of Champion's Susceptibility, Benefits, and Barriers Scale for Mammography Screening. The quasi-experimental, pretest-posttest, one-group study was conducted in small group settings in five senior housing facilities located in the metropolitan area of a large southeastern city in the United States. The educational program intervention was offered to a convenience sample of females aged 65 years and older. The sample (N = 13) was drawn from this population and included those women with no history of breast cancer and no mammogram in the

past 2 years. Statistical data included demographic analysis and paired *t* tests. There was no statistically significant difference in the perceived susceptibility to breast cancer, benefits and barriers of mammography, or intention to obtain a mammogram after the educational program. Women who were in compliance with mammography screening guidelines had higher perceptions of the benefits of mammography than those who were not current on their mammograms. The majority of women who chose to attend the educational program were current with the mammography screening recommendations and met the goal of 60% compliance set by the Healthy People 2000 initiative. Recommendations for further research include replication of this study with a larger and more diverse sample. A similar study could be conducted specifically targeting women who are not in compliance with guidelines. Qualitative research studies could be implemented to explore the reasons why those women who are in compliance with mammography screening are compliant. The role the health care provider plays in the recommendation to obtain mammography should be ascertained through additional study.

Dedication

I would like to dedicate this work to my parents who have not shared in any of the earthly joys I have been blessed to experience. I know, however, that they have been that guiding light, the one that shines so brightly from the sky.

Acknowledgments

I would like to express my sincere gratitude to my research committee for the incredible amount of time and interest they have shown me during this endeavor. To my chair, Terri Hamill, my thanks for her patience, guidance, and suggestions, always given in a calm and reassuring manner. To Dr. Lynn Chilton, my thanks for her eloquent demeanor in offering her comments and for her painstaking grammatical suggestions. To Betty Metheny, my thanks for her personal touch and soulful understanding of my commitment to this task. I share the joy of completion with each of you.

Words are inadequate to express to my husband, Ray, my deepest appreciation for his unwavering support throughout this journey. Without his love and encouragement, I could not have completed the tasks of the program. I am so grateful to our two sons who have been instrumental in providing the balance to this whole equation. Chris has been the sounding board, measuring stick, and voice of reason every time I needed him to be. Danny has been the calm, painstaking listener who brings everything into perspective effortlessly.

I would like to acknowledge Dr. Albert Grobmyer, III for sharing with me his passion for the subject of breast disease. He planted the seed many years ago and nurtured it through his teaching. I humbly offer this study as the work of a dedicated student.

Table of Contents

		Page
Abstract		iii
Dedication		v
Acknowledgments		vi
List of Tables		x
Chapter		
I.	The Research Problem	1
	Establishment of the Problem	2
	Significance to Nursing	6
	Theoretical Framework	9
	Statement of the Problem	10
	Hypotheses	11
	Definition of Terms	12
	Summary	13
II.	Review of the Literature	15
	Summary	47
III.	The Method	50
	Design of the Study	51
	Setting, Population, and Sample	52
	Variables	53
	Limitations	54
	Instrumentation	55
	Intervention	56
	Data Collection Procedure	57
	Method of Data Analysis	59
	Summary	59
IV.	The Findings	61
	Description of the Sample	61
	Demographic Data	62
	Data Analysis	64
	Susceptibility	64

Benefits 65
Barriers 65
Intention 66
Additional Findings 67
Summary 69

V. The Outcomes 71

Summary and Discussion of Findings 72
Limitations of the Study 76
Conclusions 77
Implications for Nursing 78
Recommendations for Further Study 81

References 83

Appendix

A. Breast Health Promotion Survey (Pretest) . . . 86

B. Breast Health Promotion Survey (Posttest) . . 92

C. Letter Requesting Permission to Use Tool . . . 97

D. Educational Program Using PowerPoint 101

E. Approval of Mississippi University for Women's Committee on Use of Human Subjects in Experimentation 103

F. Letter to Community Housing Representative 105

G. Informed Consent for Breast Health Promotion Program 107

H. Cover Letter for Mailed Questionnaire 109

I. Raw Data 111

J. Raw Data Code 113

List of Tables

Table		Page
1.	Demographic Characteristics of the Sample by Frequency and Percentage	63
2.	Mean and Standard Deviation Related to Response Variables Using a *t* Test	67
3.	Pretest Response Variables from Nonparticipants and Participants Utilizing a *t* Test	68
4.	Average Scores on Response Variables Between Intention and Non-Intention to Obtain Mammography	69

Chapter I

The Research Problem

Breast cancer is the most common type of cancer affecting women and the second leading cause of cancer deaths in women in the United States. The American Cancer Society (2000) estimates that 182,800 new cases of breast cancer will be diagnosed this year and approximately 40,780 women will die from the disease. Additional estimates are that one in eight women will develop breast cancer in her lifetime, compared with one in nine in 1991. The chances of getting breast cancer by the age of 50 years are 1 in 54, but by the age of 60 years the chances are 1 in 23. Approximately 77% of all breast neoplasms occur in women older than 50 years of age (American Cancer Society, 2000). Increased awareness of the risks of breast cancer in this population could lead to increased screening for the disease. Therefore, the focus of this research endeavor was to evaluate an educational program reflecting issues related to risks associated with breast cancer and early detection with mammography.

Establishment of the Problem

Many factors enter into the risk assessment for development of the disease, but being female and advancing age are the two strongest factors. Family history of breast cancer in one first-degree relative (mother, sister, or daughter) doubles the woman's risk of disease. Those women with two first-degree relatives have five times the risk of developing the disease. A woman with breast cancer in one breast has a threefold to fourfold increased risk of developing a new cancer in the other breast. Women with early menarche (before age 12 years) or late menopause (after age 50) have a slightly higher risk. Those women with their first pregnancy at 30 years of age or older and those who are nulliparous are at increased risk. Alcohol consumption of two to five drinks per day increases the risk by 1.5 times that of nondrinkers (American Cancer Society, 2000). The link between postmenopausal obesity and breast cancer is being studied although this area requires additional research.

Researchers from the National Cancer Institute conducted the Omnibus Survey in July 1999. Survey results revealed that elderly females do not perceive the increased risk of breast cancer with advancing age. There were 36% of the 65-year-old and over female population surveyed who were not as concerned about getting breast

cancer now as they were when they were younger. An additional 34% of the respondents indicated elderly women without risk factors could be less concerned about getting mammography. This research supports the perception that elderly females have a false sense of security about their age relating to the risk of developing breast cancer (National Cancer Institute, 1999).

Mortality from breast cancer has a direct correlation to the stage of detection. The 5-year survival rate is 97% for women in whom local disease is detected. For women in whom the disease is detected with distant metastasis, the survival rate drops to 20%. Mammography is the gold standard for early detection of the disease (American Cancer Society, 2000). Approximately 60% to 95% of breast abnormalities can be detected by mammography. Regular screening mammography in Europe reduced breast cancer mortality by 20% to 40% (U.S. Department of Health and Human Services [DHHS], 1999). Some estimates reveal that early detection through mammography can prevent approximately 25% of breast cancer deaths (Lauver, Kane, Bodden, McNeel, & Smith, 1999). In Healthy People 2000 the DHHS (1999) established a goal that 60% of women aged 50 and over have a mammogram every 1 to 2 years. Various agencies have developed clinical practice guidelines for mammography screening in this age group. The American

Cancer Society and the American College of Obstetricians and Gynecologists have recommended annual screening. The American Academy of Family Physicians and the National Cancer Institute have recommended screening frequency of 1 to 2 years (DHHS, 1999). Although early detection has been shown to reduce mortality and elderly females are at higher risk of developing breast cancer, this population has underused mammography as a screening tool. Chevarley and White (1997) estimated that between 20% and 50% of women over the age of 40 have the recommended yearly mammograms. The Breast Cancer National Project Overview (DHHS, 1999) reported more current, but not significantly improved screening rates at 30% to 60% for women over the age of 50 years. Although the 65 and over group now have Medicare coverage for screening mammography, the mammography compliance goals set by Healthy People 2000 (DHHS, 1991) were not met by this group. Therefore, the previously associated barrier of cost for the mammogram is not considered to be a significant factor. Additional reasons for the underutilization have been discussed in various studies. Holm, Frank, and Curtin (1999) included

> . . . inconvenience, worry, embarrassment, fear of radiation or pain, belief that mammography is unnecessary in the absence of symptoms, and lacking knowledge of recommended guidelines. Also, the fear of finding cancer has been viewed as a nearly universal perceptual barrier among women. (p. 153)

Conversely, the perception of the benefits of mammography has been shown to positively correlate to mammography usage (Lauver et al., 1999).

Educational efforts that address the knowledge deficit areas of breast cancer risk, mammography barriers, benefits, and utilization are important factors in improving the breast promotion behaviors of the elderly females. It has been reported that older adults related the value of organized educational sessions and the use of community venues as positive health promotion events (Fitch et al., 1997). The impact of health care providers' recommendations on the older adults' health promotion behaviors has been identified almost universally. Stoddard et al. (1998) highlighted the importance of communication between patient and physician in affecting increased rates of breast cancer screening. The importance of self-efficacy and social influences on intentions to obtain mammography also has been reported (Allen, Sorensen, Stoddard, Colditz, & Peterson, 1998). These areas are recommended in educational programs and counseling with women who have not complied with screening mammography recommendations in the past. While studies have linked the physician as the provider and communicator, this researcher pursued the impact of information delivered by the nurse practitioner student. Learning the risk factors

for breast cancer, the benefits of mammography, the methods used to obtain a mammogram, and the current screening recommendations will assist the elderly female in health promotion behaviors. The purpose of this study was to determine the effectiveness of an educational program for elderly females concerning perception of breast cancer risk, the benefits and barriers of mammography, and the intention to obtain mammography.

Significance to Nursing

Breast cancer is a major risk for females who are 65 years and older. The health promotion activity of mammography screening is significant in early detection of this disease. The Health Belief Model provides a framework for understanding the health promotion behaviors that are practiced by the senior population. When an elderly female's health-influencing behaviors are understood theoretically, interventions to enhance those behaviors can be designed.

This research could suggest that intention to obtain mammography increased when the elderly female population received education about breast cancer and mammography. The knowledge that the risk of breast cancer increases with advancing age improves the perception of susceptibility to the disease. The understanding of the

benefits of mammography in early detection and thus reduced morbidity and mortality could increase the intention to obtain mammography. When the barriers to mammography are addressed, they can be overcome, thus increasing the utilization of mammography. Nurse practitioners should assess the knowledge and perception of risks that the senior woman possesses regarding breast cancer. The nurse practitioner should then address the specific issues of screening mammography in relation to the perceptions offered by the patient.

Nurse practitioners are educators and should inform the elderly females of the benefits of mammography. The risk factors of the disease can be explained so these women understand that they are at increased risk of developing the disease. The logistics of obtaining a mammogram is also an important aspect of education. Community or group educational events can add the dimension of social influences to the spectrum of education.

Formal nursing education programs should include the importance of this disease in the elderly female population. Knowledge regarding the reduction of the morbidity and mortality of disease processes through early detection is an important adjunct to nursing education.

The impact of secondary prevention through mammography screening should be a part of the nursing curriculum.

Research has indicated a correlation between mammography utilization and the elderly females' perception of breast cancer risks, and mammography barriers and benefits. Conducting on-site research and keeping abreast of current studies regarding the influences on health promotion behavior impact clinical practice through nursing research. Promoting this important screening tool can decrease the morbidity and mortality associated with breast cancer as it affects women who are 65 years of age and older. In the clinical setting, nurse practitioners need to encourage mammography use in the population of elderly females. A flow sheet or tracking mechanism has been found to be helpful in reminding these women of the annual reevaluation.

This research project is significant to nursing as it supports the role of the nurse practitioner in educational endeavors to improve breast health promotion behaviors in elderly females. As this segment of our population continues to grow, the nurse practitioner will have the opportunity to positively impact the health promotion behaviors of the senior females through clinical practice, educational efforts, and research.

Theoretical Framework

The conceptual framework upon which the study was based is the Health Belief Model as defined by Becker in 1988. This model has become a popular framework for nursing studies related to preventive health care practices and, specifically, breast health promotion behaviors. This theory holds that the health-seeking behavior of an individual is influenced by the perception of a threat posed by a health problem and the value related to actions aimed at reducing that threat. The components of the model include perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and self-efficacy (Rosenstock, 1990).

The application of the Health Belief Model to this study included perceived susceptibility as it relates to the person's knowledge of the risk factors of breast cancer and the recognition of the personal impact of those factors. Advancing age and being female are the two strongest risk factors, while family history holds a close third. If a senior female recognizes herself in this context, theoretically she should embrace breast health promotion techniques. Another variable from the Health Belief Model, perceived benefits, includes the person's belief that adopting breast cancer screening behaviors will result in health promotion and illness prevention.

