



Relationship of health belief model, knowledge of breast cancer, and sociodemographic variables to breast self-examination in rural women
by Mary Ellen Gray

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Nursing
Montana State University
© Copyright by Mary Ellen Gray (1988)

Abstract:

This study looked at the variables of sociodemographics, knowledge about breast cancer and breast self-examination (BSE), and Health Belief Model concepts and frequency of BSE practice in rural women. The Health Belief Model Scale (Champion, 1984) was used to measure the concepts of seriousness, susceptibility, benefits, barriers, and health motivation, sociodemographic and knowledge variables, and frequency of BSE. A convenience sample included 347 members of the Cascade County Extension Homemaker Clubs. Data were collected using a self-administered mailed questionnaire.

Analysis of sociodemographic variables in relation to frequency of BSE using the Lambda statistic showed no relationship between the variables. A Pearson product moment correlation coefficient was used to test the association between knowledge of breast cancer and BSE and frequency of BSE. Results showed a low, but positive relationship ($r = .1216$; $p = .023$).

Multiple regression analysis showed the Health Belief Model concepts accounted for 26% of the variance in BSE practice. Perceived benefits of BSE, perceived barriers to BSE, and health motivation were found to be the best predictors of BSE performance.

Results from this study suggested that this group of rural women were highly motivated toward health issues. Forty-three percent of the sample reported practicing BSE at least monthly. Those women who perceived the most benefits to BSE were likely to practice more frequent BSE.

Educational programs that emphasize benefits of BSE need to be developed, implemented, and evaluated to increase the number of women who practice BSE. Nurses should assess what women perceive as potential barriers to BSE and plan appropriate strategies to reduce them. Nurses also need to assess women concerning general health practices in an effort to identify women who are motivated toward good health. These women may be more likely to complete monthly exams if encouraged by health care personnel.

RELATIONSHIP OF HEALTH BELIEF MODEL, KNOWLEDGE OF
BREAST CANCER, AND SOCIODEMOGRAPHIC VARIABLES
TO BREAST SELF-EXAMINATION IN RURAL WOMEN

by

Mary Ellen Gray

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

of

Master

of

Nursing

MONTANA STATE UNIVERSITY
Bozeman, Montana

June 1988

V378
6793

APPROVAL

of a thesis submitted by

Mary Ellen Gray

This thesis has been read by each member of the thesis committee and has been found to be satisfactory regarding content, English usage, format, citations, bibliographic style, and consistency, and is ready for submission to the College of Graduate Studies.

May 15th, 1988
Date

Sharon R. Hovey
Chairperson, Graduate Committee

Approved for Major Department

May 17, 1988
Date

Kathleen Ann Long
Head, Major Department

Approved for the College of Graduate Studies

June 6, 1988
Date

Henry L. Parsons
Graduate Dean

STATEMENT OF PERMISSION TO USE

In presenting this thesis in partial fulfillment of the requirements for a master's degree at Montana State University, I agree that the Library shall make it available to borrowers under rules of the Library. Brief quotations from this thesis are allowable without permission, provided that accurate acknowledgement of source is made.

Permission for extensive quotation from or reproduction of this thesis may be granted by my major professor, or, in his absence, by the Dean of Libraries when, in the opinion of either, the proposed use of the material is for scholarly purposes. Any copying or use of the material in this thesis for financial gain shall not be allowed without my written permission.

Signature Mary Ellen Gray
Date 5-15-88

ACKNOWLEDGMENTS

I would like to thank special individuals who contributed their guidance, encouragement, expertise and support to this project. Their help has made my thesis a reality:

Sharon Hovey

Dr. Helen Lee

Rita Cheek

Jacqueline Stankey

American Cancer Society-Montana Division

Claire Del Guerra

Jeff, Allison and Caitlin Gray

Friends and Classmates

TABLE OF CONTENTS

	Page
APPROVAL	ii
STATEMENT OF PERMISSION TO USE	iii
VITA	iv
ACKNOWLEDGMENTS	v
TABLE OF CONTENTS	vi
LIST OF TABLES	viii
LIST OF FIGURES	ix
ABSTRACT	x
1. INTRODUCTION	1
Significance to Nursing	4
Conceptual Framework	5
Definition of Terms	9
Assumptions	10
2. REVIEW OF LITERATURE	11
Sociodemographics	11
Knowledge	13
Health Belief Model Variables	14
3. METHODS	17
Design	17
Population and Sample	18
Instrument	19
Data Collection	21
Protection of Human Rights	22
Data Analysis	23

TABLE OF CONTENTS-Continued

	Page
4. RESULTS	24
Sociodemographics	24
Knowledge	28
Health Belief Model Variables	30
5. DISCUSSION	35
Sociodemographics	36
Knowledge	38
Health Belief Model Variables	39
Conclusions	42
Limitations	44
Implications for Nursing	44
Recommendations for Future Study	47
REFERENCES CITED	49
APPENDICES	53
Appendix A - Permission Statements	54
Letter from Claire Del Guerra	55
Letter from Victoria Champion	56
Appendix B - Study Consent	57
Consent Letter	58
University Consent	59
Appendix C - Instrument	60
Health Belief Model Scale	61
Appendix D - Follow-up Letters	66
Letter to Claire Del Guerra	67
Letter to Cascade County Extension Homemakers	68

LIST OF TABLES

Table	Page
1. Examples of items of the subscales of susceptibility, seriousness, benefits, barriers, and health motivation.....	20
2. Frequency of practice of breast self-examination.....	26
3. Frequency of breast self-examination by age group.....	27
4. Sociodemographic variables as predictors of practice of breast self-examination.....	28
5. Response frequencies for questions about breast cancer and BSE.....	29
6. Internal reliabilities for the Health Belief Model subscales about breast cancer and BSE.....	31
7. Health Belief Model subscale scores.....	31
8. Listwise multiple regression of Health Belief Model variables by frequency of breast self-examination.....	33

LIST OF FIGURES

Figure	Page
1. Gray's adaptation of the Health Belief Model as a predictor of breast self-examination.....	7

ABSTRACT

This study looked at the variables of sociodemographics, knowledge about breast cancer and breast self-examination (BSE), and Health Belief Model concepts and frequency of BSE practice in rural women. The Health Belief Model Scale (Champion, 1984) was used to measure the concepts of seriousness, susceptibility, benefits, barriers, and health motivation, sociodemographic and knowledge variables, and frequency of BSE. A convenience sample included 347 members of the Cascade County Extension Homemaker Clubs. Data were collected using a self-administered mailed questionnaire.

Analysis of sociodemographic variables in relation to frequency of BSE using the Lambda statistic showed no relationship between the variables. A Pearson product moment correlation coefficient was used to test the association between knowledge of breast cancer and BSE and frequency of BSE. Results showed a low, but positive relationship ($r = .1216$; $p = .023$).

Multiple regression analysis showed the Health Belief Model concepts accounted for 26% of the variance in BSE practice. Perceived benefits of BSE, perceived barriers to BSE, and health motivation were found to be the best predictors of BSE performance.

Results from this study suggested that this group of rural women were highly motivated toward health issues. Forty-three percent of the sample reported practicing BSE at least monthly. Those women who perceived the most benefits to BSE were likely to practice more frequent BSE.

Educational programs that emphasize benefits of BSE need to be developed, implemented, and evaluated to increase the number of women who practice BSE. Nurses should assess what women perceive as potential barriers to BSE and plan appropriate strategies to reduce them. Nurses also need to assess women concerning general health practices in an effort to identify women who are motivated toward good health. These women may be more likely to complete monthly exams if encouraged by health care personnel.

CHAPTER 1

INTRODUCTION

Breast cancer is one of the leading health concerns for American women today. One out of ten women, about 10% of all females in the United States, will develop breast cancer sometime during her lifetime (American Cancer Society, 1987). About one million American women have had breast cancer and are still alive. Today, 65% of women with breast cancer survive at least five years after diagnosis (Clark et al., 1987). The rate of cancer deaths from breast cancer has remained stable from 1930 to 1985, accounting for 27 deaths per 100,000 women per year (Silverberg and Lubera, 1988).

An important factor in breast cancer prognosis is the stage of disease upon discovery. The five year survival rate is calculated to be 95% if cancer is detected and treated in a localized stage. If the cancer has spread regionally to the axillary lymph nodes, the survival rate drops to 65% (Silverberg and Lubera, 1988).

Early detection using mammography, physical examination by a health professional, and breast self-examination, and subsequent treatment could

significantly increase long term survival rates. Of the methods of detecting breast cancer, none can match the appeal of breast self-examination (BSE). BSE is simple, performed in private, inexpensive, non-invasive, non-radiative, and self-generated.

Breast self-examination is the regular and systematic examination of the breasts and underarm area, visually and by palpation, for any signs of abnormality. With the regular practice of BSE a woman becomes familiar with the structure and texture of her own breasts so that she will recognize any changes. Research has found that women practicing BSE were more likely to find their own tumors than patients not practicing BSE (Smith, Francis, and Polissar, 1980) and that performance of BSE is associated with earlier clinical staging, smaller tumor size, and increased five year survival rates (Greenwald et al., 1978).

