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The Frequency of Breast Self-Examination in Women Who Participated in the Breast Cancer Prevention Trial

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THE FREQUENCY OF BREAST SELF-EXAMINATION
IN WOMEN WHO PARTICIPATED
IN THE BREAST CANCER PREVENTION TRIAL

By

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ABSTRACT

THE FREQUENCY OF BREAST SELF-EXAMINATION IN WOMEN WHO
PARTICIPATED IN THE BREAST CANCER PREVENTION TRIAL

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This study used the Health Belief Model (HBM) to examine attitudes about breast

health among women who had participated in the Breast Cancer Prevention Trial. More

specifically, the purpose of this study was to identify the relationship between the HBM

variables and the frequency of breast self-examination (BSE). A convenience sample of

80 women completed Champion's (1993) HBM questionnaire.

It was hypothesized that the HBM concepts would significantly correlate with the

frequency of BSE. However, only two significant correlations were found: a positive

correlation between the frequency of BSE and perceived benefits ($r=.37$; $p=.000$) and a

negative correlation between the frequency of BSE and perceived barriers ($r=-.41$;

$p=.000$). Therefore, this hypothesis was not supported. A second hypothesis addressed

was whether the HBM concepts could differentiate between groups of frequency of BSE.

Using an analysis of variance, a significant difference was found between the HBM

concept of barriers and the frequency of BSE. Women who perceived significant barriers

to BSE performance were less likely to perform this procedure on a routine basis.

These results indicate that there are women who are still not performing monthly BSE

even though they have been deemed high risk for developing breast cancer. It is important

for nurses to continue to identify the factors that hinder women from conducting monthly

BSE and develop interventions to encourage this lifesaving procedure.

DEDICATION

This work is dedicated to my grandparents, James Allen Kelly and Hannah Caroline Mile-Kelly, who during their living years inspired within me to reach and accomplish whatever goal I set forth for myself. That inspiration has continued to encourage me today and may it do so forever. May they be smiling down on me from Heaven, as I smile up towards them.

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CHAPTER 1

Introduction

In 1963, the lifetime risk of breast cancer was one in every 18 women (Groenwald, Frogge, Goodman & Yarbo, 1993). Today, the risk has increased to approximately one in every nine women. The American Cancer Society (ACS) estimates that 182,800 women will be diagnosed with breast cancer in 2000. Breast cancer is the most common diagnosed cancer in American women and the second most common cause of cancer death (Henderson, 1995). The incidence of breast cancer rises rapidly with age until menopause and then increases more slowly with advancing years (Groenwald et al., 1993). More than 70% of all breast cancer occurs in women who are 50 years of age or older (Williams, 1988). The incidence of breast cancer rates greatly underestimate the number of women who are affected by the disease. Breast cancer, the most feared malignancy by women, will cause approximately 40,800 deaths in 2000.

Approximately 20 million American women will see their physician this year about a potential breast cancer tumor (Henderson, 1995). In addition, for every woman who has a confirmed diagnosis of breast cancer another five to 10 women will have a biopsy that shows benign disease. For every woman who has a biopsy, another 10 women will go to their physician for breast symptom complaints or because they are worried that they are at high risk for developing breast cancer (Henderson, 1995).

The exact etiology of breast cancer is unknown. It is therefore impossible to determine who will and will not be diagnosed with the disease. Breast cancer's epidemiology is constantly being researched in an attempt to reveal its etiology. As the incidence of the disease increases in a certain population, it is hoped that a genetic, hormonal, or biochemical factor will be identified. Epidemiologic features, when statistically correlated with the incidence of disease, designate a particular factor as a "risk factor" (Groenwald et al., 1993). Currently, these risk factors are divided into primary, secondary, and other in an attempt to identify who is at higher risk for developing breast cancer. However, it should be noted that more than 75% of women with new diagnosed breast cancer have no identifiable risk factors (A Cancer Journal for Clinicians, 1998).