Early detection is a means toward illness prevention in the sense that the early detection of the disease decreases morbidity and mortality, thus impacting the course of an illness. Barriers, the third variable from the Health Belief Model, exists to health-seeking behaviors regardless of the perceived benefits and susceptibility. Significant barriers to mammography have included cost, embarrassment, pain, worry about radiation, and fear of finding breast cancer (Miller & Champion, 1996). Other barriers more germane to the senior population may include a knowledge deficit related to scheduling a mammogram, lack of transportation, memory deficits, and the belief that breast cancer is a young woman's disease. The Health Belief Model served as the framework for this research, which sought to evaluate the impact of an educational program on the perceived susceptibility, perceived benefits, and perceived barriers relating to breast cancer risk and mammography.

Statement of the Problem

Some researchers have determined that elderly females aged 65 years and over are at increased risk for breast cancer, yet this group of elders do not perceive their susceptibility. The mortality and morbidity of this disease can be ameliorated with early detection and

treatment. Screening mammography is the gold standard of early detection, yet the mammography compliance goals set by Healthy People 2000 are not met by this age group. An increase in knowledge regarding susceptibility, benefits of mammography, and barriers to mammography may be accomplished through educational programs tailored to the specific needs of this group of women.

Hypotheses

The following anticipated associations between the independent and dependent variables directed this study:

Ha_1: There will be an increase in the perceived susceptibility to breast cancer in elderly females after an educational program.

Ha_2: There will be an increase in the perceived benefits of mammography in elderly females after an educational program.

Ha_3: There will be a decrease in the perceived barriers to mammography in elderly females after an educational program.

Ha_4: There will be an increase in intention to obtain mammography in elderly females after an educational program.

Definition of Terms

For the purpose of this study, the following terms were defined in theoretical and operational contexts. The operational definitions of the major study variables were determined by the research tool, the Revised Susceptibility, Benefits and Barriers Scale for Mammography Screening (Champion, 1999).

1. Perceived susceptibility: Theoretical: appreciation of personal vulnerability to a risk. Operational: "perceived benefits of personal threat or harm related to breast cancer" (Champion, 1999, p. 342).

2. Perceived benefits: Theoretical: awareness of the positive attributes of an action. Operational: "perceived, positive outcomes of obtaining a mammogram" (Champion, 1999, p. 342).

3. Perceived barriers: Theoretical: awareness of the negative aspects related to an action. Operational: "perceived emotions, physical or structural concerns related to mammography behaviors" (Champion, 1999, p. 342).

4. Intention to obtain mammography: Theoretical: personal aim to obtain a breast tissue x-ray. Operational: person's set goal to obtain a breast tissue x-ray during the year.

5. Elderly females: Theoretical: women who are age 65 or older. Operational: women who are age 65 years or older with no prior history of breast cancer and who have not had a mammogram in the past 2 years.

6. Educational program: Theoretical: structured event to impart knowledge. Operational: structured lecture and media event to impart knowledge on the risk factors of breast cancer, the benefits of mammography, and the manner in which mammography is performed.

Assumptions

For the purpose of this study, the following assumptions were made:

1. Women have perceptions regarding susceptibility to breast cancer.

2. Women have perceptions related to the benefits of mammography.

3. Women have perceptions concerning barriers to mammography.

4. Perceptions related to susceptibility to breast cancer, benefits of mammography, and barriers to mammography can be measured.

Summary

This chapter presented the problem researched as the effect of an educational intervention on the breast health

promotion beliefs and intended practices of elderly women. The lack of compliance with mammography screening guidelines in the elderly female population and the association between early detection of breast cancer through mammography and reduced morbidity and mortality were established. The Health Belief Model guided this study, as the components of this theoretical framework established the influences on health promotion decisions related to mammography utilization. The implications for nursing practice, education, and research were offered. The hypotheses and assumptions were outlined. Terms were defined, both theoretically and operationally, as they were used in this study.

Chapter II

Review of the Literature

Breast health promotion behaviors are examined in several research studies. The review of literature revealed those studies germane to the current researcher's study. Factors that influenced breast cancer screening behaviors in elderly females were studied and examined to assess the strategies and current interventions surrounding mammography utilization. The studies hold important implications for the establishment of the scope of the problem and the development of the research study. The following reviews represent a significant part of the current research on mammography.

Lauver et al. (1999) conducted a descriptive, cross-sectional study to define the variables that discriminate between the use and nonuse of screening behaviors for breast cancer. Based on Triandis' Psychological Theory of Behavior, the authors measured a set of psychosocial variables: affect, norms, beliefs, habits, and facilitators. Affect referred to feelings about a behavior, and beliefs referred to the perception of the

likelihood of outcomes of the behavior. Norms were the social influences regarding the behavior, and habit referred to the usual practice of the behavior. Facilitators were external resources that enabled engagement in the behavior. The variables of knowledge, clinical factors, and demographic factors were identified as these had previously been reported in the literature. Knowledge referred to the screening practice recommendations, cost, and availability. Clinical factors included personal and family history of breast disease. Age, race, and marital status were the primary demographic factors described.

Lauver et al. (1999) proposed affect, beliefs, and facilitators as the most likely influences on breast cancer screening behaviors. The specific aim of the study was to determine whether the theoretical-based variables defined screening behaviors adequately or whether the additional factors gleaned from literature held a stronger association. Since the three screening behaviors have inherent differences in regard to access and engagement, the distinguishing variables were measured for screening behavior rather than as a group of behaviors.

The population included women between the ages of 51 and 80 years who had not had a mammogram in the last 13 months, had no prior history of breast cancer, and were

able to communicate in English over the telephone. Record reviews from a mammography clinic in an urban county setting yielded the eligible participants. The clinic served predominantly low-income African American clients. After approval from the human subjects review committee, nurse researchers contacted the potential participants by telephone. Of the initial 254 patients contacted, the final study sample included 119 women, with a mean age of 63.65 years and a racial composition of 57% Caucasian, 42% African American, and 1% Latino. Twenty-seven percent had some college, 34% graduated from high school, and 40% had less than a 12^{th}-grade education. A large majority (91%) had some form of health insurance. A fairly even mix of occupations ranged from service to sales, homemaking, professional, and administrative support.

The telephone interview initially confirmed eligibility and obtained consent for participation in the study. Nurse researchers used a modified Profile of Mood States to measure affect. An 8-item adjective list was used, and each item was ranked on a 5-point scale. The results were averaged and reported with the higher scores indicative of negative moods. The internal consistency of Cronbach's alpha was 0.75. The Attitudes Toward Mammography Scale was used to measure beliefs about mammography. The scale developed by Monato and Taplin in

1991 includes outcomes of mammography related to procedural and diagnostic factors. The instrument was reported on a 5-point scale with the higher rating more positive. Cronbach's alpha was 0.56 in this study. Beliefs about breast cancer susceptibility were gathered by responses to two questions on a 5-point scale. These beliefs were related to the likelihood of developing cancer and the likelihood of developing cancer relative to other women in the same age group. Melnyk's Barriers Scale (1990) was used to measure facilitators, with higher scores reflective of greater barriers. Barriers and facilitators were assumed to exist at ends of a continuum. The responses were averaged, and Cronbach's alpha was 0.88.

Participants also were asked to report on their engagement in mammography and clinical breast exam in the previous 13 months. Data obtained from these self-reports were coded dichotomously as nonuse or use. Reports of breast self-exam frequency were obtained on a 9-point frequency scale ranging from none (0) to daily (8) and then dichotomized into monthly or not monthly for comparison purposes with the mammography and clinical breast exam data. The knowledge factor was determined by answers to three questions about the recommendations for mammography, the right to ask for a clinical breast exam,

and the availability of reimbursement for the cost of a mammogram. These responses were scored as agree, disagree, or neither.

Of the 199 participants in this study, Lauver et al. (1999) determined that 56% had not had mammography as recommended and 79% did not do breast self-examination monthly. Of the 89 participants who knew the date of their clinical breast exam, 30% did not have that exam as recommended. Mammography use and clinical breast exams were positively associated, $\Phi = 0.67$, $\underline{n} = 89$, $\underline{p} < .05$. In this sample, 67% of the patients had a clinical breast examination while having the mammography. The frequency of breast self-examination was not associated with either mammography, $\Phi = 0.03$, $\underline{p} < .05$, or clinical breast exam, $\Phi = 0.10$, $\underline{p} < .05$. Of note is the fact that mammography and clinical breast examination involve use of a health care system and breast self-examination does not. Most women reported few barriers so those scores were skewed, and barriers were reported as absent or present.

Lauver et al. (1999) used discriminant function analysis to identify the variables that differentiate between the group of women who had engaged in screening practices and the group of women who did not engage in screening practices. Variables associated with mammography use included negative moods, barriers, history of

asymptomatic breast problems, marital status, private insurance, and race. Women were more likely to have mammography if they had low negative moods, no barriers, no history of asymptomatic breast problem, or had private insurance and were single women of color.

Variables associated with clinical breast examination were negative moods, barriers, and knowledge that one can request a clinical breast exam, previous breast biopsy, education, and race. Women with low negative moods about mammography, no barriers, a breast biopsy, and more education who knew they could ask for a clinical breast exam and were of color were more likely to have clinical breast exam.

Variables associated with breast self-examination included mammography and risk perception beliefs, demonstration of the exam, history of breast symptoms and breast biopsy, family history of breast cancer, and marital status. The most likely group to engage in breast self-examination was single women with positive beliefs, low perceived risk of breast cancer, no history of breast symptoms, a previous breast biopsy, positive family history, and had been taught the technique.

The Lauver et al. (1999) study provided the framework for the current study under investigation. This researcher conducted an educational program for women on breast

health promotion practices. The variables identified in the Lauver et al. (1999) study were addressed in the program as they are recognized as affecting breast cancer screening behaviors. The topics of mammography and perceived susceptibility to breast cancer were addressed during the presentation. The program included the recommended frequency for mammography, the benefits of mammography in early detection, and financial responsibility under Medicare for the test. The risk factors and occurrence rates of breast cancer in the 65 year and older age group were discussed to improve the perception of breast cancer risk. The conclusions drawn from the Lauver et al. (1999) study supported this approach.

It is important to understand the factors that influence a woman's decision to obtain a mammogram. The impact of health beliefs and internal and external locus of control on this decision can aid in the design of more effective strategies to improve compliance with this breast cancer screening practice. Educational and counseling sessions either on an individual or group level are more effective if designed within a proven theoretical framework.

Holm, Frank, and Curtin (1999) conducted a nonexperimental descriptive correlational study to explore

the relationship between health beliefs, locus of control, and mammography practices in women. The Health Belief Model (HBM) constructs of susceptibility, seriousness, benefits, and health motivation and the Health Locus of Control behaviors of internal and external factors formed the theoretical framework for the study. These independent variables were studied to determine their effect on the dependent variables of mammography history and frequency of mammography screenings. It was hypothesized that the perceived benefits of mammography, seriousness, and susceptibility related to breast cancer and health motivation would be higher in women who obtain regular mammography screening. Perceived barriers would be lower in regular mammography users. Internal locus would show a positive correlation, and external locus of control (chance and powerful other) would show a negative relation to regular mammography practices.

Survey packets were distributed to a convenience sample of 150 women in the community. Each packet contained demographic information questionnaire, the HBM constructs instrument, and a Multidimensional Health Locus of Control (MHLC) instrument. Ninety-seven respondents returned the completed packets in a sealed envelope to the researcher. The HBM instrument contained 31 items, which were scored on a 5-point Likert scale, ranging from 1

(strongly disagree) to 5 (strongly agree). The items correlated to the constructs of the model and included susceptibility, seriousness, benefits, barriers, and motivation. The MHLC included 18 items that were reflective of internal locus of control, chance health locus of control, and powerful other locus of control. Internal locus referred to being in control of one's own health. Chance locus referred to the accidental nature of health outcomes. Powerful other referred to health professional controlling health. Responses were scored on a 6-point Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree).

Holm et al. (1999) reported of the 97 women who responded to the survey, 72.6% were married, 74.2% were White, 82.5% were Protestant, and the average age was 53 years with a range from 35 years to 84 years. Almost 75% were employed in managerial or technical occupations, and 66% exceeded a high school educational level. The surveys were divided into two groups according to mammography history. Those respondents who had not had a mammogram comprised 32.3% of the participants. The 68.2% who had mammograms were also noted to have a higher educational level, higher income, married, and employed in a managerial or professional position. The instrument scales

were scored per item, and separate t tests compared the mammogram status on each of the variables.

Based on the constructs of the HBM, significant differences were noted in the two groups for the benefits scale, $t(94) = 2.16$, $p < .033$, barriers scale, $t(94) = 3.83$, $p < .001$, and the motivation scale, $t(94) = 1.99$, $p < .050$. Women who had a mammogram scored higher on the benefits and motivation scales and lower on the barrier scale. There was no significant difference between the two groups on the MHLC scales. Positive correlations were observed between the results of the scales and the frequency of screening and time since the last mammogram. These Spearman rank correlation coefficients were significant for frequency and the benefits scale ($r_s = .225$, $p < .05$) and the motivation scale ($r_s = 3.86$, $p < .01$). A significant negative correlation was observed between frequency and the barriers scale ($r_s = .204$, $p < .05$). Negative correlation was also observed between the time since last mammogram and the benefits scale ($r_s = -.257$, $p < .05$) and the motivation scale ($r_s = .260$, $p < .05$).

The results suggest partial support for the constructs of the HBM as factors influencing a woman's decision to obtain a mammogram. There was no support for the internal or external locus of control in this study.