However, despite the facts that BSE is a quick, simple, painless, and cost-free procedure, and that many women possess the knowledge to perform BSE, research findings reveal that many women choose not to practice BSE. According to a Gallup poll conducted in 1974 for the American Cancer Society, 77% of women interviewed had heard of BSE but only 18% had performed BSE in the previous year. A follow-up study in 1977 by Gallup

Organization reported 24% of women practicing monthly BSE. A 1980 national survey indicated that only 24% of the adult female population reported performing monthly BSE (American Cancer Society, 1980).

Recent research has revealed that women's attitudes about breast cancer and BSE may relate to the practice of BSE (Champion, 1985; Kelly, 1979; Rutledge, 1987; Schlueter, 1982; Stillman, 1977; Trotta, 1980; Turnbull, 1978;). Beliefs about the seriousness of breast cancer and susceptibility to the disease and the value of BSE in relation to the threat of breast cancer may affect motivation to perform monthly breast exams.

Health professionals in both urban and rural areas must emphasize the preventive aspects of health care and the teaching of information on BSE. To develop effective teaching programs, nurses must understand the effects of women's attitudes about breast cancer and BSE on the practice of BSE. Much of the past research on attitudes about breast cancer and BSE has been conducted on women residing in densely populated areas. Therefore, the purpose of this study was to identify the relationships of the variables of sociodemographics, knowledge, susceptibility, seriousness, benefits, barriers, and health motivation to the frequency of breast self-examination in rural women.

This research study on rural women addressed the following questions:

1. What sociodemographic variables are associated with frequency of breast self-examination?
2. Does knowledge about breast cancer and BSE relate to frequency of breast self-examination?
3. What is the relationship between the variables of perceived susceptibility, perceived seriousness, perceived benefits, perceived barriers, and health motivation to the frequency of breast self-examination?

Significance to Nursing

Mortality from breast cancer has not changed significantly in the last fifty years. Use of BSE as an early screening technique may lessen the likelihood of axillary lymph node involvement and recurrence and increase the chances for prolonged survival and possible cure. However, research indicates that only one in four women practice BSE. Women's attitudes about breast cancer and BSE may affect their motivation to perform BSE monthly. An understanding of the variables that influence the practice of BSE can assist nurses in rural and urban areas in designing successful interventions to increase performance of BSE.

Conceptual Framework

The conceptual framework for this study was based on the Health Belief Model (HBM). The HBM was developed to explain health-related behaviors at the level of individual decision making (Mikhail, 1981). The HBM relates psychological theories of decision making (which attempt to explain action in a choice situation) to an individual's decision about alternative health behaviors. Use of the HBM allows analysis of an individual's motivation to act as a function of the expectancy of goal attainment in the area of health behavior. The HBM was derived from social-psychological theory of Lewin, Becker, and others (Rosenstock, 1966).

The HBM addresses the subjective world of the behaving individual and focuses on linking current subjective states of the individual with current health behavior. Thus, the subjective world of the perceiver determines behavior rather than the objective world of the health professional (Rosenstock, 1966).

The HBM proposes that in order for an individual to avoid a disease one would need to believe (1) that one was personally susceptible to it (susceptibility), (2) that the occurrence of the disease would have at least moderate severity on some component of one's life

(seriousness), (3) that taking a particular action would be beneficial by reducing its severity (benefits), and (4) that action would not entail overcoming important barriers such as cost, convenience, pain, or embarrassment (barriers) (Becker, 1974). In addition, a stimulus called cue to action must occur to trigger the health protective behavior. This cue may be internal, like perception of bodily state, or external, such as interpersonal communications or impact of mass media.

A fifth concept, health motivation, was introduced into the model by Becker in 1974. Health motivation refers to the individual's degree of interest in and concern about health matters.

Modifying factors may condition an individual's perception of susceptibility, seriousness, and benefits to action. These factors include demographic, structural, attitudinal, interaction, and enabling factors (Becker, 1974).

Figure 1 depicts the researcher's adaptation of the HBM to BSE for the purposes of this research. On the left side of the figure are women's attitudes about breast cancer and BSE. These include the variables of perceived susceptibility to breast cancer, perceived seriousness of breast cancer, perceived benefits of BSE,

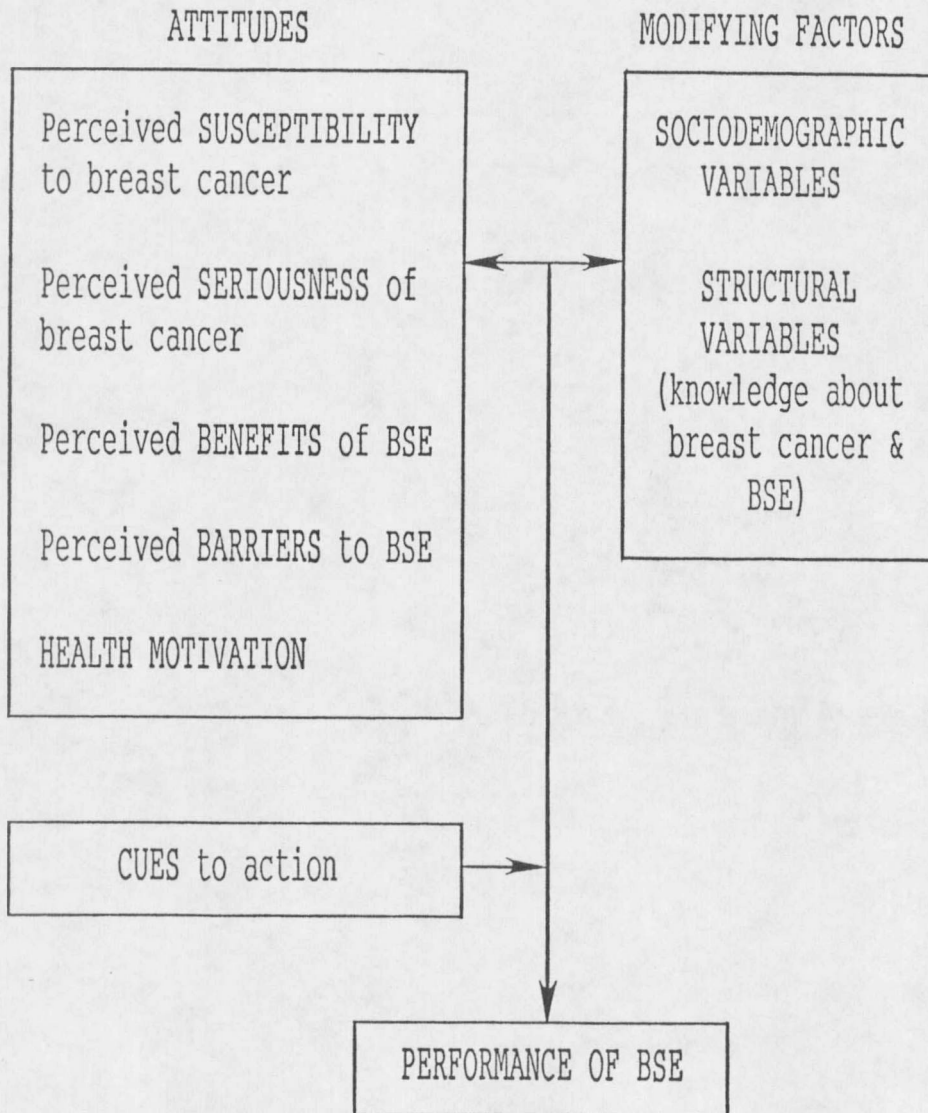


Figure 1. Gray's Adaptation of the Health Belief Model as a Predictor of Breast Self-Examination

perceived barriers to BSE, and health motivation. On the right side of the figure are the modifying factors such as sociodemographic variables and structural variables. Attitudes and modifying factors can influence each other and also influence the women's likelihood of performing BSE (located at the bottom of the figure). An additional variable, cues to action, (located below attitudes) can also influence the performance of BSE. Cues to action does not influence any other variables in the figure.

Application of the HBM proposes that in order for a woman to adopt the monthly practice of BSE, she must hold several beliefs:

1. She must believe she is personally susceptible to breast cancer (perceived susceptibility).

2. She must believe that breast cancer will have at least moderate consequences on her life-style (perceived seriousness).

3. She must believe that BSE will be beneficial in preventing or reducing the seriousness of breast cancer should it occur (perceived benefits).

4. She must believe that performing monthly BSE does not involve overcoming such barriers as cost, unpleasantness, inconvenience, embarrassment, fear, pain, or difficulty in remembering to do the examination each month (perceived barriers).

Health motivation (or a woman's degree of interest in and concern about health matters) may also alter a women's perception of her environment. Sociodemographic and structural variables (knowledge about breast cancer and BSE) must also be considered because they may condition a woman's perception of the threat of breast cancer and benefits and barriers to BSE.

A cue to action is also necessary to trigger a woman to perform BSE. Cues can be external (such as a family experience with breast cancer) or internal (like development of a symptom).

Definition of Terms

Perceived susceptibility: subjective risk of contracting breast cancer. Subjective risk was measured by the susceptibility subscale of the Health Belief Model Scale (HBMS) about Breast Self-Examination (Champion, 1984).