Family history is the most recognized primary risk factor for breast cancer. The relative risk of obtaining the disease depends upon the age of the first-degree and second-degree relatives with a history of breast cancer, and whether the cancer was unilateral or bilateral. Risk due to family history is divided between a genetically inherited predisposition or an increased familial incidence. Hereditary and familial breast cancer accounts for approximately 30% of diagnosed cases.

Other primary risk factors are gender, a woman's age and biopsy history. Surveillance, Epidemiology and End Results (SEER) data indicates that as a woman's age increases above 50, so does her risk for breast cancer (National Surgical Adjuvant Breast/Bowel Prevention Trial-1 (NSABP P-1), 1992). Women who have had breast biopsies that have revealed ductal carcinoma in situ (DCIS), lobular carcinoma in situ (LCIS) or atypical hyperplasia are at increased risk for an invasive cancer later in life

(NSABP P-1, 1994).

Secondary risk factors include postmenopausal obesity, ionizing radiation exposure to the chest before age 35, benign breast disease, and numerous hormonal factors. Multiple studies have been done that show a link between age at menarche, menopause, and a first pregnancy to breast cancer risk (NSABP P-1, 1994). Women who experienced early menarche (prior to age 12) and/or late onset of menopause (after age 55) are at increased risk for breast cancer (ACS, 1995). Other reproductive factors that have been found to increase a woman's risk are age of first live birth and parity. The risk of breast cancer for a woman with her first live birth after age 30 years is nearly twice that of a woman whose first live birth occurred before age 20 years (ACS, 1995). The role of oral contraceptives relating to increase risk for breast cancer remains inconsistent and controversial. Some studies have shown that there is an increased risk if a woman used contraceptives prior to age 20 and continued the use for six or more years (Groenwald et al., 1993).

Other factors in determining a woman's risk for breast cancer include nulliparous women, prolonged use of postmenopausal estrogen replacement therapy (greater than 10 years), high fat diet, and alcohol use. These factors remain controversial due to the lack of evidence in replicated studies to constantly support their increased risk potential. There are multiple factors that may increase or decrease a woman's risk for developing breast cancer and these risk factors are only part of the attempt in identifying high risk women.

Research is being conducted that looks at prevention and early detection of breast cancer. The most promising study to date is the Breast Cancer Prevention Trial (BCPT)

conducted by the National Surgical Breast/Bowel Program (NSABP). This randomized trial (NSABP P-1) uses tamoxifen to determine if breast cancer can be prevented in women with high risk factors (NSABP P-1, 1994).

Currently, with our present knowledge, there is only one method of preventing breast cancer and that is a prophylactic mastectomy. Efficacy of this procedure is difficult due to differences in patient selection for the procedure, variations in operative technique, and incomplete follow-up data of women who have undergone this procedure (ACS, 1995). Therefore, this method remains highly controversial and early detection methods in hopes of discovering breast cancer at an early and treatable stage is the focus for reducing the mortality from this disease. Early detection reduces the mortality of breast cancer and provides a 90% survival rate for five years (Groenwald et sl., 1993). The National Cancer Institute (NCI) and the ACS recommend monthly breast self-examination (BSE) by all women over the age of 35 as a means of early breast cancer detection (ACS, 1995).

BSE is the least expensive and easiest method to perform for early detection. Studies have shown BSE to be effective in discovering tumors at an earlier stage and when subsequent treatment may offer the best hope for long-term survival (Champion, 1990). Unfortunately, the literature reveals that BSE is grossly underutilized and as few as 18%-36% of adult women are practicing this method (Champion, 1991). The low compliance among adult women with practicing monthly BSE is of critical importance to nurses. Nurses need to be able to identify the barriers that prevent a woman from performing this monthly exam. If these barriers are identified then interventions can be developed to increase this early detection behavior.

The Health Belief Model (HBM) is one of the most frequently used models to predict health behavior. The HBM was initially developed in the 1950s by a group of social psychologists at the U.S. Public Health Service in an effort to explain the low levels of participation in free preventive health programs offered by the Public Health Service (Salazar, 1991). Since its development, the HBM has been the basis for many studies that investigate behaviors in the maintenance of health, prevention of disease, and detection of disease in an asymptomatic state (Champion, 1987). Many researchers have used the HBM as a theoretical framework to study breast self-examination in adult women (Champion, 1993; Nemcek, 1990). The HBM variables are used to predict whether a person will take preventive action to reduce the likelihood of getting a disease by engaging in a certain health behavior.