The perceived seriousness of breast cancer was not associated with mammography history, perhaps because breast cancer is seen as a serious condition. Perceived susceptibility was not associated with mammograms in this study, but most studies of the HBM and mammography have found to the contrary. Interventions for women in regard to mammography utilization should be based on an understanding of the factors that influence decisions about these health promotion practices. According to Holm et al. (1999), the HBM provides one tool to facilitate this understanding, thus serves as a basis for interventions. These conclusions are germane to this researcher since the educational intervention delivered was based on the constructs of the HBM and not on the Health Locus of Control. Both studies focused on the health practice of mammography. However, the Holm et al. (1999) study examined mammogram history and screening frequency, while the current research examined intention to obtain mammography.

Interventions to improve mammography utilization have ranged from mass media campaigns to one-on-one provider-patient counseling. The effectiveness of certain interventions over others is important as this researcher sought the most effective manner in which to deliver the message of mammography as an early detector of breast

cancer. The following study is one of the early works on this subject and led to the refinement of subsequent studies by the author.

Champion (1994) conducted a 2 x 2 factorial design longitudinal study that compared the effects of interventions on mammography utilization. The interventions were based on the HBM and Fishbein and Ajzen's Theory of Social Behavior. The HBM constructs that guided the interventions were susceptibility, seriousness, benefits, barriers, health motivation, and control. Susceptibility is the perceived risk of breast cancer, and seriousness is the degree of harm to the individual from the disease. Benefits and barriers are the perceived positive and negative consequences of an action. Health motivation refers to the individual's concern for general health while control refers to the perception of one taking charge of a situation. The social influence variables of the Theory of Social Behavior were defined as the influence of significant others on the individual's decision to utilize mammography.

Four groups were used in this study, a control group, a belief group, an informational group, and a combined belief/informational group. The information interventions were based on an American Cancer Society program related to mammography and breast self-examination. The belief

intervention was developed to meet the individual participant's needs based on the baseline beliefs survey. The hypotheses that guided the study were that mammography utilization would increase one year after the intervention with the greatest increase in the belief/information group. It was also hypothesized that the social influences and demographic variables would be significant predictors for mammography compliance one year after intervention.

Champion's (1994) study included women who were 35 years and older with no history of breast cancer and who were willing to participate in the longitudinal study. Women were contacted at random in a large midwestern metropolitan area that included surrounding counties. Of the 990 eligible women contacted, 654 agreed to participate, and 322 actually were entered into the study. These participants were randomly assigned to one of the four groups. The one-year attrition rate was 7%. Most of the women who were lost to follow-up had moved. The sample demographics included race: 90% White, 8% Black, and the remainder Indian or Asian. The mean age was 50 years, with a range from 35 to 88 years. The mean educational level was 13.7 with a range of 8 years to 20 years. There were 62% of the participants who were rated compliant with the current screening mammography guidelines.

There were three data collection periods in the study. A baseline survey was mailed out that included beliefs and mammography history. Demographic information was collected including race, age, and educational background. The second data collection point was approximately 6 weeks later in the participant's home, and the third data collection point was one year later and also conducted in the participant's home. The control group received no belief or information intervention, but completed the Belief, Knowledge and Social Influence Scale. The in-home intervention delivered to Group 2 included counseling by the research assistant and based on the beliefs scale completed by the participant. This individualized education may have included susceptibility and or seriousness of breast cancer, health motivation and control, and benefits and barriers of mammography utilization. Group 3 received information about the recommended mammography screening guidelines. Group 4 received the belief and information intervention. The research assistants used standardized informational packets for all educational components.

Champion (1994) utilized an instrument to measure the belief constructs on a 5-point Likert scale that required the participants to respond to statements about susceptibility, seriousness, benefits, barriers, control,

and health motivation. The knowledge scale was multiple choice and addressed facts about mammography screening and breast cancer. Social influence was measured on a 5-point Likert scale with items relating to perceptions of the influence significant others had on the individual. Data collected were analyzed with the SPSS system, and the alpha level was set at $p \leq .05$ for analysis. Paired t tests were used to reflect the changes before and after belief intervention for Groups 2 and 4. Perceptions related to the HBM were significantly changed with the intervention except for susceptibility ($t = 1.06$, $p \leq .293$), seriousness ($t = 6.46$, $p \leq .001$), benefits ($t = 9.37$, $p \leq .001$), barriers ($t = 2.77$, $p \leq .006$), health motivation ($t = 2.77$, $p \leq .001$), and perceived control ($t = 4.32$, $p \leq .001$).

Forced entry logistic regression was used to test mammography compliance at one year after intervention. Group 1 increased 6%, Group 2 increased 17%, Group 3 increased 8%, and Group 4 increased 15%. The social influence and demographic variables increased the significance of the intervention by accounting for more systematic variance by using covariates. The older age group (65 and older) and the middle age group (50 to 64 years) were lower in mammography compliance than the younger group. Higher educational levels correlated with

higher mammography utilization. The women in Group 4 (belief/information) had the highest likelihood of being compliant when compared with the control group.

Champion (1994) concluded that the highest benefit to women was the combined belief and information intervention. These women were five times more likely than the control group to maintain mammography compliance one year after intervention. Higher education and younger age were significant predictors of mammography behaviors. The implications of this study are compelling as the educational intervention designed by this researcher incorporated the components of both health beliefs and information. This researcher used a group approach rather than an individual approach in the intervention, but the theoretical constructs relative to breast health promotion behaviors are the central core of the intervention.

The constructs of the HBM have been used extensively in research related to breast cancer screening behaviors in women. Interventions, which are based on the variables of the model, have been correlated with increased screening behaviors. It is theorized that when there is a perceived threat to health and or a perceived benefit of a health promotion behavior, the behavior is more likely to occur. For example, when a woman perceives that she is at risk for breast cancer, she is more likely to obtain or

plan to obtain a mammogram. Instruments used to measure these variables must be valid and reliable in order for the research to be meaningful.

Champion (1999) revised the scales used to measure perceived susceptibility to breast cancer, perceived benefits of mammography, and perceived barriers to mammography. The author utilized an expert panel to initially evaluate scale items from an earlier instrument. Two focus groups of women over age 50 were then given the scales and asked to comment on the clarity of the statements. Items were dropped in each of the three categories so that the final instrument included three items related to susceptibility, five items related to benefits, and 11 items related to barriers. These revised scales were then tested within a large intervention study designed to increase breast cancer screening in women 50 years of age and older who were enrolled in a health maintenance organize (HMO) and in a general medicine clinic. The overall purpose of this methodologic research was the revision of the instrument with an expected improvement in validity, reliability, and internal consistency over the previous instrument.

Champion (1999) defined the major study variables within the framework of the HBM as related to breast cancer screening behaviors. Perceived susceptibility

referred to the "perceived beliefs of personal threat or harm related to breast cancer" (p. 342). Perceived benefits of mammography were "perceived positive outcomes of obtaining a mammogram" (p. 342). The perceived barriers to mammography were defined as "perceived emotions, physical or structural concerns related to mammography behaviors" (p. 342). Theoretically, if more benefits and fewer barriers to mammography are perceived in association with a perception of susceptibility to breast cancer, breast cancer screening behavior will take place. Beliefs based on these variables were used to test the relationship between the revised scale and the stage of mammography compliance.

The stages of compliance were drawn from the Transtheoretical Model and included precontemplation, contemplation, action, relapse precontemplation, and relapse contemplation. Champion (1999) defined the stages for the purpose of this research in terms of mammography usage. Precontemplation was defined as "never had a mammogram and not thinking about having one in the next 6 months" (p. 342). Contemplation was "never had a mammogram but thinking about having one in the next 6 months" (p. 342). Action referred to "had a mammogram within the last 15 months." Relapse precontemplation was defined as "last mammogram 15 months ago or more and not thinking about

having one in the next 6 months" (p. 342). Relapse contemplation referred to "last mammogram 15 months ago or more and thinking about having one in the next 6 months" (p. 342).

Champion (1999) conducted a quantitative, methodologic study involved 804 female participants who were all age 50 and older who were members of an HMO and general medicine clinic. These women were involved in an intervention study to increase breast cancer screening. In order to participate in the instrument revision, these women had to have had no history of breast cancer, no mammogram in the past 15 months, and were able to read and write English. There was a response rate of 39% with the sample demographics including a mean age of 61.15 years and a mean educational level of 12.5 years. Forty-six percent were married, 25% widowed, and 21% divorced. The other 8% were never married, living with a partner or separated. The majority (68%) of the women were Caucasian, 30% were African American, and the other 2% were Asian, Native American, or Hispanic.

A computer database at the HMO and the medicine clinic was used to identify the eligible women. In the HMO sample, a letter was sent from the medical director explaining the study. A research assistant made follow-up telephone calls and asked for participation. For those

women agreeing, an informed consent was mailed along with a questionnaire. After this information was returned, the women were assigned to an intervention or control group. Following an intervention, a second questionnaire was mailed and returned. For the purposes of instrumentation test-retest calculations, however, the author used only the control group data. The same procedure was used in the medicine clinic, except the research assistant met the women on a visit to the clinic, obtained informed consent, and had the questionnaire completed at that time. Randomization into intervention and control groups and second set data collection were the same as the HMO setting.

Champion (1999) refined the instrument to contain 19 items, which were scored on a 5-point Likert scale. The responses ranged from strongly agree to strongly disagree. Three items were correlated to perceived susceptibility, five items related to benefits of mammography, and 11 items referred to the barriers to mammography utilization. The construct validity of the items was examined using both an exploratory factor analysis and a confirmatory factor analysis using LISREL. The Goodness-of-Fit ratio was calculated. The reliability was tested by item analysis and test-retest correlations for the control group. The predictive validity was measured using three

independent *t* tests based on compliance and noncompliance groups of women 6 weeks after intervention. The dependent variables were susceptibility, benefits, and barriers.

Champion (1999) confirmed through the findings the existence of strong internal consistency, reliability, and test-retest reliability of the revised scales. When compared to the previous tool, the susceptibility items showed a slight but insignificant decrease in internal consistency reliability from .93 to .87. The test-retest reliability decreased from .70 to .62; however, the .62 is considered acceptable. The benefit items internal consistency reliability was essentially stable at .79 and .75 while the test-retest reliability improved from .38 to .61. Internal consistency reliability for the barrier scale increased from .73 to .88 and the test-retest reliability from .60 to .71. Champion (1999) also found that the scales differentiated between women at varying stages of compliance with mammography, so the theoretical relationships with the Transtheoretical Model were upheld.

The scales were useful in establishing the perceptions of females regarding breast cancer screening behaviors and in predicting mammography utilization. The instrument was easily administered in a clinical or educational setting, and the nurse practitioner could plan an individual approach to counseling those women. Such

teaching sessions could be considered more effective because of the individualization of the information. Due to the strength of the reliability and validity of the tool, it was most useful in subsequent research. This researcher used this tool as the pretest and posttest instrument in this research endeavor. Additionally, the Champion (1999) research provided the groundwork for the current study in that both studies attempted to ascertain the effects of an intervention upon mammography seeking behavior.

Early detection and treatment can reduce the substantial impact of breast cancer mortality in the aged female population. The gold standard for early detection remains mammography, and the current screening guidelines for women over 50 years of age is annually. Many factors have been identified to explain poor compliance with these recommendations including lack of access to health care, lack of insurance, and lower income and educational levels. The correlation between the use of other preventive health practices and mammography use has recently been explored and holds interesting implications for health promotion education.

Gnanadesigan, Hirsch, and Reuben (2000) conducted a one-time cross-sectional survey of self-reported preventive health practices including mammography. The

purpose of the study was to identify preventive practices associated with mammography use among community dwelling older females and to identify factors that differentiate elderly females who are in compliance with screening guidelines and those who are not in compliance. The convenience sample was 610 women between the ages of 60 and 84 years. All attended various community meal sites in the Los Angeles area through the Prevention for Elderly Persons program. The average age was 74 years and ethnic minorities accounted for 43% of the population. Seventy-six percent were widowed, divorced, or single, and 46% were at or below the poverty level. A majority (75%) had a high school diploma or higher educational preparation. Fifty-seven percent reported their health as good, very good, or excellent. The majority of the sample was independent in basic activities of daily living (79%) and in instrumental activities of daily living (69%).

The participants were asked to complete a close-ended survey that included 77 items. The information collected included the above-noted sociodemographics, health and functional status, and preventive practice characteristics. The self-reported information on mammography was obtained through a dichotomous response to two questions. The women were asked if they had ever had a mammogram and if they had a current mammogram. "Current"

was defined as having had one in the last 2 years. The remainder of the items that dealt with preventive health practices included Pap smears, breast self-exams, hormone replacement therapy, calcium supplements, aspirin use, immunizations, colonoscopy, and fecal occult blood testing.

Bivariate analysis of the data was initially performed. The variables that were significantly associated with mammography use at $p < .10$ were included in a multivariate model. Unadjusted odds ratios and multiply adjusted odds ratios for the factors associated with ever having received a mammogram and current mammography were reported by the authors. The adjusted odds ratios were adjusted for age, race, education, marital status, income, perceived health, functional status, and HMO membership.