Perceived seriousness: subjective harmful consequences of breast cancer in relation to altering the individuals life-style. Perceived seriousness was measured by the seriousness subscale of the HBMS (Champion, 1984).

Perceived benefits: subjective effectiveness of BSE in reducing the threat of breast cancer. Perceived

benefits was measured by the benefit subscale of the HBMS (Champion, 1984).

Perceived barriers: potential negative aspects of BSE. Perceived barriers was measured by the barrier subscale of the HBMS (Champion, 1984).

Health motivation: concern about general health matters. Health motivation was measured by the health motivation subscale of the HBMS (Champion, 1984).

BSE practice: self report of performance of BSE; the number of times BSE was completed in monthly increments.

BSE knowledge: knowledge about factual information on breast cancer and BSE as measured on the knowledge portion of the HBMS (Champion, 1984).

Sociodemographic variables: demographic data including age, education, religion, marital status, and personal experience with breast cancer. Sociodemographic variables were measured on the demographic portion of the HBMS scale (Champion, 1984).

Assumptions

It was assumed that the HBMS (Champion, 1984) was valid for this study population since validity was not reestablished.

It was assumed that women honestly and accurately completed the HBMS (Champion, 1984).

CHAPTER 2

REVIEW OF LITERATURE

Breast cancer is one of the leading causes of death among women in the United States. In 1988, 41,000 American women were expected to die from breast cancer (Silverberg and Lubera, 1988). Efforts aimed at reducing breast cancer mortality have focused on early detection and treatment. Breast Self-Examination (BSE) has been widely advocated as a useful method for early cancer detection. While most women are aware of BSE as a breast cancer screening method, many do not practice it (Gallup, 1974).

BSE has been studied extensively in relation to sociodemographics, knowledge, and HBM variables. The following paragraphs address these variables.

Sociodemographics

Many studies (Foster et al., 1978; Howe, 1981; Huguley & Brown, 1981; Reeder, 1980; Senie et al., 1981; Smith, Francis & Polissar, 1980) have examined the relationship between BSE and various sociodemographic variables. Howe (1981) interviewed 708 urban women who by sociodemographic characteristics (white, married, and

high socioeconomic status) were high risk for breast cancer. A positive association was found between knowledge and BSE attitude and BSE frequency. Howe also found that frequency of BSE practice in high risk women was positively associated with age, education, modesty, social influence, preventive health orientation, and ease in establishing a BSE routine.

Huguley & Brown (1981) found that women who were more educated, under 50, white, professional or salaried non-professional, and had a family experience with breast cancer were more likely to perform monthly BSE ($N = 2092$). Foster and associates (1978) found younger women tended to report more frequent BSE than older women ($N = 335$). Smith, Francis, & Polissar (1980) found a similar relationship between age and practice of BSE ($N = 230$) in urban women. Results from their study also indicated that study participants who were separated or divorced reported a lower frequency of BSE. Senie & associates (1981) found higher frequency of BSE reported in urban women who had prior benign breast disease, a family history of breast cancer, were premenopausal, currently married, and more educated ($N = 1216$). Reeder and associates (1980) examined BSE behavior among urban women and found that more black than Hispanic or white women said they practiced BSE monthly ($N = 684$).

Knowledge

Several studies (Champion, 1985; Laughter et al., 1981; Sheley, 1983; Schlueter, 1982) have examined knowledge about breast cancer and BSE in relation to BSE practice. An examination of the knowledge of breast cancer self-detection (Sheley, 1983) on 290 urban women indicated only 10% of the breast self-examiners possessed the knowledge to perform both a timely and effective examination. A study examining the BSE practices of urban women ($N = 142$) with benign and malignant breast disease found similar results. Ratings obtained on a 13-point performance scale showed a mean of 3.9 steps performed. Less than half of the women were aware that BSE should be performed monthly (Laughter et al., 1981). Schlueter (1982) administered a self-report questionnaire to 263 urban women examining their knowledge of breast cancer and benefits of BSE in relation to practice of BSE. Results showed no significant relationship existed between knowledge or beliefs and frequency of practice of BSE. Champion (1985) found that urban women who were younger, more educated, and had a higher socioeconomic status, demonstrated higher knowledge of breast cancer and BSE but did not differ in frequency of performance of BSE ($N = 301$).

Health Belief Model Variables

The HBM has been used to examine women's attitudes about breast cancer and BSE and their practice of BSE. Several researchers (Champion, 1985; Kelly, 1979; Rutledge, 1987; Schlueter, 1982; Stillman, 1977; Trotta, 1980; Turnbull, 1978) have studied one or more HBM variables and their relationship to BSE behavior. Champion (1985) found that urban women perceiving few barriers to BSE were more likely to report increased frequency of BSE ($N = 301$). Likewise, women who scored high on health motivation reported greater frequency of BSE. Women perceiving more benefits examined their breasts more frequently and those who perceived fewer benefits examined less frequently. Women who had a relative or friend with breast cancer scored higher on the susceptibility subscale than those women with no personal experience.

Rutledge (1987) studied 93 upper middle class women to determine the relationship between perceived susceptibility, perceived seriousness, perceived benefits, perceived barriers, age, social support, and self concept and women's practice of BSE. High perceived benefits of BSE, low perceived barriers to BSE, and high

self concept were found to positively correlate directly to frequency of BSE practice.

Kelly (1979) studied a sample of 158 urban women and found that examiners had two main reasons for beginning and continuing BSE: (1) an awareness that it is desirable to detect breast cancer early, and (2) an awareness that they themselves could get breast cancer.

Stillman (1977) investigated women's health beliefs about breast cancer and BSE and the extent of practice of BSE in 122 women. Ninety-seven percent scored high in perceived benefits of BSE in reducing the threat of breast cancer and 87% scored high in perceived susceptibility to breast cancer. Forty percent practiced BSE monthly, but over 20% of the sample had high beliefs and were not practicers. Women's explanations for not examining themselves monthly included lack of instruction, being too busy, and preferring not to think about it.

Turnbull (1978) examined women's practices of BSE in health and non-health oriented professions ($N = 160$). Her findings demonstrated a relationship between positive practice of BSE and positive practices of other preventive health measures in women up to 35 years of age, but not in those over age 35. Fear of cancer was cited as the most significant factor in influencing BSE

practice. Most women who did not perform BSE reported lack of motivation and forgetting to perform the examination as reasons.

Trotta (1980) studied BSE behavior on a group of 446 women. She found that the fewer barriers reported by women, the more frequently they practiced BSE.

Further testing of the HBM on rural populations would determine the universality of the HBM in relation to frequency of practice of BSE. In order to promote the effectiveness of health professional's efforts to increase the practice of BSE in women, theory testing of the HBM on rural populations is necessary.

CHAPTER 3

METHODS

Design

The research design used in this study was descriptive survey. This design was chosen due to the ease of distribution and administration to a large population. The use of close-ended questions allowed the researcher to score and tabulate a large number of questionnaires with relative ease.

Use of the mailed questionnaire had several advantages. It was a less time consuming method of data collection than a personal interview. The researcher was able to gather data from a large sample and from a large geographic area. Participants were able to remain anonymous; respondents may have been more willing to answer personal questions about BSE if they felt they would not be identified. Additionally, the survey was a relatively inexpensive method of data collection. Respondents were able to complete the questionnaire in a few minutes.

The descriptive survey research method also has weaknesses. The questionnaire was unable to probe women's attitudes in depth without becoming too lengthy.

Respondents could omit or disregard any item they choose without giving an explanation. In addition, use of close-ended questions may have forced participants to select a response that was not their actual choice. The amount of information gathered by the questionnaire was limited by the respondent's available time and interest. Items on the questionnaire may have been misunderstood. The sample was limited to those who were literate. The participants who did return the questionnaire may not have provided a representative sample of the target population.

Population and Sample

Participants in this study included all women who were currently members of the Cascade County Homemakers. Cascade County is located in central Montana and has a population of 80,696. There are currently 45 Homemaker Clubs in Cascade County; seventeen of the clubs are outside the city of Great Falls. Each club is a voluntary organization with a small annual membership fee and open membership to any woman in Cascade County.

Through contact with the Extension Home Economist, a convenience sample of study participants was obtained (Appendix A). Women were approached through the mail from the mailing list of all current Homemakers in

Cascade County. A cover letter giving information about the study was mailed with the questionnaire to study participants (Appendix B). All women who were members of the Cascade County Homemakers were included in the survey. No discrimination was made on the basis of age (over 18), race, occupation, education, or family income. This population consisted of approximately 811 women residing in Cascade County.

Instrument

The Health Belief Model Scale (HBMS) (Champion, 1984) was used to collect data measuring the concepts of susceptibility, seriousness, benefits, barriers, health motivation, and BSE practice (Appendix C). This instrument uses a Likert format. Responses were measured on a five point scale from strongly agree, receiving five points to strongly disagree, one point. Each concept scale included five to twelve items; examples of items pertaining to specific concepts can be found in Table 1. Sociodemographic variables measured included race, marital status, education, occupation (self and spouse), religion, age, and personal experience with breast disease. Frequency of breast self-examination was measured by a single question which asked the respondent how often she examined her breasts. Knowledge of breast

Table 1. Examples of Items on the Subscales of Susceptibility, Seriousness, Benefits, Barriers, and Health Motivation.