Purpose

The purpose of this study was to identify the relationship between the Health Belief Model variables and the frequency of Breast Self-examination in high risk women who participated in the Breast Cancer Prevention Trial.

CHAPTER 2

CONCEPTUAL FRAMEWORK and LITERATURE REVIEW

Conceptual Framework

The most frequently cited theory used to explain health preventive behavior and breast self-examination research is the Health Belief Model (Champion, 1985). The origin of the Health Belief Model comes from theories rooted in psychology, sociology, and social learning. The first HBM prototype used, involved the joining together of two major learning theories. This was accomplished in the 1950s in an effort to explain the widespread failure of people to participate in programs to prevent or to detect disease.

In the Stimulus Response (S-R) Theory, theorists believe that learning results from events (termed reinforcements) that reduce physiological drives that activate behavior. Cognitive theorists believe that behavior is a function of the subjective value of an outcome and of the subjective probability or expectation that a particular action will achieve that outcome. The value expectancy concept was revised in order to have it reflect health preventive behavior. The concept explained an individual's estimate of personal susceptibility to and severity of an illness and the likelihood of being able to reduce that threat through personal action. In later years, the concept was expanded to include that individuals will take action to prevent or detect disease if they believe that the anticipated barriers to taking the action are outweighed by its benefits (Rosenstock, 1991).

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The Health Belief Model (HBM) has generated important research regarding behaviors for maintenance of health, prevention of disease, and detection of disease in asymptomatic subjects (Champion, 1984; 1987). Many studies have used the HBM as a theoretical framework to study breast self-examination (BSE) or other breast cancer detection behaviors. According to Champion (1991), the HBM has had the greatest influence on research related to predicting BSE behavior.

The HBM was first introduced in the 1950s by Hochbaum, Leventhal, Kegeles, and Rosenstock in an effort to explain the public's unwillingness to accept disease preventives or screening tests offered by the U.S. Public Health Service (Rosenstock, 1974). The screening tests or disease preventives were originally for tuberculosis (TB) screening but later included cervical cancer, dental disease, rheumatic fever, polio, and influenza (Rosenstock, 1974). These preventive measures or tests were provided to the public on a demonstration basis, free of charge, or at a very low cost. The results of the Public Health Service programs largely influenced the kind of theory that the group of social psychologists developed in an effort to explain preventive health behavior. Later the theory was applied to patients' responses to symptoms and to compliance with prescribed medical treatment.

The original HBM hypothesized that persons would not seek preventive care unless they had minimal levels of motivation and knowledge, and viewed themselves as vulnerable. Also, persons had to believe the condition to be threatening, saw the interventions as beneficial, and saw few difficulties in the recommended action (Becker, 1974; Mikhail, 1981).

Originally, the HBM contained four variables: 1) susceptibility-perceived personal vulnerability to or subjective risk of a health condition; 2) seriousness-perceived personal harm of the condition; 3) benefits-perceived positive attributes of an action in preventing or detecting disease; and 4) barriers-perceived negative aspects related to an action (Champion, 1993). The four variables have been tested individually and in combination as predictors of health related behaviors (Champion, 1985; Janz & Becker, 1984). In later development of the HBM, two additional variables were added. Becker (1974) suggested including health motivation since it referred to a generalized state of intent that resulted in behaviors to maintain or improve health.

The concept of self-efficacy (confidence) was an additional variable suggested by Rosenstock (1985). Rosenstock added the variable of self-efficacy which described the conviction that one can successfully execute a behavior required to produce an outcome. Self-efficacy was later introduced as a concept in the development of the Social Learning Theory by Bandura in 1977 (Rosenstock, 1991). The newer concepts, health motivation and confidence, have been less thoroughly tested than the original four variables because of their more recent addition to the HBM.