The strongest association was between having ever had a Pap smear and previous mammogram (OR [odds ratio] = 9.33, $p < .05$) and ever having had a Pap smear and current mammography status (OR = 2.21, $p < .05$). Gnanadesigan et al. (2000) concluded that the specialized area of women's health accounted for this association because both preventive services are usually addressed at the same time. The least association in preventive practices was between hormone replacement therapy and mammography use,

both previous and current ($p < .05$). There was no significant association between health status (OR = 0.81), functional status (OR = 0.91), and mammography use. Race was only statistically significant for the Asian females who were less likely to have ever had a mammogram ($p < .05$).

Gnanadesigan et al. (2000) concluded that engagement in preventive health practices that are patient initiated (e.g., calcium supplements, monthly breast self-exams, and fecal occult blood testing) was associated with current mammography use. The preventive practices that required intervention by a provider (e.g., immunizations or colonoscopy) were associated with ever having a mammogram. The authors suggested that women who regularly engage in one preventive health practice are more likely to engage in others. However, those who merely follow the provider-initiated recommendations may not have made a personal commitment to self-directed preventive behaviors.

The Gnanadesigan et al. (2000) study is germane to this current research because it impacts the content of health education programs on mammography use in elderly females. The program designed by this author encourages patient-initiated behaviors which impact the personal commitment of the individual to health promotion.

Adherence to screening guidelines for mammography could be improved with this approach.

The issue of breast health promotion behavior is central to an educational program about breast cancer and mammography. The beliefs that seniors hold about health promotion and the impact of cancer were explored in order to design an appropriate program focus.

Fitch et al. (1997) conducted a needs assessment of the 55-year-old and older population in a large metropolitan community. The focus of the study was the knowledge, attitudes, and beliefs of this segment of the population regarding health promotion and cancer. The results were used to develop programs about cancer and screening methods, specific to the population that is at highest risk for development of this disease.

A coalition with the local health department, the regional cancer center, and a local community health agency provided the research team. A participatory research approach was used with qualitative data collection methods. The group of researchers co-facilitated 10 focus groups with a total of 158 individual participants. These groups were both preexisting senior community centers/residents' groups and groups gathered for the sole purpose of this research. Four sessions were held with culturally diverse groups: Italian, Chinese,

Greek, and Spanish heritage. There were 9 older adults (aged 65 to 75 years) who were individually interviewed in their homes due to physical impairments that prohibited their attendance at the group sessions. The same questions were used to guide the focus groups and the individual interviews. Areas assessed were the knowledge, beliefs, attitudes, behaviors, barriers, and strategies related to cancer and health promotion. The responses from all interviewees were taped with the permission of the participants.

Fitch et al. (1997) reported that the responses from the focus groups and the individuals were so similar that they were reported together. Health issues important to older adults included being active, having a healthy lifestyle, and being free of chronic disease. The majority of participants had some personal experience with cancer either through a family member or friend. Causes of cancer were believed to be the environment, heredity, lifestyle, viruses, injury, and abnormal tissue growth. The participants described the symptoms of cancer as lumps, sores, bruises, bleeding, and weight loss, lack of energy, and pain.

In response to the question about seeking information about cancer, most respondents would ask the family doctor or a cancer specialist. They would seek support from

family and friends, but would be careful not to worry those significant others. In assessing their own risk for cancer, most participants did not view age as related to an increased risk. Fate was mentioned as a factor, along with the belief that cancer spreads after surgery.

Most participants did not admit to avoiding screenings for fear of a diagnosis of cancer, but admitted there were others who would avoid a screening for this reason. When asked about personal risk and reduction of that risk, most participants suggested lifestyle modifications. These included increasing fruits and vegetables in the diet, smoking and drinking cessation, sun avoidance, regular exercise programs, and annual checkups with the doctor. These answers were essentially the same when the respondents were asked what they do to prevent cancer. Many participants related having had screenings for cancer, such as prostate exam, mammogram, Pap smear, and dental exam. The majority took part in the screenings because their doctor suggested it. Family members did not influence them. Barriers to community cancer screenings were identified as language and culture.

The participants also noted that most people do not see the doctor if they are well but only when they are sick. Some of the reasons noted for people not having screening tests were the fear of the diagnosis of cancer,

procrastination, ignorance of the testing availability, and waiting for the doctor to suggest they have a screening test. Strategies to enhance early detection and prevention focused on educational components. The respondents cited programs that cover the causes of cancer, including the role heredity plays and the signs and symptoms of cancer. They also stated it is important to know what screening tests were available and how to get them. The shared success stories of cancer survivors would be of interest and help people understand that outcomes can be successful. Educational programs could reduce the fear that some people experience about the diagnosis of cancer.

In tabulating the results of this study, Fitch et al. (1997) developed a number of strategies for programs designed to educate the older adult about cancer and health promotion behaviors. Sessions with speakers who spoke on a "lay" person's level and the use of videos or some type of pictures were important. Offering social events along with the speakers and setting up programs at the senior centers or residences were considered important. The use of displays in the mall and highlighting seniors during cancer awareness month were also mentioned as possible successful measures.

The authors relate the importance of highlighting the benefits of early detection in the senior population to reduce morbidity and also to carry the message of hope in relation to early detection. This researcher included these issues in the educational intervention developed for the females 65 years and older on breast cancer screening. The attitudes and beliefs that were extracted from the focus groups and individual interviews carry implications for the actual presentation of material to the senior female population in this researcher's study. The messages of susceptibility, benefits, and barriers of mammography addressed the issues raised by the focus groups. The aspects of socialization with a group presentation and the convenience of program offerings at the seniors' residences were also met by the design of this researcher's intervention. Therefore, the Fitch et al. (1997) study guided the current study under investigation in several ways. Both studies focused on promoting the healthy behaviors of elderly females and the importance of understanding the process this population uses in decision-making. It was recommended by Fitch et al. (1997) that future research be conducted to study the actual decision-making process to aid in designing more effective educational programs. Understanding breast cancer susceptibility, the benefits and barriers of mammography,

and the benefits of early detection of the disease with this technique are important factors in leading women to obtain a mammogram.

A descriptive correlational study conducted by Burack, George, and Gurney (2000) identified active involvement of women in the mammography decision-making process by age groups. Mammography use was assessed through data collected from the 1992 National Health Interview Survey (NHIS) Cancer Control Supplement. This survey contained self-reported health and demographic information from civilians in the United States who were not institutionalized and who were aged 18 years or older. Only those women aged 40 years and older who reported having had a screening mammogram in the past year were included in the study. This population netted 1,064 women who met this criterion and also had responded to a survey question about who made the decision to have the mammogram. Of the respondents, 28% were 65 years of age and older and 12% were nonwhite.

Women chose from three answers: (a) "I decided on my own," (b) "My doctor ordered it," or (c) "Both my doctor and I agreed on it" (Burack et al., 2000, p. 818). Active decision-making was defined as either the woman initiating the decision (response #1) or the woman participating in the decision with the physician (response #3). The

percentage of women who reported active decision-making declined from 16% in the younger age groups to 8% in the 50- to 74-year-old group. Among women who were 75 years and older, only 3% reported active involvement in the decision versus 13% who reported the mammogram was initiated by the physician. Additional characteristics that distinguished active decision-making were higher educational level, private insurance coverage, higher level of self-reported health, the knowledge of breast cancer risk, and the belief that early detection decreases morbidity.

Burack et al. (2000) concluded that active decision-making is substantially less common among older women. Active involvement of those women aged 75 years and older was only one third of those women who were 40 to 44 years of age. The authors suggested that one reason for the decline in mammography utilization in the older female population was a less active role in the decision-making process by these women. It was also noted that women with less knowledge of risk factors or benefits of early detection leading to decreased morbidity were less likely to be actively involved in the decision.

This study is germane to this researcher's study as it underscores the importance of educational programs geared toward the elderly female population. An

educational program that addresses the risks of breast cancer and the benefits of mammography in early detection could influence a woman becoming actively involved in the decision to obtain a mammogram, which was the purpose of the current research study and the issue this researcher examined.

Summary

This chapter presented an extensive review of current literature related to breast health promotion, the constructs of the HBM, and the views of seniors on the topic of health promotion and active involvement in health promotion decisions.

Lauver et al. (1999) concluded that the theoretically driven variables of affect, beliefs, and facilitators were most likely to influence mammography screening behaviors. Holm et al. (1999) explored the relationship between health beliefs, locus of control, and mammography practices. The constructs of the HBM were found to facilitate the understanding of breast cancer screening behaviors. Champion (1994) conducted an early study comparing four interventions designed to increase mammography utilization. The author concluded that the constructs of the HBM were valid as a basis for belief

intervention and this approach increased mammography utilization.

Champion (1999) revised the susceptibility, barriers, and benefit scales through focus and intervention groups. The Champion instrument was the basis for the pretest and posttest this author used in the current research. Gnanadesigan et al. (2000) studied the preventive health practices of the elderly and concluded that the practice of screening mammography is likely to occur when this process is viewed as health promotion and embraced as a lifelong behavior. Fitch et al. (1997) conducted a qualitative study with focus groups and identified various needs of the elderly in regard to health promotion education. Healthy lifestyle choices were important, and the educational programs aimed at explaining the causes of cancer, screening tests, and outcomes of early detection were noted as the most beneficial. Burack et al. (2000) concluded that decreasing mammography utilization in the elderly females might be related to their lack of active decision-making. Offering educational programs about breast cancer risk and the benefits of mammography would increase utilization of this screening exam since the elderly females would be empowered to become active decision-makers.

The various authors and studies support this researcher's approach to an educational intervention that measures the effectiveness of breast health promotion practices of elderly females. The program offered information on susceptibility to breast cancer and the benefits and barriers to mammography. The participants' intention to obtain a mammogram was the outcome measure.

Chapter III

The Method

The previous review of literature by this researcher provided a critical evaluation of the current data on the variables of the Health Belief Model (HBM) and the breast health promotion behaviors of elderly females. Breast cancer is the most common type of cancer affecting women and the second leading cause of cancer death in women in the United States. The decreased mammography utilization rates in the elderly female population may be related to their lack of active decision making (Burack et al., 2000). Educational efforts that address the knowledge deficit areas of breast cancer risk and mammography utilization are important factors in improving the breast health promotion behaviors of elderly females (Lauver et al., 1999). Therefore, the focus of this research endeavor was to evaluate an educational program reflecting issues related to the risks of breast cancer and early detection with mammography. The perceived susceptibility to breast cancer, perceived benefits and barriers to mammography,

and the intention to obtain mammography were the variables addressed by this researcher (Champion, 1999).

In this chapter, variables are defined and the method used to examine these variables is discussed. The procedures used in the study are presented, including the design, population, sample, and setting. The limitations are specified, and the data collection methodology is explained.

Design of the Study

The study was a quasi-experimental, one-group pretest/posttest design. This design involved the manipulation of an independent variable within one group. The experimental group also served as the control group. This design was appropriate to evaluate the participants' perceptions and intentions prior to and after an educational program, the intervention. The strength of this design lies in its feasibility and practicality. The study took place in five senior housing facilities in a metropolitan area in southeastern United States. A largely elderly female population occupied the facilities. Educational programs are frequently offered at these sites. The criteria for inclusion in the study group were designed to enhance internal validity. The participants were limited to those females who were 65 years and older,

had not had a mammogram in the past 2 years, and had no history of breast cancer.

Setting, Population, and Sample

The educational program was offered at five senior living facilities located in the metropolitan area of a southeastern United States city. An exclusively senior population occupied these apartment complexes with the majority being females. The women were independent in their activities of daily living and not cognitively impaired. The residents may have required some assistance with instrumental activities of daily living, such as driving or perhaps apartment maintenance. Financial assistance was available for a monthly rental at some of the facilities through Housing and Urban Development subsidies. These facilities frequently offered health-related programs to their residents as part of their monthly activity calendar. This researcher conducted the program in the meeting rooms at the facilities.

Nonprobability convenience sampling was employed to gather the participants from those women who attended the free educational programs. Any women who attended the program who were under 65 years of age, had a prior history of breast cancer, or had current mammograms were excluded from the study but were welcomed to attend the

program. The women included in the study met these criteria of age 65 years or older with no history of breast cancer and no mammogram in the past 2 years. These criteria were determined by the demographic data on the pretest which was completed by all attendees. A target sample was 30 participants who met the study criteria and agreed to join the program. The final sample was 13 participants.

Variables

The independent variable in this study was the educational intervention. This was designed to address the specific dependent variables that were gleaned from the HBM. The topic areas included the statistical data and risk factors related to the development of breast cancer. The effectiveness of mammography as an early detection tool was highlighted. Verbal information was presented on the methods of acquiring a mammogram and the technique used in this screening study. The dependent variables in this study were the perceived susceptibility to breast cancer, perceived benefits of mammography, and barriers to mammography. The outcome measure was the intention to obtain mammography. The specific aim of the study was to determine whether the independent variable would influence

the dependent variables. The behavioral measure was the intention to obtain mammography.