Scale	Item
Susceptibility	1. My chances of getting breast cancer are great.
	2. Within the next year I will get breast cancer.
Seriousness	1. Breast cancer is a hopeless disease.
	2. If I had breast cancer, my whole life would change.
Benefits	1. I have a lot to gain by doing self exams.
	2. Self breast exams can help me find lumps in my breast.
Barriers	1. Self breast exams are time consuming.
	2. The practice of self breast exams interferes with my activities.
Health Motivation	1. I frequently do things to improve my health.
	2. I search for new information related to my health.

cancer and BSE was measured by a ten item multiple choice subscale. These questions tested factual knowledge about breast cancer and BSE. Items testing prevalence, breast cancer risk factors, timing of BSE, and techniques of BSE were included.

Internal reliability of the HBMS (Champion, 1984) was determined for each concept using Cronbach alpha and ranged from .60 to .78. Results of the test-retest correlations using Pearson r ranged from .47 to .86 ($p \leq .001$). Construct validity was established using factor analysis and multiple regression statistics.

Data Collection

The Extension Home Economist of the Cascade County Extension Homemakers was contacted to obtain a convenience sample of study participants. Questionnaires were mailed to all current members ($N = 811$) on the mailing list. Respondents were instructed to return questionnaires in an enclosed stamped self-addressed envelope. The questionnaire was self-administered and took fifteen minutes to complete.

A two month cut-off date was established for return of questionnaires. Questionnaires returned after the two month period were not used in the data analysis. A thank you letter and an informational article on breast cancer and BSE was written by the researcher and published in the Cascade County Extension Homemaker's Newsletter two weeks after completion of the data collection (Appendix D).

Protection of Human Rights

All study participants received a consent letter with the questionnaire. The consent letter informed the participants of the nature of the study, of the method of data collection, of any potential harm or discomfort that might be expected, of potential benefits that might come from participation in the study, and of the amount of time required to participate in the study. Additionally, the letter indicated that participation was voluntary and without monetary exchange. Written consent was not obtained; consent was implied by return of the completed questionnaire.

Participant's responses were kept confidential by asking the participants not to write their names anywhere on the questionnaire. Questionnaires were not coded prior to mailing. Respondents were told that study findings would be reported as group data.

Respondents were informed of potential risks from participation in the study. Participants were told that the questionnaire might be embarrassing or personal; however, participation did not involve any substantial discomfort or stress. The consent letter informed participants of these potential risks. Participants in the study were informed that while the study did not have

any direct benefits for them, the research could be useful in developing future educational programs on BSE.

This research proposal was reviewed and approved by the Montana State University College of Nursing Human Subjects Review Committee prior to data collection. (Appendix B).

Data Analysis

Descriptive statistics were used to describe the sociodemographic characteristics of the women participating in the study. Research question # 1 (sociodemographics) was tested using descriptive statistics (percentages, frequencies, range, mean, mode). Comparative statistics were used to test the influence of the variables of age, education, marital status, and personal or friend experience with breast cancer on BSE.

Research question # 2 (knowledge) was tested using descriptive statistics (percentages, frequencies, range, mean, and mode). The knowledge scores were analyzed in relation to the frequency of BSE.

Research question # 3 (HBM variables) was tested using a step-wise multiple regression to analyze the combined constructs of susceptibility, seriousness, barriers, benefits, and health motivation on BSE.

CHAPTER 4

RESULTS

Three hundred-seventy questionnaires were returned for a response rate of 46%. Thirty-three questionnaires were not used in the data analysis due to lack of completeness. Six questionnaires were returned as undeliverable. Data analysis was based on 347 questionnaires.

Sociodemographics

The age of the respondents ranged from 23 years to 84 years with the mean being 52 years. Ninety-eight percent of the sample were Caucasian. Eighty-eight percent ($n = 304$) of the respondents were married and eleven percent ($n = 38$) were widowed. Two women were divorced and two were single. Eighty-three percent of the respondents reported a religious preference. Forty-eight percent of the respondents ($n = 165$) were Protestant and 27% ($n = 92$) were Catholic. Educational level of the women ranged from eight years to over 16 years with a mean of 12 years. Fifty-two percent ($n = 182$) of the women reported their occupation as either a housewife, ranchwife, or farmwife. Thirteen

percent ($\underline{n} = 45$) of the women were retired. Other occupations reported were teachers, six percent ($\underline{n} = 21$); secretaries, five percent ($\underline{n} = 19$); nurses, four percent ($\underline{n} = 15$); and clerks, three percent ($\underline{n} = 11$).

Sixteen percent ($\underline{n} = 57$) of the sample reported having had a personal experience with breast disease. Thirty-four of the women had been treated for fibrocystic breast disease; eight had been treated for cancer; seven for breast lumps; six for tumors; and two for mastitis. In regards to treatment for breast conditions, 25 of the women had experienced surgery for breast disease; 16 had had a biopsy; three of the women reported eliminating caffeine from their diets; two had received chemotherapy; two had received estrogen therapy; one had received radiation therapy; and another had received antibiotics. All of these women stated that treatment had been effective with their breast disease.

Forty-four percent ($\underline{n} = 151$) reported having a friend with breast disease. Thirty-seven percent ($\underline{n} = 127$) of the women reported having a friend with breast cancer. Three percent of the women knew of a friend with fibrocystic breast disease and another three percent had friends with a breast lump. Thirty-four percent of the women reported having had a friend surgically treated for breast disease. Ten percent of

the women had a friend treated with chemotherapy; nine percent with radiation; and one percent with caffeine restrictions. Seventy-five percent of the women with friends treated for breast disease reported that the treatment had been successful.

Ninety-nine percent of the sample ($n = 345$) had heard of BSE and 90% ($n = 311$) reporting knowing how to perform BSE. Forty-three percent ($n = 151$) reported practicing BSE at least monthly (Table 2). Examining BSE by ten year age cohorts revealed that the 51 to 60 year old age group of women ($n = 72$) were the most frequent practitioners of BSE with 59.8% reporting at least monthly BSE practice. The 41 to 50 year old age group had the lowest percent practicing monthly BSE and also the highest percent of non-practicers (14.1%) (Table 3).

Table 2. Frequency of Practice of Breast Self Examination ($N = 347$).

Frequency of examination	Number of persons	
Never	35	(10.1%)
Every 5 to 6 months	49	(14.1%)
Every 3 to 4 months	64	(18.4%)
Every other month	48	(13.8%)
Every month	116	(33.4%)
More than monthly	35	(10.1%)

Table 3. Frequency of Breast Self-Examination by Age Group (N = 347).

Age group	Percent practicing monthly	Percent never practicing
Up to age 30 (<u>n</u> = 32)	53.1%	9.1%
31 to 40 years (<u>n</u> = 65)	35.6%	3.1%
41 to 50 years (<u>n</u> = 64)	34.4%	14.1%
51 to 60 years (<u>n</u> = 72)	59.8%	11.1%
61 to 70 years (<u>n</u> = 74)	35.2 %	10.8%
71 years and above (<u>n</u> = 39)	48.8%	12.8%

The Lambda statistic was used to measure the association between the demographic variables in relation to frequency of practice of BSE (Table 4). Practice categories of BSE were defined by frequency of practice ranging from never to more than once monthly. For all categories, the resulting Lambda statistic showed weak or no association between the demographic variables of age, race, marital status, religion, education, personal experience with breast disease and friend's experience with breast disease and the frequency of practice of BSE.

Table 4. Sociodemographic Variables as Predictors of Practice of Breast Self-Examination ($N = 347$).

	Symmetric	Frequency of BSE dependent	Demographic dependent
Age	0.04382	0.00000	0.08088
Race	0.00424	0.00433	0.00000
Marital status	0.00368	0.00435	0.00000
Religion	0.00000	0.00000	0.00000
Education	0.00901	0.01732	0.00000
Personal Experience	0.00000	0.00000	0.00000
Friend Experience	0.01842	0.00000	0.04516

Knowledge

The mean score on the knowledge portion of the HBMS was six correct responses out of ten. Only 32% of the women were able to identify the correct time during menstrual cycle to examine breasts (Table 5).

Thirty-nine percent correctly believed that a woman should examine her breasts in the shower. Seventy-eight percent were aware that variation in the size of a woman's breasts is normal. Seventy-two percent were able to correctly identify circumstances when a woman should

Table 5. Response Frequencies for Questions about Breast Cancer and BSE ($N = 347$).