The HBM also contains modifying factors, which in any given circumstance, affects individual perceptions and may directly influence their health-related behavior. These modifying factors, also referred to as interpersonal factors, include demographics, sociopsychological, and structural variables. Demographic variables include age, gender, income, educational level, race, and ethnicity. Structural variables include knowledge about the disease and prior contact with the disease. Sociopsychological variables include

personality, expectations of significant others, family patterns of health care, and previous interactions with health professionals (Marlenga, 1995; Nemcek, 1990).

An additional variable labeled "cues to action" is thought to precipitate the decision-making process. These cues include media articles, media and community campaigns, and advice from others (Marlenga, 1995).

The HBM is viewed as a comprehensive conceptual framework which attempts to explain an individual's compliance as well as approaches for changing that individual's compliance. The HBM has the capability to explain the variables that may prevent compliance to a medical regimen (Rosenstock, 1985).

According to the HBM, health behaviors are more likely to occur if an individual feels susceptible to a specific condition and feels the condition is serious. Next, the individual must perceive benefits to a specific action while perceiving few barriers. Thirdly, being concerned about health and feeling a sense of confidence over health outcomes is related to a specific behavior (Champion, 1987). Finally, a cue, such as recently hearing about a health topic, increases the likelihood that a health behavior will occur (Champion, 1988).

For the purpose of this study, all six variables of the HBM will be explored, along with the modifying factors, and the "cue to action" variable. Many research studies have investigated the ability of the original HBM variables to predict frequency of BSE. Most studies have found at least one variable significant, although inconsistencies are demonstrated (Champion, 1990). Variables included in the HBM have been examined with the frequency of BSE since the late 1970s. According to the model, the practice of BSE should be increased when the individual believes she is susceptible to breast cancer

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and when breast cancer poses a serious threat.

In several studies, susceptibility and seriousness has been found to be significantly related to BSE (Calan & Moss, 1984; Champion & Miller, 1992; Massey, 1986; Williams, 1988). Hallal (1982) found that susceptibility was significantly correlated with frequency of BSE. Massey (1986) found a significant difference in susceptibility scores in women who had practiced BSE more than six times during the preceding year and those who had not. In addition, older women (greater than or equal to age 50) had significantly lower susceptibility scores when compared with younger women (less than age 50). Other investigators found no correlation between susceptibility or seriousness and frequency of BSE (Bennett, Lawrence, Fleischmann, Gifford, & Slack, 1983; Champion, 1985; Rutledge, 1987).

The concepts of perceived benefits and barriers were examined in many studies and consistently found to be positively correlated with BSE. The studies revealed that women perceived greater benefits and few barriers to BSE and thus practiced self-exam more frequently (Champion, 1985; 1987; Hallal, 1982; Kelly, 1978). Kelly (1978) found that women who tended to be practitioners of BSE perceived benefits in detecting lumps though BSE. Hallal (1982) and Champion (1985) found that the perception of benefits was significantly related to frequency of BSE. Although benefits have been related to BSE, the greatest amounts of variance in BSE behavior has been explained by the barriers variable (Champion, 1990). Barriers have consistently accounted for the most variance in BSE behavior; between 12% and 27% in the majority of the research articles (Champion, 1993). Research appears to indicate that perceptions of benefits and barriers are

important predictors of this health behavior.

General health motivation was a later addition to the original HBM and has been found to be positively related to BSE (Champion, 1985; 1993). Health motivation was measured by preventive health practice in Turnbull's (1978) research. Turnbull reported that for women 35 and younger preventive health practices were related to BSE; but for women over the age of 35, no relationship was found (Champion, 1988). Compared to the original four variable of the HBM, health motivation has been less thoroughly tested with the frequency of BSE.