Limitations

Certain limitations are germane to the quasi-experimental design such as lack of the full control that is the hallmark of an experimental design. The experimental group in this study also served as the control group. The sample was a nonprobability convenience sample rather than a random sample. Homogeneity was utilized to strengthen the sample through the inclusion criteria of age, breast cancer history, and recent mammography utilization. History was addressed as a threat to internal validity by conducting the interventions during the early spring when the media coverage of breast cancer was not in the forefront. National Breast Cancer Awareness Month is October. Discussions that took place after the intervention in the close living quarters of the senior housing complex were seen as a potential limitation. The threat of testing was addressed through the timing of the posttest responses. The 2-week time frame between the pretest and posttest was designed to measure the effectiveness of the intervention without the testing threat. Researcher bias was minimized by use of the same audiovisual aides and program structure for each

group. Despite the limitations, this researcher proceeded with the study based on the strengths of the instrument and the sample strengthened by homogeneity. The posttest response time was set to decrease the threat of testing, and the timing of the interventions was used to control the threat of history to internal validity.

Instrumentation

The Revised Susceptibility, Benefits and Barriers Scale for Mammography Screening (Champion, 1999) was the instrument used to garner data (see Appendices A and B). Permission was granted for its use in the study (see Appendix C). The questionnaire was used to assess perceived susceptibility to breast cancer, benefits of mammography, and barriers to obtaining a mammogram prior to and after the educational program. The instrument was organized into three areas according to the Health Belief Model. The perceived susceptibility section had three items, benefit of mammography section had five items, and the barrier to mammography section had 11 items. Each item had five possible responses on a Likert scale rating. The scales were coded as 5 (Strongly agree (5), Agree (4), Neutral (3), Disagree (2), and Strongly disagree (1). The responses were tallied per item, and the percentages were compared between the pretest answers and the posttest

answers. Each item was evaluated on the basis of the difference from the pretest responses to the posttest responses. The items in the tool are indicators of the variables in the health belief theoretical model. The construct validity and reliability of the 19 items were confirmed when the tool was revised (Champion, 1999). Internal consistency alpha scores were .87 for susceptibility, .75 for the benefits of mammography, and .88 for the barriers to mammography (Champion, 1999).

Intervention

The educational program was a structured event to impart knowledge. The format included lecture and media components. Overhead transparencies developed from PowerPoint were used to enhance the lecture (see Appendix D). The program lasted from 30 to 40 minutes and included the prevalence and risk factors for breast cancer. The benefits of early detection were explained in regard to morbidity and mortality. The benefits of mammography were outlined with an explanation of what a mammogram is, why and when mammography should be performed, how to schedule a mammogram, and the types of mammograms that can be performed.

Data Collection Procedure

An application for approval by the Mississippi University for Women Committee on Use of Human Subjects in Experimentation (IRB) was completed. After IRB approval (see Appendix E), the five community housing facilities in the metropolitan area of a southeastern United States city were contacted by telephone about the program offering. The activity directors at the facilities were informed that the purpose of the program was to complete one component of the researcher's thesis. They were advised of the content and length of the program and that refreshments would be served. The informed consent, pretest, and posttest were explained. A follow-up letter to the activity coordinators again explained the research study, informed consent, and the educational program format (see Appendices F and G). The programs were scheduled at the convenience of the housing community and advertised on the bulletin boards and in the newsletter or flyer at the facility. A follow-up telephone call of confirmation was made to the coordinator one week prior to the scheduled program date. The program was delivered in a group setting in the assigned room at each housing facility.

The entire program lasted approximately one hour. An explanation of the study was followed by signing of the

informed consent. Each form included the participant's address so the posttest could be mailed out accurately. If a participant was unable to read or understand the consent form or if she chose not to complete the pretest, she was welcomed to attend the program but was not included in the study. The pretest was administered and completed by the participants. This portion of the program took approximately 20 minutes. The consent forms and pretests were numbered in order to track return rates. All completed forms were maintained in a locked file cabinet by the researcher. The educational lecture/media program was offered and lasted approximately 30 to 40 minutes. At the end of the program the participants were again informed of the need to complete and return the posttest upon receipt. Posttests were mailed to those participants who met study criteria (see Appendix H). These posttests were mailed, prepaid postage, 2 weeks after the program. The researcher contacted the activity directors when the posttests were mailed to the participants in their housing community. The directors were asked to remind the participants to complete and return the posttests to the researcher, and the researcher offered assistance with the posttests if needed.

Method of Data Analysis

The description of the sample was analyzed from the demographics on the pretest. The number of subjects and percentage of the sample were reported according to age, ethnicity, education, and marital status. The pretest and posttest instruments were scored on the 5-point Likert scale. The pretests from each of the participants were tallied as were the individual posttest responses. A paired *t* test with a .10 level of significance was used to analyze the data on each of the stem items. This statistical measure was used to compare scores of the same group taken at different times which enabled the researcher to evaluate the effectiveness of the educational program.

Summary

In Chapter III, the design of the research study was explained. The independent and dependent variables were identified. The setting, population, and sample were defined. The IRB process and controls to insure anonymity were explained. Informed consent was required for participation in the study along with a pretest and posttest. A discussion of the limitations of the study included the methods used to control the threats to internal and external validity. The intervention was

described and the instrument was explained. The procedures for collecting the data and the method of data analysis were discussed.

Chapter IV

The Findings

The purpose of this study was to assess the knowledge and beliefs of elderly females regarding breast health promotion behaviors before and after an educational intervention. The knowledge and beliefs variables were breast cancer susceptibility, benefits and barriers to mammography, and intention to obtain a mammogram. The study was a quasi-experimental, pretest and posttest, one-group design with four directional hypotheses. The sample consisted of 13 women, aged 65 years and older, with no history of breast cancer and no mammogram in the past 2 years.

Description of the Sample

Convenience sampling was utilized to collect the statistical data from the elderly females aged 65 years and older. The participants lived in senior housing facilities in a metropolitan southeastern city of the United States. The study sample was drawn from five facilities. Forty-eight females attended the educational interventions offered. Of those attending, 2 decided not

to participate in the study, 2 had dementia, and 2 were under the age of 65 years so these 6 women did not complete the pretest. Of the 42 women who completed the pretest, 17 met the study criteria based on their pretest responses of no history of breast cancer and no current mammogram and were mailed posttests. Thirteen posttests were returned for a return rate of 76%. The final sample consisted of 13 women who had signed the consent form, taken the pretest, attended the educational program, met the study criteria, and returned the posttest.

Demographic Data

Demographic data were collected for all participants in the educational interventions who completed the pretest. The data included age, race, marital status, and educational level, history of breast cancer, and current mammography status. The participants were ranked in age groups and included 8% who were from age 65 to 75 years, 46% were 75 to 85 years, and 46% were 85 to 95 years. The sample included a majority of White widows with fairly evenly distributed educational levels. As per study criteria, none had a history of breast cancer and a majority had a mammogram more than 2 years ago. Table 1 represents the demographic data.

Table 1

Demographic Characteristics of the Sample by Frequency and Percentage

Demographic characteristic	f[a]	%[b]
Age (years)		
65 to 75	1	8.0
76 to 85	6	46.0
86 to 95	6	46.0
Race		
Black	1	8.0
White	12	92.0
Marital status		
Married	2	15.0
Divorced	1	8.0
Widowed	10	77.0
Education		
Less than high school	3	23.0
High school graduate	3	23.0
Some college	3	23.0
Graduated college	2	15.0
Last mammogram		
Never	1	8.0
More than 2 years ago	12	92.0

[a]N = 13.

[b]Percentages were rounded to the nearest tenth place. Not all participants answered all questions.

Data Analysis

In this study the variables of susceptibility to breast cancer, the benefits of mammography, barriers to mammography, and intention to obtain a mammogram were assessed. The susceptibility, benefits, and barriers variables were evaluated independently through a series of statements related to each variable. Responses to the statements were scored on a 5-point Likert scale with strongly agree ranked as 5 and strongly disagree ranked as 1 in the susceptibility and benefits areas. The barriers scale was rated as 1 for strongly agree and 5 for strongly disagree. Individual statement responses were grouped according to the variable area for reporting purposes. The intention to obtain a mammogram was reported on a dichotomous scale of 1 for no intention and 2 for intention. A paired *t* test was performed using the pretest and posttest responses.

Susceptibility. The first research hypothesis was as follows: There will be an increase in the perceived susceptibility to breast cancer in elderly females after an educational program. In the area of perceived susceptibility to breast cancer, three statements regarding the likelihood of getting breast cancer were scored pretest and posttest. With a *p* value of .50, the results of the study indicated that there were no

significant differences in the responses after the educational program intervention. The pretest mean was 0.641, and the posttest mean was 0.641 (t = 0.00). Therefore, the researcher rejected the hypothesis. There was no increase in the women's perceived susceptibility to breast cancer after attending the educational intervention.

Benefits. The research hypothesis was as follows: There will be an increase in the perceived benefits of mammography in elderly females after an educational program. The benefits section contained five statements related to the early detection of breast cancer through mammography. With a p value of .40, the results of the study indicated that there were no significant differences in the responses after the educational intervention. The pretest mean was 0.764 (t = 0.22) and the posttest mean was 0.755 (t = 0.22); therefore, the researcher rejected the hypothesis. There was no significant increase in the perceived benefits of mammography after attending the educational program.

Barriers. The research hypothesis was as follows: There will be a decrease in the perceived barriers to mammography in elderly females after an educational program. There were 11 statements related to perceived barriers to mammography. With a p value of 0.13, the

results of this component of the study indicated there were no significant differences in the responses after the educational program. The pretest mean was 0.747 (t = -0.50), and the posttest mean was 0.767 (t = -0.50). Therefore, the researcher rejected the hypothesis. There was no significant decrease in the perceived barriers to mammography after an educational program.

Intention. The research hypothesis was as follows: There will be an increase in the intention to obtain mammography in elderly females after an educational program. In the dichotomous responses to intention to obtain a mammogram, 10 participants answered both pretest and posttest. There was no variation in these responses. Six participants (60%) intended to obtain a mammogram pretest, and the same six indicated this intention posttest. Four participants (40%) did not intend to obtain a mammogram pretest, and the posttest responses were unchanged. The researcher rejected the hypothesis. There was no difference in the intention to obtain a mammogram after an educational program. Table 2 represents the statistical data obtained for each variable category.

Table 2

Mean and Standard Deviation Related to Response Variables Using a *t* Test

Response variable	*M*	*SD*	*t*	*p*
Susceptibility				
Pretest	0.641	0.018	0.000	0.500
Posttest	0.641	0.043		
Benefits				
Pretest	0.764	0.013	0.222	0.414
Posttest	0.755	0.013		
Barriers				
Pretest	0.747	0.014	-0.503	0.314
Posttest	0.767	0.017		

*$p < .10$.

Additional Findings

Additional items of special interest were noted in the process of data analysis. The majority of women in the initial population reported having a mammogram within the past 2 years; therefore, these women were considered to be current on mammography. Of the 42 women who took the pretest, 59.9% had a mammogram within the past 2 years. This group showed a higher score in the benefits response variable on pretest when compared to the study

participants' pretest responses. A significant difference in the two groups was not apparent in the barriers or susceptibility response variables. Table 3 represents this data.

Table 3

Pretest Response Variables from Nonparticipants and Participants Utilizing a *t* Test

Response variable	*M*	*SD*	*t*	*p**
Susceptibility				
Nonparticipants	0.561	0.020	-1.362	0.09
Participants	0.641	0.018		
Benefits				
Nonparticipants	0.800	0.022	0.683	0.25
Participants	0.764	0.013		
Barriers				
Nonparticipants	0.785	0.013	0.798	0.21
Participants	0.747	0.014		

*$p < .10$.

Intention to obtain a mammogram was positive in those participants who had higher scores in all response variables than those who did not intend to obtain a mammogram. The response variables were susceptibility,

benefits, and barriers. These average scores were tallied as percentages of all possible scores in each variable category. These findings are represented in Table 4.

Table 4

Average Scores on Response Variables Between Intention and Non-Intention to Obtain Mammography

Response variable	Intention	Non-Intention
Susceptibility	0.68	0.51
Benefits	0.84	0.65
Barriers	0.83	0.68

Note. N = 10.

Summary

Chapter IV included the sample as well as data collection and analysis for the study. Statistical findings revealed no significant change in mean scores from pretest to posttest in the variables of susceptibility, benefits, or barriers to mammography. The intention to obtain a mammogram was not changed from the pretest response to the posttest. However, there was an indication that the higher the response variables scores, the more likely the intention to obtain a mammogram. Those women who were current on mammography scored higher on the

benefit response variable than those who were not current on mammography.

Chapter V

The Outcomes

Breast cancer risk increases with age, and the disease mortality has a direct correlation to the stage of detection. Mammography remains the gold standard for early detection of the disease, yet females aged 65 years and older have demonstrated a lack of compliance with recommended screening frequency.

The purpose of this study was to determine the effects of an educational program on the variables of perceived susceptibility to breast cancer, benefits of and barriers to mammography, and intention to obtain mammography. The variables are constructs of the Health Belief Model, which served as the theoretical framework for the study. The variables were assessed through use of the Champion's Susceptibility, Benefits and Barriers Scale for Mammography Screening.