Question	Correct (%)	Incorrect (%)
1. Identify best time during menstrual cycle for BSE	111 (32.0%)	236 (68.0%)
2. Should a woman examine breast in shower?	134 (38.6%)	213 (61.4%)
3. Are a woman's right and left breasts the same size?	271 (78.1%)	76 (21.9%)
4. Circumstances in which a woman should see her doctor at once	249 (71.8%)	98 (28.2%)
5. Identify correct position and technique for BSE	245 (70.6%)	102 (29.4%)
6. Prevalence of breast cancer	94 (27.1%)	253 (72.9%)
7. Identify relationship between age and cancer	224 (64.6%)	123 (35.4%)
8. Identify groups of women at risk for breast cancer	247 (71.2%)	100 (28.8%)
9. Are the majority of breast lumps cancerous?	279 (80.4%)	68 (19.6%)
10. Five year survival rate if breast cancer is discovered in a small area	250 (72.0%)	97 (28.0%)

see her physician at once. Seventy-one percent were able to identify the correct position for performing BSE. The majority of women (73%) believed the incidence of breast cancer was much higher than the actual rate. Sixty-five percent of the women were correct in identifying degree of risk regarding age and breast cancer. Seventy-one percent of the woman identified groups of women at highest risk for developing breast cancer. Eighty percent of the women correctly believed that the majority of breast lumps are not cancerous and 72% correctly believed that the five year survival rate for breast cancer was very good if the cancer was detected in a small area.

A Pearson product moment correlation coefficient was used to analyze the relationship between the variables of BSE knowledge total score and BSE practice. Results indicated a low, but positive, significant relationship between the two variables ($r = .1216$; $p = .023$).

Health Belief Model Variables

Internal reliabilities of the HBMS and each of the subscales were computed using a Cronbach Alpha statistic (see Table 6). The overall scale demonstrated an internal consistency reliability coefficient of .81. The subscales of susceptibility and barriers had internal

Table 6. Internal Reliabilities for Health Belief Model Subscales about Breast Cancer and BSE (N = 347).

Subscale	Number of items	Cronbach alpha
Health Motivation	8	0.72
Seriousness	12	0.85
Susceptibility	6	0.87
Benefits	5	0.69
Barriers	8	0.87
Overall scale	39	0.81

Table 7. Health Belief Model Subscale Scores (N = 347).

Subscale	Mean group score	Group range	Possible range
Health Motivation	31.9	14 to 40	8 to 40
Susceptibility	14.7	6 to 27	6 to 30
Seriousness	30.1	12 to 54	12 to 60
Benefits	19.8	10 to 25	5 to 25
Barriers	14.1	8 to 40	8 to 40

consistency reliability coefficients of .87. The seriousness subscale had an alpha of .85. The scales of benefits and health motivation had alphas of .69 and .72, respectively.

The group scores on the five HBMS subscales are listed in Table 7. Analysis of the mean score on the health motivation subscale indicated that this group of women were interested and concerned about health matters. The scores ranged from a low of 14 to a high of 40 (highly motivated) in a possible range of 8 to 40.

Scores on the susceptibility subscale indicated that this sample did not feel personally susceptible to breast cancer. Scores ranged from 6 to 27 in a possible range of 6 to 30. Lower scores on this subscale indicated that the woman did not perceive herself to be personally susceptible to breast cancer.

The mean group score on the seriousness subscale indicated neutral feelings about the severity of breast cancer on one's life. Scores on this subscale ranged from 12 to 54 in a possible range of 12 to 60.

The benefits subscale indicated that this sample of women perceived positive benefits of BSE. The scores ranged from 10 to 25 with a mean of 20. Higher scores indicated that the woman perceived more benefits to BSE.

The possible range of scores on the benefits subscale was 5 to 25.

The low mean group score on the barriers subscale demonstrated that this group of women did not perceive negative aspects or barriers to BSE performance. Low scores on this subscale indicated few perceived barriers to BSE while high scores indicated many barriers to BSE. Scores on the barriers subscale spanned the entire possible range from 8 to 40.

Listwise multiple regression was used to test the combined influence of the HBMS subscale scores on frequency of BSE practice (see Table 8). For the overall scale a multiple R of .508 ($p \leq .0001$) was obtained: 25.8% of the variance on breast self-examination was

Table 8. Listwise Multiple Regression of Health Belief Model Variables by Frequency of Breast Self-Examination. ($N = 347$).

Scale	Multiple R	R ²	F	Significance of F
Health Motivation	.271	.074	27.43	$\leq .0001$
Seriousness	.023	.000	0.18	.6661
Susceptibility	.207	.043	15.48	.0001
Benefits	.351	.124	48.63	$\leq .0001$
Barriers	.288	.083	31.35	$\leq .0001$
Overall Scale	.508	.258	23.76	$\leq .0001$

accounted for by the variables of health motivation, seriousness, susceptibility, benefits, and barriers. The combination of the subscales of the Health Belief Model were related to breast self-examination at a statistically significant level ($p \leq .0001$) in this sample of rural women. When each subscale is analyzed independently, benefits accounts for the largest portion of the variance (12.4 %) on the dependent variable of frequency of breast self-examination. Women who perceived more benefits of BSE in reducing the severity of breast cancer were likely to report more frequent BSE. Barriers accounted for 8.3% of the variance and health motivation accounted for 7%. Women who perceived fewer barriers to performing BSE reported a greater frequency of BSE practice. Women who scored high on the health motivation subscale were also more likely to report performing monthly BSE. Susceptibility accounted for 4% of the variance. The seriousness subscale did not add a significant amount to the variance.

CHAPTER 5

DISCUSSION

The purpose of this study was to examine the relationship between sociodemographic variables, knowledge about breast cancer and BSE, and HBM variables and the frequency of breast self-examination in rural women. Data were collected using a mailed self-administered questionnaire. A convenience sample included 347 members of the Cascade County Extension Homemaker Clubs. The Health Belief Model Scale (Champion, 1984) was used to measure the concepts of seriousness, susceptibility, benefits, barriers, and health motivation, and the variables of knowledge, sociodemographics, and a measure of frequency of BSE practice.

Analysis of the sociodemographic variables in relation to frequency of BSE using the Lambda statistic showed low or no association between variables. The Pearson product moment correlation coefficient used to measure the relationship between knowledge and frequency of BSE revealed a low sized, but positive significant relationship.

A multiple regression analysis was done with the frequency of BSE as the dependent variable. Results showed the Health Belief Model concepts accounted for 26% of the variance in BSE practice. When each subscale was analyzed independently, benefits accounted for the largest portion of the variance (12.4%) followed by barriers (8.3%), health motivation (7.4%), and susceptibility (4%). Seriousness did not add a significant amount to the variance. Women who perceived benefits of BSE were more likely to report more frequent BSE. In addition, women who perceived few barriers to performing BSE or scored high on health motivation also reported a greater frequency of BSE.

Sociodemographics

In this study there was no relationship between the sociodemographic variables and the frequency of practice of BSE. Champion (1985) was also unable to find any relationship between age and frequency of BSE practice. These findings differ from research findings by Foster (1978), Huguley & Brown (1981), Senie and associates (1981), and Smith, Francis, & Polissar (1980). Each of these researchers reported a decreasing frequency of BSE with increasing age.

Champion (1985) also reported no relationship between education and frequency of BSE practice. In contrast, other researchers (Howe, 1981; Huguley & Brown, 1981; Senie et al., 1981; and Smith, Francis, & Polissar, 1980) found that monthly BSE was reported more frequently in women with higher educational levels.

In this study, marital status did not influence the frequency of BSE practice. This is similar to findings by Champion (1985). Senie and associates (1981) found that monthly BSE was reported more frequently by married women. Smith, Francis, & Polissar (1980) found that separated and divorced women had lower frequencies of BSE practice.

This research found no relationship between religion and frequency of BSE. These findings are similar to those reported by Senie and associates (1981).

Findings from this study showed no association between a personal experience or a friend's experience with breast disease and frequency of BSE practice. These findings are congruent with those of Champion (1985) and Rutledge (1987). Other researchers (Huguley & Brown, 1981; and Senie et al., 1981) found that a personal or family history of breast disease was associated with an increased practice of BSE.

Knowledge

The mean score on the knowledge portion of the HBMS was six correct responses out of ten. Only 39% of the sample believed that a woman should examine her breasts in the shower. Seventy-three percent of the women overestimated the incidence of breast cancer.

Seventy-one percent of the sample were able to identify the correct position and technique for BSE, but 68% of the sample were unable to identify the correct time during the menstrual cycle for performing BSE. The majority of the women correctly identified risk factors associated with breast cancer and knew that most breast lumps were not malignant. The majority of the women identified breast cancer signs which should be reported to their doctor at once.

Schlueter (1982) also found that most women overestimated the prevalence of breast cancer. Her research also indicated that most women were aware that the majority of lumps are not malignant. In contrast to the findings from this research, Schlueter found women in her sample to be uninformed of the risk factors associated with breast cancer.

Results from research conducted by Laughter and associates (1981) and Sheley (1983) differed from this

study. Their findings indicated that the majority of women lacked the knowledge necessary to perform BSE correctly.

Results from this research indicated a low, but positive, relationship between knowledge and frequency of BSE performance. Howe (1981) and Reeder and associates (1980) also found that as knowledge about breast cancer and BSE increases, frequency of BSE practice increases. In contrast, Champion (1985) and Schlueter (1982) found no relationship between the variables of knowledge and frequency of practice of BSE.