The most recent concept added to the HBM is that of confidence (self-efficacy). Rosenstock, Strecher, and Becker (1988) equated the term confidence with Bandura's construct of self-efficacy (Bandura, 1977). Significant positive associations have been found between BSE and self-efficacy (Champion, 1993). According to Bandura (1987), persons who have high expectations about their ability to engage or execute a behavior, will have higher behavior outcomes that those who have less confidence. Many authors have found that confidence is related to increased proficiency of a certain behavior. Champion (1985,1987) and Hallal (1982) found confidence to be associated with the frequency of BSE in their research. Most research studies which have included self-efficacy have demonstrated a significant relationship of confidence to BSE (Champion, 1985; 1987; 1990; Hallal, 1982).

Since the development of the HBM in the 1950s, it has been the foundation for research regarding behaviors for the maintenance of health, prevention of disease, and detection of disease in an asymptomatic state (Becker, 1974; Champion, 1991; Mikhail,

1981). Most studies have supported a connection between health behaviors and variables

in the HBM (Janz & Becker, 1984). The HBM contains six variables that can be used to

explain a woman's frequency in performing BSE. The conceptual definitions for the

variables in this research study will be defined as it was in Champion's study (1991):

1. Susceptibility: a woman's perceived likelihood of contacting breast cancer

2. Seriousness: the woman's perceived personal harm related to breast cancer

3. Benefits: a woman's perceived positive attributes related to performing BSE

4. Barriers: a woman's perceived negative attributes related to performing BSE

5. Health motivation: a woman's concern about maintaining breast health

6. Confidence: a woman's perceived ability to perform BSE accurately to detect breast

cancer.

Literature Review

Breast Self-examination

Breast self-examination is a low cost and easy-to-learn method of screening for early

breast cancer. BSE has been advocated for over 30 years and its clinical effectiveness has

been well documented. Foster, Lang, Sonstanza, Worden, Haines andYayes (1978)

demonstrated that more frequent performance of BSE was associated with lower clinical

stage of breast cancer, smaller tumor diameter, and a higher five-year survival rate. Hill,

White, Jolley and Mapperson (1988) completed a meta-analysis of 12 comparable

retrospective studies relating the practice of BSE to subsequent tumor size or node status

in breast cancer patients. Hill et al. (1988) concluded that there were good reasons to

encourage women to practice BSE regularly. The findings from the meta-analysis

revealed that women who reported having practiced BSE regularly presented with smaller tumors and less axillary node involvement.

Although BSE is strongly encouraged, there has been criticism against the technique. Frank and Mai (1985) stated the practice of BSE will result in numerous benign lesions being discovered, ultimately exposing women to unnecessary, invasive, and costly procedures. The researchers argue that costs may outweigh the benefits of BSE, especially in young women. Kegeles (1985) proposes that women who are not thorough enough with the technique of BSE may rely on it too much. Kegeles believed that poor BSE technique could be a disadvantage to women since an early cancer could be missed that could have been detected by mammography or a physician. There is also concern that an increasing number of women are becoming obsessed with the "ritual of self-examination (Maguire, 1983). However, Strauss, Soloman, Costanza, Worden, and Foster (1987) reports that women with and without previous history of breast disease have strong beliefs that BSE is a life saving procedure.

Shugg, Lee, Sheperd and Scott (1981) surveyed the BSE practices of women in a community before and after a statewide media champaign that promoted the practice of BSE. The study revealed that after the campaign there was an increase in frequency of monthly BSE from 32% to 38%, but 62% of the women still were not performing monthly BSE. Of the women surveyed in this study, 76% reported confidence in the BSE technique, however, only half of the sample were doing a monthly BSE. The researchers felt that a variable other than lack of knowledge accounted for the women in the sample who believed in the importance of performing monthly BSE, but were non-compliant in

the monthly practice.