The quasi-experimental pretest-posttest study was conducted in small group settings in five senior housing facilities located in the metropolitan area of a large southeastern city in the United States. The educational

program intervention was offered to a convenience sample of females 65 years and older. The final sample included 13 women with no history of breast cancer and no mammogram in the past 2 years. The program included information on breast cancer susceptibility, mammography benefits and barriers, and recommended screening guidelines using PowerPoint overhead transparencies.

In this chapter the findings will be discussed and conclusions drawn. Additionally, implications for nursing will be addressed and recommendations for further study in the areas of research and practice will be offered.

Summary and Discussion of Findings

The findings from this study regarding the perceived susceptibility of breast cancer, benefits and barriers to mammography, and the intention to obtain mammography before and after an intervention showed no significant change. There was no statistically significant increase in the perceived susceptibility to breast cancer after an educational program. This finding indicates that the elderly females do not perceive themselves at risk for breast cancer and even after statistical data were presented, this perception did not change. Holm et al. (1999) conducted a descriptive correlational study to explore relationships in mammography practices. The

authors concluded that the perceived seriousness of breast cancer was not associated with mammography behavior. This researcher found that there was no increase in intention to obtain a mammogram after the educational program that included the increased risk of breast cancer with advancing age. This finding is supported by the previous research of Holm et al. (1999). If the perceived susceptibility of breast cancer is not increased with educational information and is not related to mammography intention, then this may not be the motivating factor for elderly females to engage in breast health promotion behavior.

There was no statistically significant increase in the perceived benefits of mammography after the educational program. Early detection of breast cancer with mammography and improved treatment associated with early detection were the messages of the program. Elderly females did not perceive these issues as benefits of breast cancer screening, and the intention to obtain a mammogram did not change after the program. In contrast to this researcher's findings, the study conducted by Champion (1994) concluded that the perceived benefits of mammography were improved after an educational program and mammography compliance improved also. That study was not a group approach, but the information was offered to women

in their homes on an individual basis, which could account for the difference in results. This researcher did note a relationship in the benefits area when the pretest scores of the participant and nonparticipants were compared. There were higher benefit scores in the group of nonparticipants who were current on their mammograms. There seems to be an association between perceived benefits and mammography compliance, irrespective of an intervention. This finding may be more closely related to an individual's internal belief of the benefit of a health promotion behavior.

There was no statistically significant decrease in perceived barriers related to mammography after an educational program. The intention to obtain a mammogram did not change in relation to the attendance at the program. To this researcher, the barriers to the action of mammography may not be the sole reason for mammography noncompliance. In the research conducted by Gnanadesigan et al. (2000) the findings suggested that women who engage in one preventive health practice are more likely to engage in another. The personal commitment one makes to her own health may be the greater predictor of health promotion behavior than the perceived barrier to an action.

Fitch et al. (1997) conducted a needs assessment study of the 55 and older population regarding health promotion and cancer. This researcher, to shape the setting and manner of the program offering, used the findings of this study. Fitch et al. (1997) concluded that health promotion education was important and that many of the participants were interested in lifestyle modifications as one way to reduce the risk of cancer. Since there is no known cause for breast cancer, there is no specific lifestyle change to decrease the risk of breast cancer. Interestingly, group questions after the program presented by this researcher centered on aspects of adhering to a healthy diet, exercising, and salt intake in the diet. In three of the five presentations, active discussions initiated by the group concerned these topics. The observation by this researcher lends credence to the opinion that health promotion may be the deciding factor for elderly females to engage in certain behaviors, but only if the perceived risk is an individualized perception. This observation is supported by the conclusion of the Fitch et al. (1997) study.

An additional finding of note by this researcher was that the majority of females who attended the program were in compliance with current mammography recommendations. Of the 42 women who chose to attend the programs, 59.9% had a

mammogram within the past 2 years, which is essentially at the 60% goal of the Healthy People 2000 initiative. This observation can be interpreted as a sign of improvement in breast cancer screening related to a number of factors. It must also be noted that these programs were strictly voluntary, and one must entertain the idea that the women who chose to attend did so because they were comfortable with the topic. Perhaps the majority compliance rate was skewed because the audience was already interested in health and health education.

The high return rate of the posttests (76%) suggested to this researcher the motivation of the elderly to complete a task or at least to respond to a request from a health care professional. Many of the respondents added a thank you to the returned surveys. This willingness to please may be a factor that is difficult to measure but may play a part in compliance with health promotion behavior. Although the role of the health care provider in recommending specific screening to an individual patient was not measured in this study, this may play a role in elders' decisions.

Limitations of the Study

The most profound limitation of the study was the small sample size. It was gratifying to see the large

percentage of women who were excluded from the study based on their current mammography history. However, the convenience sampling may have drawn those women who were comfortable with the topic and not "in need" of the educational intervention. In many of the facilities, those women who did attend the educational program represented a small portion of the total number of occupants of the facility.

The sample was homogenous with the majority being white widows between the age of 75 and 96 years. This limits the generalization of the results.

Not all participants answered all the questions on the pretest or posttest, so the results were less than desirable in terms of completeness. In some cases participants missed an entire page on the posttest.

Conclusions

Based on the findings of this study, the following conclusions were drawn:

1. There was no significant increase in the perceived susceptibility of breast cancer after an educational intervention.

2. There was no increase in the perceived benefits of mammography after the educational intervention.

3. There was no decrease in the perceived barriers of mammography after the educational intervention.

4. There was no change in the intention to obtain mammography after an educational intervention.

5. Women who are current on their mammograms have higher perceptions of the benefits of mammography than those women who are not current on their mammograms.

6. The majority of women who chose to attend an educational program on breast cancer and mammography are in compliance with current screening recommendations and meet the goals of 60% compliance set by the Healthy People 2000 initiative.

7. Those women with higher scores in all response variable categories were more likely to intend to have a mammogram.

Implications for Nursing

Implications for nursing theory, practice, education, and research were addressed. The health promotion activity of mammography screening is significant in early detection of breast cancer. The Health Belief Model provides a framework for understanding the health promotion behaviors that are practiced by the senior population. When an elderly female's health-influencing behaviors are understood theoretically, interventions to enhance those

behaviors can be designed. This research suggested that intention to obtain mammography might be more closely related to one's perceived benefits of mammography as a health promotion behavior. Additional internal perceptions or a locus of control may play a role in this health decision. The theories of health promotion behavior require additional study as they relate to elderly females and breast cancer screening behaviors.

In practice, it is important that the nurse practitioner realize the risk of breast cancer increases with advancing age. The practitioner must understand the benefits of mammography in early detection, resulting in reduced morbidity and mortality from breast cancer. Nurse practitioners should be aware of some of the barriers that elderly females may perceive so they may address these on an individual basis. When the barriers to mammography are addressed, they can be overcome, thus increasing the utilization of mammography.

Nurse practitioners should assess the knowledge and perception of risk that the senior woman possesses regarding breast cancer. The nurse practitioner should then address the specific issues of screening mammography in relation to the perceptions offered by the individual patient. Nurse practitioners are educators and should inform elderly females of the benefits of mammography and

recommend the study. Community or group educational events can serve as a forum for the nurse practitioner to improve community health by addressing this important woman's health issue.

Formal nursing education programs should include the importance of this disease in the elderly female population. This population is one of the fastest growing in the United States, and this health issue is one of the most important due to the impact of secondary prevention. Nursing students should have an understanding of the reduction of the morbidity and mortality of breast cancer through early detection. The impact of secondary prevention through mammography screening should be a part of the nursing curriculum, as nurse practitioners continue to improve the preventive aspects of nursing care.

Research has indicated a correlation between mammography utilization and the elderly females' perception of breast cancer risk and mammography barriers and benefits. Although this researcher's study did not support the previous studies, it is important to conduct on-site research and keep abreast of current studies regarding the influences on health promotion behavior. Such activity impacts clinical practice through the application of nursing research. Promoting mammography through research-based practice can decrease the morbidity

and mortality associated with breast cancer as it affects women who are 65 years of age and older. This researcher's project is significant to nursing as it supports the role of the nurse practitioner in improving health promotion behaviors in elderly females. As this segment of our population continues to grow, the nurse practitioner will have the opportunity to positively impact the health promotion behaviors of the senior females through clinical practice, educational efforts, and research grounded in nursing theory.

Recommendations for Further Study

Based on the findings from this study, the researcher makes the following recommendations for future research:

1. Replication of this study with a larger and more diverse sample that would lend itself to statistical significance.

2. Conduction of similar studies that would specifically target those women who are not in compliance with current mammography screening guidelines.

3. Implementation of qualitative research studies exploring the reasons why those women who are in compliance with mammography screening are compliant.

4. Development of a descriptive study to evaluate the role the health care provider plays in the recommendations for elderly females to obtain mammography.

5. Conduction of additional research studies targeted at the ideas and practices of the elderly in health promotion behaviors.

REFERENCES

References

Allen, J., Sorensen, G., Stoddard, C., Colditz, G., & Peterson, K. (1998). Intention to have a mammogram in the future among women who have underused mammography in the past. Health Education and Behavior, 25(4), 474-488.

American Cancer Society: Breast Cancer Resource Center. (2000, September 22). Fast Facts [On-line]. Available: http://www3.cancer.org

Burack, R., George, J., & Gurney, J. (2000). Mammography use among women as a function of age and patient involvement in decision making. Journal of the American Geriatrics Society, 48(7), 817-821.

Champion, V. L. (1994). Strategies to increase mammography utilization. Medical Care, 32(2), 118-129.

Champion, V. L. (1999). Revised Susceptibility, Benefits, and Barriers Scale for Mammography Screening. Research in Nursing and Health, 22, 341-348.

Chevarley, F., & White, E. (1997). Recent trends in breast cancer mortality among white and black US women. American Journal of Public Health, 87, 776-781.

Fitch, M., Greenberg, M., Levstein, L., Muir, M., Plante, S., & King, E. (1997). Health promotion and early detection of cancer in older adults: Needs assessment for program development. Cancer Nursing, 20(6), 381-388.

Gnanadesigan, N., Hirsch, S., & Reuben, D. (2000). Preventive health behaviors and mammography use among urban older women. American Journal of Health Promotion, 14(6), 343-346.

Holm, C., Frank, D., & Curtin, J. (1999). Health beliefs, health locus of control, and women's mammography behavior. Cancer Nursing, 22(2), 149-156.

Lauver, D. R., Kane, J., Bodden, J., McNeel, J., & Smith, L. (1999). Engagement in breast cancer screening behaviors. Oncology Nursing Forum, 26(3), 545-554.

Miller, A., & Champion, V. (1996). Mammography in older women: One-time and three-year adherence to guidelines. Nursing Research, 45(4), 239-245.

National Cancer Institute. (1999). Knowledge, attitudes and behavior of women ages 65 and older on mammography screening and Medicare [On-line]. Available: http://www.nci.gov

Rosenstock, I. (1990). The Health Belief Model: Explaining health behavior through expectancies. In K. Glanz, F. M. Lewis, & B. K. Rimer (Eds.), Health behavior and health education: Theory, research and practice (pp. 39-62). San Francisco, CA: Josey-Bass.

Stoddard, A., Rimer, B., Lane, D., Fox, S., Lipkus, I., Luckmann, R., Avrunin, J., Sprachman, S., Costanza, M., & Urban, N. (1998). Underusers of mammogram screening: Stage of adoption in five U.S. subpopulations. Preventive Medicine, 27, 478-487.

U.S. Department of Health and Human Services, Public Health Services. (1991). Healthy People 2000: National health promotion and disease prevention objectives (DHHS Publication No. PHS 91-50212). Washington, DC: U.S. Government Printing Office.