Health Belief Model Variables

Variables found in this research study to be related to the practice of BSE in rural women were high perceived benefits of BSE, low perceived barriers to BSE, and high health motivation. All five HBM constructs together accounted for 25.8% of the variance of frequency of breast self-examination. The findings from this study are similar to Champion (1985) who also found 26% of the variance on BSE practice was accounted for by the variables of the HBM. However, Champion found the barriers construct to be the most significant, followed by health motivation and perceived benefits. Rutledge (1987) also found that women with high perceived benefits

of BSE were more likely to report a higher frequency of BSE practice. In contrast, Schlueter (1982) found that almost all of her sample held strong beliefs in the benefits of BSE but only one-third of the women practiced BSE monthly. Stillman (1977) found that one-fourth of her sample who held high beliefs in the benefits of BSE did not practice BSE.

The barriers variable was the second most important variable in predicting frequency of BSE for this group of rural women. Champion (1985) found that barriers accounted for the largest amount of variance in breast self-examination. The findings from this study are also similar to Rutledge (1987) and Trotta (1980) who found that high perceived barriers to BSE were related to less frequent BSE practice.

The variable of health motivation was third most important in predicting frequency of BSE. Women who were concerned about matters related to their health were more likely to report a greater frequency of BSE. This supports findings by Champion (1985) who also found that women with high scores on health motivation reported a greater frequency of BSE.

The concept of susceptibility accounted for four percent of the variance in BSE practice. Findings from this study differ from the research findings of Champion

(1985), Howe (1981), Rutledge (1987), Schlueter, (1982), Stillman (1977), and Trotta (1980), who found no association between perceived susceptibility to breast cancer and frequency of BSE practice.

Seriousness of breast cancer was not related to the frequency of BSE practice. This is congruent with findings by Champion (1985), Rutledge (1987), and Trotta (1980). The Health Belief Model variable of seriousness was not related to frequency of BSE in this group of rural women. The relationship between seriousness of breast cancer and frequency of BSE is not clear. In theory, if a woman perceives breast cancer to be a serious disease, she would be more likely to perform BSE. The seriousness of breast cancer may cause enough fear that it inhibits the performance of BSE. If women perceive breast cancer to be very serious, they may avoid any activity that might cause them to think about or detect breast cancer.

Results from this research support the relationship of Health Belief Model variables to the practice of BSE. In order for a woman to adopt the monthly practice of BSE, she must believe that BSE will be beneficial in reducing or preventing the seriousness of breast cancer should it occur and she must believe that performing monthly BSE does not involve overcoming such barriers as

embarrassment, fear, or pain. A woman's degree of interest or concern about health matters may also affect her willingness to perform BSE. A woman's perception of her susceptibility to breast cancer was also related to her performance of BSE. If she perceives herself to be personally susceptible to breast cancer she may be more likely to adopt the practice of monthly BSE.

Conclusions

Although all but one of the HBM variables examined in this study were related to the performance of BSE at significant levels, the majority of the variance in BSE behavior is still unaccounted for. One of the HBM variables that was not examined in this study was "Cues to Action". In theory, "Cues to Action" is independent of other variables studied and may account for a large portion of the variance in BSE performance.

Ninety-nine percent of the women in this study had heard of BSE. Forty-three percent reported practicing BSE at least monthly and 90% practiced at least twice yearly. Findings from this study indicate that this group of rural women practiced BSE more frequently than past groups studied. The increase in the number of women practicing monthly BSE may be due to the effects of history. Mass media messages about breast cancer and BSE

are more common now than a decade ago. An increase in public awareness may have had an influence on this group of women and served as a motivator to perform BSE.

As a group, these rural women perceived BSE to be beneficial in reducing the seriousness of breast cancer. They perceived few barriers to performing monthly BSE. Women in this study were very motivated toward matters concerning health. High health motivation may be a characteristic of the population of women who belong to rural extension homemaker organizations. Women that possess high motivation toward health matters may be more likely to perform BSE if encouraged to do so by educational programs offered by the extension service. The extension group may also serve as a support network for these women that may provide a necessary cue to motivate or educate these women to perform BSE.

Although 43% of the women studied reported at least monthly BSE, 68% of the women could not identify the correct time of month for performing a breast self-examination. The majority of the women studied also believed that a woman should not examine her breasts in the shower. These findings indicate that although women believe they know how to perform a breast self-examination, they may not possess the knowledge necessary to perform an exam correctly.

Limitations

A convenience sample was used in this study and may not have been an accurate representation of the population of central Montana. A limitation of this study was the homogenous sampling. The respondents were primarily white and married.

Use of a mailed questionnaire does not allow researchers to collect data on the BSE practices of those women who did not respond. The sociodemographic information of persons belonging to extension clubs is not collected by the parent organization; therefore, the characteristics of the non-respondents were not available. A woman who is less knowledgeable about BSE or does not practice BSE may have been less likely to respond than a woman who practices BSE regularly.

Implications for Nursing

Based on its value as an early cancer detection method, nurses should continue to develop, evaluate, and improve BSE educational programs to increase the number of women who practice BSE. Nurses should also continue to examine the effects of women's knowledge, beliefs, and attitudes concerning breast cancer and breast self-examination behavior.

Perceived benefits of BSE was the most important variable in predicting frequency of BSE practice. The value of BSE lies in secondary prevention. BSE will not prevent breast cancer, but may reduce the seriousness of the disease if it does occur. Nurses should continue to emphasize the preventive aspects of health care including teaching information about breast cancer and breast self-examination. Nurses should reinforce benefits of breast self-examination when teaching patients BSE behavior. Teaching strategies that emphasize the benefits of BSE should be developed and implemented by nurses.

Perceived barriers to BSE was also found to be a significant predictor of BSE practice. Barrier items included embarrassment, difficulty remembering to perform BSE, and difficulty in performing a breast self-examination. When working with women on teaching and encouraging BSE behavior, nurses should assess what women perceive as potential barriers to BSE. After the barriers have been identified, appropriate strategies can be planned by the nurse and patient to reduce them.

Women who held high beliefs toward health motivation were also more likely to perform monthly BSE. Nurses should assess women concerning general health practices in an effort to identify women who are motivated toward general good health. Once identified, these women may be

more likely to complete monthly exams if encouraged by health care personnel.

Perceived susceptibility to breast cancer accounted for a small percentage of the variance of frequency of BSE. The practice of BSE does not reduce a woman's susceptibility to breast cancer. The value of BSE lies in its ability to detect tumors early and reduce the seriousness of the disease. The majority of the women in this study also overestimated the prevalence of breast cancer. Nurses should develop educational programs that stress the actual prevalence of breast cancer in an attempt to reduce the fear and anxiety associated with its occurrence. This fear and anxiety may actually immobilize women.

Women belonging to extension homemaker organizations may possess high motivation toward health matters. They may be more likely to perform monthly BSE if encouraged to do so. Nurses need to assess groups of women belonging to these rural organizations and provide them with BSE educational programs.

Although women may believe they know how to perform a monthly breast self-exam, they may not possess the knowledge to perform the exam correctly. Nurses should continue to assess women who perform monthly BSE to be

certain that they possess the knowledge required to perform a timely and correct breast self-examination.

Recommendations for Future Study

Findings from this study support portions of the Health Belief Model. However, the HBM variables of motivation and perceived susceptibility, seriousness, benefits, and barriers accounted for only 25.8% of the variance on BSE behavior. Therefore, more testing of the model is needed before precise nursing interventions to increase frequency of BSE can be developed.

Even if a woman holds high beliefs in the benefits of BSE, she still needs a cue to action to trigger the practice of BSE (Becker, 1974). This research did not test the HBM variable of "Cue to Action". Exploration of the internal and external cues to action may account for conscious and unconscious factors that influence women to perform monthly BSE. Internal cues might include such factors as denial or fear of finding a tumor. External cues may include recommendations from nurses and physicians or mass media messages.

Findings from this study can be generalized to populations with similar sociodemographic characteristics. Similar studies should be done using less homogenous populations. The HBM needs to be tested

in populations which include more Native Americans, women of Catholic and Jewish faith, single and divorced women, and women with less education. Additionally, more testing needs to be conducted in rural areas.

Many educational programs are aimed at increasing women's practice of BSE; however, testing of the effects of these educational programs on women's attitudes and practice is not usually done. Exploration of women's attitudes and practice of BSE before and after such educational programs would provide valuable information about whether such programs change attitudes or practice.

REFERENCES CITED

REFERENCES CITED

- American Cancer Society (1980). Cancer Facts and Figures. New York: American Cancer Society.
- American Cancer Society (1987). 1987 Facts and Figures. New York: The American Cancer Society.
- Becker, M. (Ed.) (1974). The health belief model and preventive health behavior. Thorofare, NJ: Charles B. Slack.
- Champion, V.L. (1984). Instrument development for health belief model constructs. Advances in Nursing Science, 6(3), 73-85.
- Champion, V.L. (1985). Use of the health belief model in determining frequency of breast self-examination. Research in Nursing and Health, 8, 373-379.
- Clark, M., Hager, M. & Drew, L. (1987). The lessons from Mrs. Reagan's case. Newsweek, 110(17), 30-31.
- Foster, R.S., Long, S.P., Costanza, M.J., Worden, J.K., Haines, C.R., & Yeates, J.W. (1978). Breast self-examination practices and breast cancer stage. The New England Journal of Medicine, 299(6), 265-270.
- Gallup Organization, Inc., prepared for the American Cancer Society. (1974). Women's attitudes regarding breast cancer. Occupational Health Nursing, 22, 20-23.
- Gallup Organization, Inc., prepared for the American Cancer Society. (1977). Cigarette smoking, health checkups, cancer detection tests: A summary of the findings. Princeton, NJ: Gallup Organization.