U.S. Department of Health and Human Services. (1999). Breast cancer national project overview [On-line]. Available: http://www.hcfa.gov/quality/

APPENDIX A

BREAST HEALTH PROMOTION SURVEY (PRETEST)

Breast Health Promotion Survey

(Pretest)

PLEASE CHECK (✔) THE INFORMATION THAT DESCRIBES YOU:

AGE (YEARS)

- ❒ 65 to 75
- ❒ 75 to 85
- ❒ 85 to 95
- ❒ Over 95

RACE

- ❒ Black
- ❒ White
- ❒ Hispanic
- ❒ Other

MARITAL STATUS

- ❒ Single
- ❒ Married
- ❒ Divorced
- ❒ Widow

EDUCATION

- ❒ Less than high school
- ❒ High school graduate
- ❒ Some college
- ❒ Graduated college

HISTORY OF BREAST CANCER

- ❒ Yes
- ❒ No

LAST MAMMOGRAM

- ❒ Never
- ❒ Less than 2 years ago
- ❒ More than 2 years ago

CHECK THE BOX THAT INDICATES YOUR FEELING ABOUT EACH STATEMENT

IT IS LIKELY THAT I WILL GET BREAST CANCER

- ❒ Strongly agree
- ❒ Agree
- ❒ No opinion
- ❒ Disagree
- ❒ Strongly disagree

MY CHANCES OF GETTING BREAST CANCER IN THE NEXT FEW YEARS ARE GREAT

- ❒ Strongly agree
- ❒ Agree
- ❒ No opinion
- ❒ Disagree
- ❒ Strongly disagree

I FEEL I WILL GET BREAST CANCER SOMETIME DURING MY LIFE

- ❒ Strongly agree
- ❒ Agree
- ❒ No opinion
- ❒ Disagree
- ❒ Strongly disagree

IF I GET A MAMMOGRAM AND NOTHING IS FOUND I DO NOT WORRY AS MUCH ABOUT BREAST CANCER

- ❒ Strongly agree
- ❒ Agree
- ❒ No opinion
- ❒ Disagree
- ❒ Strongly disagree

HAVING A MAMMOGRAM WILL HELP ME FIND BREAST LUMPS EARLY

- ❒ Strongly agree
- ❒ Agree
- ❒ No opinion
- ❒ Disagree
- ❒ Strongly disagree

IF I FIND A LUMP EARLY THROUGH A MAMMOGRAPHY MY TREATMENT FOR BREAST CANCER MAY NOT BE AS BAD

- ❒ Strongly agree
- ❒ Agree
- ❒ No opinion
- ❒ Disagree
- ❒ Strongly disagree

HAVING A MAMMOGRAM IS THE BEST WAY FOR ME TO FIND A VERY SMALL BREAST LUMP

- ❒ Strongly agree
- ❒ Agree
- ❒ No opinion
- ❒ Disagree
- ❒ Strongly disagree

HAVING A MAMMOGRAM WILL DECREASE MY CHANCES OF DYING FROM BREAST CANCER

- ❒ Strongly agree
- ❒ Agree
- ❒ No opinion
- ❒ Disagree
- ❒ Strongly disagree

I AM AFRAID TO HAVE A MAMMOGRAM BECAUSE I MIGHT FIND OUT SOMETHING IS WRONG

- ❒ Strongly agree
- ❒ Agree
- ❒ No opinion
- ❒ Disagree
- ❒ Strongly disagree

I AM AFRAID TO HAVE A MAMMOGRAM BECAUSE I DON'T UNDERSTAND WHAT WILL BE DONE

- ❒ Strongly agree
- ❒ Agree
- ❒ No opinion
- ❒ Disagree
- ❒ Strongly disagree

I DON'T KNOW HOW TO GO ABOUT GETTING A MAMMOGRAM

- ❒ Strongly agree
- ❒ Agree
- ❒ No opinion
- ❒ Disagree
- ❒ Strongly disagree

HAVING A MAMMOGRAM IS TOO EMBARRASSING

- ❒ Strongly agree
- ❒ Agree
- ❒ No opinion
- ❒ Disagree
- ❒ Strongly disagree

HAVING A MAMMOGRAM TAKES TOO MUCH TIME

- ❒ Strongly agree
- ❒ Agree
- ❒ No opinion
- ❒ Disagree
- ❒ Strongly disagree

HAVING A MAMMOGRAM IS TOO PAINFUL

- ❒ Strongly agree
- ❒ Agree
- ❒ No opinion
- ❒ Disagree
- ❒ Strongly disagree

PEOPLE DOING MAMMOGRAMS ARE RUDE TO WOMEN

- ❒ Strongly agree
- ❒ Agree
- ❒ No opinion
- ❒ Disagree
- ❒ Strongly disagree

HAVING A MAMMOGRAM EXPOSES ME TO UNNECESSARY RADIATION

- ❒ Strongly agree
- ❒ Agree
- ❒ No opinion
- ❒ Disagree
- ❒ Strongly disagree

I CANNOT REMEMBER TO SCHEDULE A MAMMOGRAM

- ☐ Strongly agree
- ☐ Agree
- ☐ No opinion
- ☐ Disagree
- ☐ Strongly disagree

I HAVE OTHER PROBLEMS MORE IMPORTANT THAN GETTING A MAMMOGRAM

- ☐ Strongly agree
- ☐ Agree
- ☐ No opinion
- ☐ Disagree
- ☐ Strongly disagree

I AM TOO OLD TO NEED A ROUTINE MAMMOGRAM

- ☐ Strongly agree
- ☐ Agree
- ☐ No opinion
- ☐ Disagree
- ☐ Strongly disagree

I INTEND TO GET A MAMMOGRAM THIS YEAR

- ☐ Yes
- ☐ No

THANK YOU FOR COMPLETING THE QUESTIONNAIRE
PLEASE RETURN IT TO THE NURSE

APPENDIX B

BREAST HEALTH PROMOTION SURVEY (POSTTEST)

Breast Health Promotion Survey
(Posttest)

CHECK THE BOX THAT INDICATES YOUR FEELING ABOUT EACH STATEMENT

IT IS LIKELY THAT I WILL GET BREAST CANCER

- ☐ Strongly agree
- ☐ Agree
- ☐ No opinion
- ☐ Disagree
- ☐ Strongly disagree

MY CHANCES OF GETTING BREAST CANCER IN THE NEXT FEW YEARS ARE GREAT

- ☐ Strongly agree
- ☐ Agree
- ☐ No opinion
- ☐ Disagree
- ☐ Strongly disagree

I FEEL I WILL GET BREAST CANCER SOMETIME DURING MY LIFE

- ☐ Strongly agree
- ☐ Agree
- ☐ No opinion
- ☐ Disagree
- ☐ Strongly disagree

IF I GET A MAMMOGRAM AND NOTHING IS FOUND I DO NOT WORRY AS MUCH ABOUT BREAST CANCER

- ☐ Strongly agree
- ☐ Agree
- ☐ No opinion
- ☐ Disagree
- ☐ Strongly disagree

HAVING A MAMMOGRAM WILL HELP ME FIND BREAST LUMPS EARLY

- ❒ Strongly agree
- ❒ Agree
- ❒ No opinion
- ❒ Disagree
- ❒ Strongly disagree

IF I FIND A LUMP EARLY THROUGH A MAMMOGRAPHY MY TREATMENT FOR BREAST CANCER MAY NOT BE AS BAD

- ❒ Strongly agree
- ❒ Agree
- ❒ No opinion
- ❒ Disagree
- ❒ Strongly disagree

HAVING A MAMMOGRAM IS THE BEST WAY FOR ME TO FIND A VERY SMALL BREAST LUMP

- ❒ Strongly agree
- ❒ Agree
- ❒ No opinion
- ❒ Disagree
- ❒ Strongly disagree

HAVING A MAMMOGRAM WILL DECREASE MY CHANCES OF DYING FROM BREAST CANCER

- ❒ Strongly agree
- ❒ Agree
- ❒ No opinion
- ❒ Disagree
- ❒ Strongly disagree

I AM AFRAID TO HAVE A MAMMOGRAM BECAUSE I MIGHT FIND OUT SOMETHING IS WRONG

- ❒ Strongly agree
- ❒ Agree
- ❒ No opinion
- ❒ Disagree
- ❒ Strongly disagree

I AM AFRAID TO HAVE A MAMMOGRAM BECAUSE I DON'T UNDERSTAND WHAT WILL BE DONE

- ❒ Strongly agree
- ❒ Agree
- ❒ No opinion
- ❒ Disagree
- ❒ Strongly disagree

I DON'T KNOW HOW TO GO ABOUT GETTING A MAMMOGRAM

- ❒ Strongly agree
- ❒ Agree
- ❒ No opinion
- ❒ Disagree
- ❒ Strongly disagree

HAVING A MAMMOGRAM IS TOO EMBARRASSING

- ❒ Strongly agree
- ❒ Agree
- ❒ No opinion
- ❒ Disagree
- ❒ Strongly disagree

HAVING A MAMMOGRAM TAKES TOO MUCH TIME

- ❒ Strongly agree
- ❒ Agree
- ❒ No opinion
- ❒ Disagree
- ❒ Strongly disagree

HAVING A MAMMOGRAM IS TOO PAINFUL

- ❒ Strongly agree
- ❒ Agree
- ❒ No opinion
- ❒ Disagree
- ❒ Strongly disagree

PEOPLE DOING MAMMOGRAMS ARE RUDE TO WOMEN

- ❒ Strongly agree
- ❒ Agree
- ❒ No opinion
- ❒ Disagree
- ❒ Strongly disagree

HAVING A MAMMOGRAM EXPOSES ME TO UNNECESSARY RADIATION

- ❒ Strongly agree
- ❒ Agree
- ❒ No opinion
- ❒ Disagree
- ❒ Strongly disagree

I CANNOT REMEMBER TO SCHEDULE A MAMMOGRAM

- ❒ Strongly agree
- ❒ Agree
- ❒ No opinion
- ❒ Disagree
- ❒ Strongly disagree

I HAVE OTHER PROBLEMS MORE IMPORTANT THAN GETTING A MAMMOGRAM

- ❒ Strongly agree
- ❒ Agree
- ❒ No opinion
- ❒ Disagree
- ❒ Strongly disagree

I AM TOO OLD TO NEED A ROUTINE MAMMOGRAM

- ❒ Strongly agree
- ❒ Agree
- ❒ No opinion
- ❒ Disagree
- ❒ Strongly disagree

I INTEND TO GET A MAMMOGRAM THIS YEAR

- ❒ Yes
- ❒ No

THANK YOU FOR COMPLETING THE QUESTIONNAIRE

APPENDIX C

LETTER REQUESTING PERMISSION TO USE TOOL

3062 Circle Gate Drive
Germantown, TN 38138
(901) 751-1238
e-mail:ray@netten.net

September 26, 2000

Victoria L. Champion, DNS, RN, FAAN
Associate Dean for Research
Indiana University School of Nursing
1111 Middle Drive
Indianapolis, IN 46202

Dear Dr. Champion,

I am a nurse practitioner graduate student at Mississippi University for Women. In partial fulfillment of my master's degree, I am conducting research on the beliefs of women 65 years of age and older regarding breast cancer susceptibility and intention to obtain mammography.

I am requesting permission to use the Revised Susceptibility, Benefits, and Barriers Scale for Mammography Screening you published in 1999. Since the scales have been tested so thoroughly, they are of great interest to me.

Thank you for your assistance and cooperation. If I can provide further information, please contact me. I look forward to your reply.

Sincerely,

Patricia W. Bader, BSN, RN, C

INDIANA UNIVERSITY

SCHOOL OF NURSING

October 20, 2000

Patricia W. Bader, BSN, RN, C.
3602 Circle Gate Drive
Germantown, TN 38138

Dear Ms. Bader:

Enclosed is a copy of my Health Belief Model and other related materials. You have my permission to use the Health Belief Model in your research; however, I do require a copy of the completed abstract. Please call me at 317/274-4187 or email me at vchampio@iupui.edu if you have any questions.

Thank you.

Sincerely,

Victoria Champion

Victoria L. Champion, DNS, RN, FAAN
Professor and Associate Dean for Research
Mary Margaret Walther Professor of Nursing

CENTER FOR NURSING RESEARCH

1111 Middle Drive
Indianapolis, Indiana
46202-5107

317-274-7627
Fax: 317-278-2021

Located on the campus of
Indiana University
Purdue University
Indianapolis

HEALTH BELIEF MODEL SCALES FOR MEASURING BELIEFS RELATED TO BREAST CANCER

Introduction: The purpose of this research was to revise scales measuring perceived susceptibility to breast cancer and perceived benefits and barriers to mammography utilization. A total of 618 women age 50 and over who were enrolled in a large intervention study participated in data collection. Scales were revised beginning with focus group input. Analyses included internal consistency reliability, test-retest reliability, factor analysis, confirmatory analysis, and known groups techniques to test construct validity. Internal consistency ranged from .75 to .88, and test reliabilities from .59 to .72. Construct validity was confirmed with exploratory and confirmatory factor analyses as well as known group techniques. Overall these scales represent an improvement in those previously reported. All scale items were measured on a 5-point Likert scale with the following coding strongly disagree (1); disagree (2); neutral (3); agree (4); and strongly agree (5). Scales were summated for analyses.

	Alpha	Test/Retest	# of items
Susceptibility	.87	.62	3
Benefits (Mammography)	.75	.61	5
Barriers (Mammography)	.88	.71	11

SCALE ITEMS

Susceptibility

1. It is likely that I will get breast cancer.
2. My chances of getting breast cancer in the next few years are great.
3. I feel I will get breast cancer sometime during my life.

Benefits

1. If I get a mammogram and nothing is found, I do not worry as much about breast cancer.
2. Having a mammogram will help me find breast lumps easily.
3. If I find a lump through a mammogram, my treatment for breast cancer may not be as bad.
4. Having a mammogram is the best way for me to find a very small lump.
5. Having a mammogram will decrease my chances of dying from breast cancer.

Barriers

1. I am afraid to have a mammogram because I might find out something is wrong.
2. I am afraid to have a mammogram because I don't understand what will be done.
3. I don't know how to go about getting a mammogram.
4. Having a mammogram is too embarrassing.
5. Having a mammogram takes too much time.
6. Having a mammogram is too painful.
7. People doing mammograms are rude to women.
8. Having a mammogram exposes me to unnecessary radiation.
9. I can not remember to schedule a mammogram.
10. I have other problems more important than getting a mammogram.
11. I am too old to need a routine mammogram.

APPENDIX D

EDUCATIONAL PROGRAM USING POWERPOINT

BREAST CANCER STATISTICS

- Most common type of cancer in women
- Second leading cause of cancer deaths in American women
- Strikes about 180,000 American women each year
- An estimated 44,000 women will die each year as a result of breast cancer

RISK FACTORS

- Females
- Advanced age
- Family history of breast cancer (mother, daughter, sister)
- Previous history of breast cancer
- Starting periods before age 11 and menopause after age 55

EARLY DETECTION REDUCES MORTALITY

- Found early, the 5-year survival rate is **96%**
- Found later, the 5-year survival rate is **20%**

MAMMOGRAMS - WHAT?

- An x-ray of each breast
- You can stand or sit to have the x-ray done
- The breast is compressed for about 1 minute or less

MAMMOGRAMS - WHY?

- The most specific screening test for breast cancer currently available
- Can detect breast cancers before they can be felt

MAMMOGRAMS - WHEN?

- Every year for women age 40 and over
- If you or your doctor find an abnormality on your breast exam

MAMMOGRAM - WHAT KIND?

- Screening mammogram
- Diagnostic mammogram

MAMMOGRAMS - HOW?

- Ask your doctor or nurse to schedule the test for you
- Call the Women's Center and schedule a screening mammogram yourself

APPENDIX E

APPROVAL OF MISSISSIPPI UNIVERSITY FOR WOMEN'S COMMITTEE ON USE OF HUMAN SUBJECTS IN EXPERIMENTATION

MISSISSIPPI UNIVERSITY FOR WOMEN

Admitting Men Since 1982

Office of the Vice President for Academic Affairs
Eudora Welty Hall
W-Box 1603
Columbus, MS 39701
(662) 329-7142
(662) 329-7141 Fax
www.muw.edu

February 23, 2001

Ms. Patricia W. Bader
c/o Division of Nursing
P. O. Box W-910
Campus

Dear Ms. Bader:

I am pleased to inform you that the members of the Committee on Human Subjects in Experimentation have approved your proposed research as submitted.

I wish you much success in your research.

Sincerely,

Vagn K. Hansen, Ph.D.
Vice President
for Academic Affairs

VH:wr

cc: Mr. Jim Davidson
Ms. Terri Hamill

APPENDIX F

LETTER TO COMMUNITY HOUSING REPRESENTATIVE

3062 Circle Gate Drive
Germantown, TN 38138
(901) 751-1238
e-mail:ray@netten.net

[Date]

Director of Activities/Residential Life
[Community Facility Name]
[Address]

Dear Director,

I am interested in conducting a research project on breast health promotion in the senior female population. The study is in partial fulfillment of requirements as a graduate nurse practitioner student at Mississippi University for Women. The results will be helpful in identifying perceived barriers to health promotion and the role the nurse plays in promoting healthy behaviors in this population.

I will present a one-hour educational program on breast cancer risks and mammography. The program utilizes overhead transparencies and lecture format. Informed consent will be obtained and a pre-program questionnaire will be distributed. A follow-up questionnaire will be mailed out to the participants. These forms are included for your review. There will be no cost incurred by the facility or the participants. I will provide the audiovisual equipment.

I would like to discuss the project details and explain the questionnaire to you. I will contact you to schedule a convenient time to do so. If you have any questions or comments, please contact me at home (901) 751-1238 or at work (901) 888-2646.

Thank you for your interest.

Sincerely,

Patricia W. Bader, BSN, RN, C

Enclosures

APPENDIX G

INFORMED CONSENT FOR BREAST HEALTH PROMOTION PROGRAM

Informed Consent for Breast Health Promotion Program

By signing this form, I am consenting to participation in an educational program and study on breast health promotion in the senior female population (age 65 and older). The program is being presented and the study conducted by Pat Bader, RN, a student in the master's nursing program at Mississippi University for Women. The purpose of the study is to examine my beliefs and practices regarding mammograms and breast cancer.

I will be asked to complete a questionnaire before the program and one that will be mailed to me after the program. The questionnaire will include information on my beliefs and practices regarding breast cancer and mammograms. The questionnaires WILL NOT include my name, so that confidentiality will be protected. Each questionnaire will be assigned a number known only to the researcher so the posttest can be matched to the pretest. All questionnaires and consent forms will be maintained in a locked file by the researcher.

Since I chose to come to this educational program, I am eligible for participation in the study. I understand that my participation is voluntary. I may attend the program and receive information and handouts but choose not to complete the questionnaire prior to the program. I may also choose to withdraw from the study by not completing and returning the follow-up questionnaire.

There is no cost to me. No risks have been identified. Potential benefits will include the receipt of information from the nurse and from various handouts. I understand that the results of the study will be shared with me if I ask for them. I also understand that Pat Bader, RN, is the nurse presenter and the contact person for this study. She can be reached at (901) 888-2646 Tuesday-Friday from 8:00 a.m. to 4:30 p.m. or (901) 751-1238 after those hours.

_____ _____

Participant's Signature Date

_____

Street Address

_____

City and State Zip Code

APPENDIX H

COVER LETTER FOR MAILED QUESTIONNAIRE

Dear _____,

You were one of the participants in an educational program presented at

_____

The program was on breast cancer risks and mammograms. At that time, you agreed to complete a follow-up questionnaire to assist me in evaluating the effectiveness of the program.

I have enclosed the questionnaire and a stamped, self-addressed envelope. I hope you will take a few minutes to complete and return it. Your opinions and experiences are very important to me.

The questionnaire is anonymous and your participation remains voluntary.

Should you have any questions, please contact Pat Bader, RN, at (901) 888-2646 during the day or (901) 751-1238 in the evenings. If you have additional comments, please feel free to write them on the back of the questionnaire.

Thank you for your cooperation and assistance in returning the form by the end of the week.

Sincerely,

Pat Bader, BSN, RN, C

APPENDIX I

RAW DATA

Bader Thesis Raw Data

ID	AGE	RACE	MARITAL STATUS	EDUCATION	HISTORY OF BREAST CANCER	LAST MAMOGRAM	S-1	S-7	P-1	BEN-1	BEN-2	BEN-3	BEN-4	BEN-5	BAR-1	BAR-2	BAR-3	BAR-4	BAR-5	BAR-6	BAR-7	BAR-8	BAR-9	BAR-10	BAR-11	INTENT
003	3	2	1	2	2	2	2	2	3	2	3	4	4	4	5	4	4	5	4	4	4	4	4	4	2	
004	2	2	4	2	2	2	2	2	2	5	5	5	5	5												
005	3	2	4	2	2	2	3	3	3	3	4	2	4	4	3	4	4	4	4	4	4	4	4	4	4	2
006	2	2	4	3	2	2	2	2	3	2	2	2	1	4	5	5	4	4	4	4	4	4	4	4	4	2
007	1	2	4	3	2	2	2	3	2	5	4	4	4	4	5	4	5	4	5	2	3	3	4	5	4	2
008	2	2	4	4	2	2	4	4	4	4	4	2	4	4	2	4	4	4	4	4	4	4	4	4	4	2
009	1	2	4	2	2	2	3	3	3	4	5	4	5	4	2	2	4	2	2	2	5	2	4	4	4	2
010	2	2	4	3	2	2	2		2	5	5	5	5	5												
012	2	2	4	2	2	2	2	2	2	5	5	4	5	4	4	4	1	5	5	4	4	4	4	4	5	2
014	2	2	2	4	2	2	3	3	2	4	5	5	3	5	5	5	5	5	4	4	3	4	5	4	4	2
017	2	2	4	1	2	2	4	4	1	4	4	5	5	4	2	1	3	2	2	2	4	3	2	5	5	2
018	2	2	4	2	2	2	3	1	1	5	5	5	4	5	5	5	5	5	5	5	5	5	5	4	5	2
021	2	2	1	2	2	2	3	2	3	4	4	5	4	4	4	4	4	4	4	4	4	4	4	2	4	1
025	3	2	4	3	2	2			4	2	5	4	4	4	4	4	4	4	4	2	4	4	4	4	4	2
027	2	2	4	2	1	2	4	4	4	2	5	5	5	4	5	5	5	5	5	5	5	5	5	5	5	2
030	3	2	4	2	2	2	3	3	3	5	5	5	5	5	5	5	1	5	5	5	5	5	5	4	4	2
031	2	2	4	2	2	2	5	4	4	4	5	5	5	5	4	4	5	5	5	4	5	4	4	4	4	2
033	1	2	4	3	2	2	3	3	2	4	4	4	4	4	4	4	3	4	4	3	3	4	4	3	4	
034	2	2	4	2	2	2	2	3	2	5	4		4	4	4	4	5	4	2	4	4	4	4	4	4	2
035	1	2	4	2	2	2	2	2	2	4	5	5	5	5	4	4	4	4	4	1	4	4	4	4	4	2
043	2	2	4	2	2	2	3	4	3	3	4	4	4	4	3	4	2	4	4	4	3	4	4	4	4	2
044	2	2	4	2	2	2	3	3						4	4	4	4	4	4	4						
045	3	2	4	3	2	2	3	3	3	4	4	3	2	2	5	5	3	4	4	4	4	4	4	4	4	2
046	3	2	4	3	2	2	2	2	3	3	4	4	4	4	3	2	3	3	4	4	3	3	4	4	4	2
057	2	2	4	3	2	2	3	2	3	3	3	3	3	3	3	3	3	4	3	3	4	3	3	3	3	1
Study Participants																										
001	3	2	4	1	2	3	3	3	3	3	3	2	1	2	5	5	5	5	5	2	5	4	5	4	4	1	1	5	4	4	4	2	5	4	5	2	2
002	3	2	4	4	2	3	3	1	3	1	2	1	5	1	5	5	5	1	4	5	4	5	4	5	4	5	4	5	3	5	4	5	4	5	4	4	4	5	4	4	4	5	4	5	4	1	1	1
011	2	2	3	4	2	3	3	3	3	3	3	4	3	3	3	3	3	3	3	3	4	4	4	3	3	4	4	3	3	4	3	3	3	3	3	4	3	2	4	3	1	1
013	2	2	2	1	2	3		3	4	3	1	2	4	4	4	4	4	4	4	5	4	4	2	3	3	3	1	4	2	4	2	4	2	4		4		4		2		4		4	2	2
015	2	2	4	2	2	3	4	5	3	5	4	3	5	5	5	5	4	4	4	5	4	5	2	4	2	2	1	3	4	5		4		2	4	2	4	1	4	2	2	4	2	4	2	2
029	2	2	2		2	3	3	3		3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	5	4	3	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	5	3	4	4	4	4	4	4	4	2	2
032	3	2	4	3	2	3	5	4	4	5	4	4	4	4	4	5	4	5	4	5	4	5	4	5	4	5	4	5	4	5	4	5	4	5	4	4	4	5	4	5	2	5	4	5	4	2	2	2
036	3	2	4	2	2	1	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
037	1	2	4	1	2	3	2	5	3	2	3	3	3	4	4	4	4	4	4	4	4	4	4	3	4	4	4	3	4	2	4	3	3	3	2	3	2	2	2	3	2	3	3	4	4	4	1	1
048	3	2	4	3	2	3	4	4	4	4	2	4	4	4	5	5		4		4		4		4	5	5	5	4	5	4	5	4	5	4	4	4	5	4	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4

APPENDIX J

RAW DATA CODE

Raw Data Code

I. Susceptibility (S) Scoring: (5) Strongly Agree; (4) Agree; (3) No Opinion; (2) Disagree; (1) Strongly Disagree
   1. It is likely that I will get breast cancer.
   2. My chances of getting breast cancer in the next few years are great.
   3. I feel I will get breast cancer sometime during my life.

II. Benefits (Ben) Scoring: (5) Strongly Agree; (4) Agree; (3) No Opinion; (2) Disagree; (1) Strongly Disagree
   1. If I get a mammogram and nothing is found I do not worry as much about breast cancer.
   2. Having a mammogram will help me find breast lumps early.
   3. If I find a lump early through a mammogram my treatment for breast cancer may not be as bad.
   4. Having a mammogram is the best way for me to find a very small breast lump.
   5. Having a mammogram will decrease my chances of dying from breast cancer.

III. Barriers (Bar) Scoring: (5) Strongly Disagree; (4) Disagree; (3) No Opinion; (2) Agree; (1) Strongly Agree
   1. I am afraid to have a mammogram because I might find out something is wrong.
   2. I am afraid to have a mammogram because I don't understand what will be done.
   3. I don't know how to go about getting a mammogram.
   4. Having a mammogram is too embarrassing.
   5. Having a mammogram takes too much time.
   6. Having a mammogram is too painful.
   7. People doing mammograms are rude to women.
   8. Having a mammogram exposes me to unnecessary radiation.
   9. I cannot remember to schedule a mammogram.
   10. I have other problems more important than getting a mammogram.
   11. I am too old to need a routine mammogram.

IV. Intention to get a mammogram: (2) Yes; (1) No

V. Demographics
   Age: (1) 65-75; (2) 75-85; (3) 85-95; (4) over 95
   Race: (1) Black; (2) White; (3) Hispanic; (4) Other
   Marital Status: (1) Single; (2) Married; (3) Divorced; (4) Widow
   Education: (1) Less than HS; (2) HS graduate; (3) Some college; (4) Graduated college
   History of Breast Cancer: (1) Yes; (2) No
   Last Mammogram: (1) Never; (2) Less than 2 years; (3) More than 2 years