- Greenwald, P., Nasca, P.C., Lawrence, C.E., Horton, J., McGarrah, R.P., Gabriele, T., & Carlton, K. (1978). Estimated effect of breast self-examination and routine physician examinations on breast cancer mortality. The New England Journal of Medicine, 299(6), 271-273.
- Howe, H.L. (1981). Social factors associated with breast self-examination among high risk women. American Journal of Public Health, 71(3), 251-255.
- Huguley, C.M., & Brown, R.L. (1981). The value of breast self-examination. Cancer, 47, 989-995.
- Kelly, P.T. (1979). Breast self-examination: Who does them and why. Journal of Behavioral Medicine, 2(1), 31-38.
- Laughter, D.C., Kean, T.J., Drean, K.D., Esparza, D., Hortobagyi, G., Judkins, A., Zeh Levitte, D., Marcus, C., & Silverberg, Y. (1981). The breast self-examination practices of high risk women: Implications for patient education. Patient Counseling and Health Education, 3, 103-107.
- Mikhail, B. (1981). The health belief model: A review and critical evaluation of the model, research, and practice. Advances in Nursing Science, 4(1), 65-80.
- Reeder, S., Berkanovic, E., & Marcus, A.C. (1980). Breast cancer detection behavior among urban women. Public Health Reports, 95(3), 276-281.
- Rosenstock, I.M. (1966). Why people use health services. Milbank Memorial Fund Quarterly, 44, 92-121.
- Rutledge, D.N. (1987). Factors related to women's practice of breast self-examination. Nursing Research, 6(3), 73-85.
- Schlueter, L.A. (1982). Knowledge and beliefs about breast cancer and breast self-examination among athletic and nonathletic women. Nursing Research, 3(6), 348-353.

- Senie, R.T., Rosen, P.P., Lesser, M.L., & Kinne, D.W. (1981). Breast self-examination and medical examination related to breast cancer stage. American Journal of Public Health, 71(6), 583-590.
- Sheley, J.F. (1983). Inadequate transfer of breast cancer self-detection technology. American Journal of Public Health, 73(11), 1318-1320.
- Silverberg, E. & Lubera, J.A. (1988). Ca-A Cancer Journal for Clinicians, 38(1), 5-22.
- Smith, E.M., Francis, A.M., & Polissar, L. (1980). The effect of breast self-exam practices and physician examinations on extent of disease at diagnosis. Preventive Medicine, 9, 409-417.
- Stillman, M.J. (1977). Women's health beliefs about breast cancer and breast self-examination. Nursing Research, 26(2), 121-127.
- Trotta, P. (1980). Breast self-examination: Factors influencing compliance. Oncology Nursing Forum, 7(3), 13-17.
- Turnbull, E.M. (1978). Effect of basic preventive health practices and mass media on practice of breast self-examination. Nursing Research, 27(2), 98-102.

APPENDICES

APPENDIX A

PERMISSION STATEMENTS

LETTER FROM CLAIRE DEL GUERRA



Cooperative Extension Service

MONTANA STATE UNIVERSITY, BOZEMAN, U. S. DEPARTMENT OF AGRICULTURE, AND MONTANA COUNTIES COOPERATING

May 11, 1987

CASCADE COUNTY EXTENSION OFFICE
1211 N.W. BYPASS, P. O. BOX 5051
GREAT FALLS, MT 59403
PHONE: 727-4843

Mary Gray
1811 3rd Avenue North
Great Falls MT 59401

Dear Ms. Gray:

You have my permission to use the mailing list for the Cascade County Extension Homemakers as a study population for your research "Use of the health belief model in determining frequency of breast self examination in rural women".

You have my permission to use my name and title (Claire Del Guerra, Cascade County Extension Agent) in the letter to the survey participants.

Sincerely yours,

Claire Del Guerra
Cascade County
Extension Agent

CDG/jo

LETTER FROM VICTORIA CHAMPION



INDIANA UNIVERSITY

SCHOOL OF NURSING

610 Barnhill Drive
Indianapolis, Indiana 46223

May 4, 1987

Mary Gray
1811 Third Avenue North
Great Falls, MT 59401

Dear Ms. Gray,

You certainly have my permission to use my instruments developed on the health belief model constructs. I will enclose a copy of the original instrument which includes the entire list of items. I advise however, that you use only those items which are recorded in the article Advances in Nursing Science as these are the ones that have proved to be valid and reliable. Thank you for your interest in my work and if I can help you in any further endeavors let me know.

Sincerely,

A handwritten signature in cursive script that reads "Victoria Champion".

Victoria Champion, R.N., D.N.S.
Associate Professor

VC:dg

Enclosure

APPENDIX B

STUDY CONSENT

CONSENT LETTER

USE OF THE HEALTH BELIEF MODEL IN DETERMINING
FREQUENCY OF BREAST SELF-EXAMINATION IN RURAL WOMEN

CONSENT LETTER

Dear Cascade County Extension Homemaker,

I am a registered nurse and graduate student in Nursing at Montana State University. I am interested in studying women's attitudes about breast cancer and breast self-examination and their relationship to frequency of breast self-examination. The results of previous research indicates women's attitudes about breast self-examination may be related to frequency of breast self-examination. Since most of the previous research has been conducted on women residing in large densely populated metropolitan areas, it would be most helpful to obtain the attitudes of women residing in a less densely populated area. Claire Del Guerra, your Cascade County Extension Agent, has given me your name so that you might participate in this study.

If you are willing to participate in this study, please complete the enclosed questionnaire. It should take approximately fifteen minutes of your time. Some women may find the content of the questionnaire to be personal or embarrassing and you are free to withdraw from the study at any time. Participation in this study is voluntary and without monetary exchange. All information obtained from you will be kept strictly confidential. Please do not write your name anywhere on the questionnaire. Information that is obtained from the questionnaire will be reported as group data and will not identify you personally in any way.

The results of this study may not have any direct benefits for you, hopefully, the information obtained can be used to influence the types of early cancer detection programs offered by health professionals. Upon completion of this research, study results will be available in the MSU Library.

Please feel free to contact me if you have any questions or concerns regarding this project.

If you have completed the enclosed questionnaire, please return it in the enclosed self addressed stamped envelope prior to July 31, 1987.

Sincerely,

Mary Gray RN

Mary Gray, R.N.
Graduate Student
College of Nursing-Great Falls Extended Campus
Montana State University
Telephone (406) 452-2244

UNIVERSITY CONSENT

RESEARCH PROPOSAL FOR HUMAN SUBJECTS REVIEW

Title of Project Use of the Health Belief Model in Determining Frequency
on Breast Self-Examination in Rural Women

Investigator Mary E. Gray Date 5-18-87

Thesis Committee:

Sharon R. Hovey Chairperson (signed)
John E. Lee Committee member (signed)
Jacquelyn Shankley Committee member (signed)
 telephone permission 5-18-87

Please answer the following questions:

1. ☒ Yes ☐ No Does the project involve the administration of personality tests, inventories or questionnaires? If YES, provide the name of the tests, if standard, or a complete copy if not standard.
2. ☐ Yes ☒ No For studies to be conducted at hospitals and clinics do the proposed studies involve the use, methods, techniques or apparatus other than those used routinely at these facilities.
3. Human subjects would be involved in the proposed activity as either:
☒ none of the following, or including: ☐ minors, ☐ fetuses,
☐ abortuses, ☐ pregnant women, ☐ prisoners, ☐ mentally
 retarded, ☐ mentally disabled.

Mary E. Gray Date 5-19-87
 Signature of Principal Investigator

APPROVAL (If disapproval, do not sign and append comments).

Edward Hunkorich Date 6-18-87
 Signature of Education Director

Marian Lane Date 6-18-87
 Committee Member

Patricia Williams Date 6-18-87
 Committee Member

· APPENDIX C

INSTRUMENT

HEALTH BELIEF MODEL SCALE

HEALTH BELIEF MODEL SCALE*

Directions: I am interested in how you feel about each of the following statements. Place a check in the column which best represents your degree of agreement with the statement. There are no right or wrong answers.

	STRONGLY DISAGREE	DISAGREE	NEUTRAL	AGREE	STRONGLY AGREE
I EAT A WELL BALANCED DIET.					
I ALWAYS FOLLOW MEDICAL ORDERS BECAUSE I BELIEVE THEY WILL BENEFIT MY STATE OF HEALTH.					
I FREQUENTLY DO THINGS TO IMPROVE MY HEALTH.					
I TAKE VITAMINS WHEN I DON'T EAT GOOD MEALS.					
I SEARCH FOR NEW INFORMATION RELATED TO MY HEALTH.					
I HAVE THE RECOMMENDED YEARLY PHYSICAL EXAMS IN ADDITION TO VISITS RELATED TO ILLNESS.					
I EXERCISE REGULARLY-AT LEAST THREE TIMES A WEEK.					
I HAVE THE RECOMMENDED PERIODIC DENTAL EXAMS IN ADDITION TO VISITS FOR A SPECIFIC PROBLEM.					
THE THOUGHT OF BREAST CANCER SCARES ME.					
WHEN I THINK ABOUT BREAST CANCER I FEEL NAUSEOUS.					
IF I HAD BREAST CANCER MY CAREER WOULD BE ENDANGERED.					
WHEN I THINK ABOUT BREAST CANCER MY HEART BEATS FASTER.					
BREAST CANCER WOULD ENDANGER MY MARRIAGE (OR A SIGNIFICANT RELATIONSHIP).					
BREAST CANCER IS A HOPELESS DISEASE.					
MY FEELINGS ABOUT MYSELF WOULD CHANGE IF I GOT BREAST CANCER.					
I AM AFRAID TO EVEN THINK ABOUT BREAST CANCER.					
MY FINANCIAL SECURITY WOULD BE ENDANGERED IF I GOT BREAST CANCER.					
PROBLEMS I WOULD EXPERIENCE FROM BREAST CANCER WOULD LAST A LONG TIME.					
IF I HAD BREAST CANCER MY WHOLE LIFE WOULD CHANGE.					
IF I GOT BREAST CANCER, IT WOULD BE MORE SERIOUS THAN OTHER DISEASES.					

	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE
MY CHANCES OF GETTING BREAST CANCER ARE GREAT.					
MY PHYSICAL HEALTH MAKES IT MORE LIKELY THAT I WILL GET BREAST CANCER.					
I FEEL THAT MY CHANCES OF GETTING BREAST CANCER ARE GOOD.					
I WORRY A LOT ABOUT GETTING BREAST CANCER.					
THERE IS A GOOD POSSIBILITY THAT I WILL GET BREAST CANCER.					
WITHIN THE NEXT YEAR I WILL GET BREAST CANCER.					
DOING SELF BREAST EXAMS PREVENTS FUTURE PROBLEMS FOR ME.					
I HAVE A LOT TO GAIN BY DOING SELF BREAST EXAMS.					
SELF BREAST EXAMS CAN HELP ME TO FIND LUMPS IN MY BREAST.					
IF I DO MONTHLY BREAST EXAMS I MAY FIND A LUMP BEFORE IT IS DISCOVERED BY REGULAR HEALTH EXAM.					
I WOULD NOT BE SO ANXIOUS ABOUT BREAST CANCER IF I DID MONTHLY EXAMS.					
IT IS EMBARRASSING FOR ME TO DO MONTHLY EXAMS.					
IN ORDER TO DO MONTHLY EXAMS I HAVE TO GIVE UP QUITE A BIT.					
SELF BREAST EXAMS CAN BE PAINFUL.					
SELF BREAST EXAMS ARE TIME CONSUMING.					
THE PRACTICE OF SELF BREAST EXAMS INTERFERES WITH MY ACTIVITIES.					
MY FAMILY WOULD MAKE FUN OF ME IF I DID SELF BREAST EXAMS.					
DOING SELF BREAST EXAMS WOULD REQUIRE STARTING A NEW HABIT, WHICH IS DIFFICULT.					
I AM AFRAID I WOULD NOT BE ABLE TO DO SELF BREAST EXAMS.					

*This instrument has been modified based on the recommendation of it's author, V. Champion, R.N., D.N.S. It is used with her written permission.

Directions: I would also like to have some information about you and your knowledge about breast cancer and breast self-examination. Please check the most appropriate answer or write in your answer. If you do not understand or do not wish to answer, leave that question blank.

1. How old are you? _____
2. Are you _____ Black _____ White _____ Oriental
_____ Native American _____ Other
3. What is your marital status?
_____ married _____ divorced _____ single
_____ widow _____ other
4. Do you regularly (at least two times a month) practice religion?
_____ Jewish _____ Catholic
_____ Protestant _____ Other
5. How many years of school have you completed?
_____ under 8 _____ 9 _____ 10 _____ 11
_____ 12 _____ 13 _____ 14 _____ 15
_____ 16 _____ more than 16
6. What is your occupation? _____
7. If married, what is the occupation of your spouse?

8. Have you ever been treated for breast disease or lumps in the breast? _____ Yes _____ No
9. What type of breast disease did you have?

10. What type of treatment did you have?

11. Was the treatment effective? _____ Yes _____ No
12. Have any persons close to you been treated for breast disease? _____ Yes _____ No
13. What type of breast disease did they have?

14. What type of treatment did they have?

15. Was the treatment effective? _____ Yes _____ No
16. Have you ever heard of the self breast exam? _____
17. Do you know how to do a self breast exam? _____

18. How often do you examine your breasts?
☐ Every 5 to 6 months
☐ Every 3 to 4 months
☐ Every other month
☐ Every month
☐ More than once a month
19. When is the best time during a menstrual cycle to examine the breasts?
☐ One week before your period
☐ One week after your period
☐ During your period
☐ Two weeks after your period
20. A woman should check her breasts while in the shower.
☐ False, she might miss lumps.
☐ False, the heat of the water could cause the breasts to swell.
☐ True, more lumps are visible when the breasts are wet.
☐ True, the hand glides over the skin more easily when wet.
21. Are a woman's right and left breast the same size?
☐ No, during adolescence there is usually a difference.
☐ Yes, if a woman is fully developed, the breasts are the same size.
☐ No, variation in size is normal.
☐ No, many women take hormones which could cause unequal size.
22. Under which of the following circumstances should a woman see her doctor at once?
☐ If there is a firm ridge on the lower curve of the breast.
☐ If the breasts are not exactly the same size.
☐ If she accidentally hits her breasts.
☐ A discharge from the nipple is noticed (does not include milk).
23. Which of the following is a true statement?
☐ A breast should be examined while lying on the side.
☐ Breasts should be examined twice a month.
☐ Breasts should be examined in a clockwise manner, circling at least three times.
☐ A woman should not examine her breasts in the shower.
24. What are the chances that a woman will have breast cancer within her lifetime?
☐ Less than 10 in 100.
☐ About 15 in 100.
☐ About 20 in 100.
☐ About 25 in 100.

25. Which of the following is true regarding age and cancer?
☐ Risk is the greatest under age 35.
☐ Risk increases with age after 35.
☐ Age is not related to risk.
26. In which of the following groups would women be at greatest risk for developing breast cancer?
☐ Women who have a family history of breast cancer.
☐ Women who smoke cigarettes.
☐ Women who have several sex partners.
☐ Women who breast-feed.
27. Which of the following statements is true?
☐ The majority of all lumps in the breast are cancerous.
☐ About half of all breast lumps are cancerous.
☐ The majority of breast lumps are NOT cancerous.
28. If breast cancer is discovered in a small area, the 5 year survival rate is
☐ Very good.
☐ Good.
☐ Moderate.
☐ Poor.
☐ Very poor.

Thank-you for taking the time to answer this questionnaire!

APPENDIX D
FOLLOW-UP LETTERS

LETTER TO CLAIRE DEL GUERRA

1811 Third Ave N.
Great Falls, MT 59401
August 27, 1987

Claire Del Guerra
Cascade County Extension Agent
1211 N.W. Bypass, P.O. Box 5051
Great Falls, MT 59403

Dear Claire,

I want to thank-you for your support of my research project "Use of the health belief model in determining frequency of breast self-examination in rural women". Almost 400 questionnaires were completed and returned to me. I have not yet started to analyze the data so I am unsure about any results at this point.

Enclosed you will find a letter to place in your newssheet that will give participants the correct information about breast cancer and breast self examination.

Thank-you again,
Mary E. Gray RN
Mary E. Gray, R.N.

LETTER TO CASCADE COUNTY EXTENSION HOMEMAKERS

1811 3rd Avenue North
Great Falls, MT 59401
August 27, 1987

Dear Cascade County Extension Homemaker,

Thank you to all of you who responded to my questionnaire "The Health Belief Model Scale". I have had a very good response and have received almost 400 completed questionnaires. I appreciate all the time and effort that each of you took in responding.

Most breast cancers are discovered by women themselves through the regular practice of breast self-examination (BSE). About 9 percent of American women will get breast cancer during their lifetime. Under age 35, the risk of breast cancer is minimal but the risk increases with age. Women are at highest risk if they have a personal or family history of breast cancer.

Every woman should take the time to examine her breasts for signs of possible cancer. Once a month is often enough, and the best time is about seven days after your period. Examine the breasts during bath or shower; hands glide easily over wet skin. Using the flat part of your fingers, feel for thickenings, lumps or changes as you glide your hand in small circles, spiraling towards the nipple. This requires at least three circles. A ridge of firm tissue in the lower curve of each breast is normal. Left and right breast will not exactly match-few women's breasts do. If a lump or dimple or discharge is discovered during BSE, it is important to see your doctor as soon as possible. Don't be frightened. Most breast lumps or changes are not cancer, but only your doctor can make the diagnosis. Breast cancers that are found early and treated promptly have excellent chances for cure.

Thank you again for taking the time to participate in this research study. If you would like additional information on breast cancer or breast self-examination, please contact the American Cancer Society.

Sincerely,

Mary Gray RN

Mary Gray, R.N.
Graduate Student
College of Nursing
Montana State University

MONTANA STATE UNIVERSITY LIBRARIES



3 1762 10120348 5