It is assumed that women practice or fail to practice BSE partly as a result of their past experiences, fear about breast cancer treatment and outcomes, social influences, breast health information available to them and beliefs formed on the basis of that information and their general attitude toward BSE (Hill & Shugg, 1989). Fear as a variable in either influencing or preventing women from doing BSE was examined in a study by Hill and Shugg (1981). A total of 654 women were surveyed, including (i) 117 recently treated breast cancer patients, (ii) 208 recently treated benign breast disease patients, and (iii) 329 women without breast disease (control group), seeing general practitioners for conditions unrelated to the breast. The patients were recruited from three outpatient surgical clinics, two radiation oncology offices, 15 surgeon offices, and 23 general practitioner offices in Tasmania. Each medical practitioner would identify eligible patients, explain the purpose of the study, and provide a questionnaire if the woman agreed to participate. The purpose of the study was to see if the perceived susceptibility to developing breast cancer differed among the three groups and what determined their perceived barriers and benefits of performing monthly BSE.

The mean age of the cancer patients was 56.98 years, benign breast disease 41.26 years, and nonbreast disease patients was 40.20 years. The study revealed that 49% of the benign breast disease patients practiced monthly BSE as compared to 34% of the breast cancer patients and 32% of the control group. Each group was examined to determine if a family history of breast cancer was associated with frequency of BSE. The group of breast cancer patients revealed that they were more likely to practice monthly BSE than

the other two groups. In regards to barriers, significantly more women in the control group indicated that forgetfulness and laziness was a barrier to performing BSE. Whereas the breast cancer and benign breast disease groups indicated the fear of finding a lump was the significant barrier. The benign breast disease patients were significantly more likely that the control or breast cancer group to believe that doing BSE would find a breast cancer lump at a curable stage. The control group was mostly likely to perceive that social influences (friends, family, health care workers) would be in favor of them doing monthly BSE, whereas the breast cancer group was least likely to perceive this social influence.

Hill and Shugg (1989) had several recommendations as a result of their study. Since the benign breast disease group had significantly stronger BSE intention and they felt any breast cancer found by BSE would be curable, the treating doctor should encourage and teach BSE. Also, health educators should focus on the non-practitioners of BSE, by developing a two-pronged program. One goal of the program would be to generate strong positive attitudes to performing monthly BSE by emphasizing the emotional incentives that go along with practicing BSE (the positive feelings of reassurance and relief). Lastly, the program would develop innovative ways to enable women to overcome the problem of just forgetting to make time to do monthly BSE (stickers for calenders, etc.)

Potentials Barriers to BSE in Older Women

The relationship of the elderly population and their health-seeking behaviors has been reported in the literature. As people get older, they are more likely to take aches and pains for granted, and to regard illness and disability as inevitable (Riley, 1983). Older

women may disregard changes in their breasts which may lead to a longer delay in seeking health care. Financial situations are also identified as having a substantial impact on the health care decisions of older women (Riley, 1983).

As they age, women experience multiple changes in their breast throughout their lives. Breast tissue loses its fullness due to atrophy of fat and fibrotic changes (Rumpler, 1986). Breasts become elongated, pendulous, and flaccid as a result of glandular tissue atrophy. The skin of the breast tends to wrinkle, appearing loose and flabby (Snyder, 1983). Such normal changes in older women's breast may mimic breast cancer and needs to be evaluated carefully. Failure to differentiate normal change of aging from abnormal findings may result in missing advanced signs of breast cancer. Often times, these advanced signs are present before older women seeks health care or the physician is aware of the abnormality.

Other physiological changes of aging can influence the effectiveness of BSE in older women. Diminished eyesight due to cataracts or glaucoma may interfere with the woman's ability to see changes in her breast. Changes in the body's joints may inhibit range of motion in the upper extremities which may limit a woman's ability to palpate her breast effectively. Lastly, a diminished peripheral sensation in the fingers may prevent a thorough and adequate BSE.

Sociocultural attitudes, beliefs, and values may also contribute to a woman's compliance in monthly BSE. For example, the breast has value related to fertility, womanhood, and sexuality. Women often fear that removal of a breast results in loss of one or more of these traits. Women, taught as children not touch their breasts or to

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explore their bodies, may find it repulsive to complete monthly BSE. Finally, many women believe that their ethnic origin protects them from developing breast cancer (Wabrek, 1979).

William's (1988) research of 253 women, who resided in senior housing looked at variables affecting the practice of BSE in older women. The mean age of the women was 73 years with a range of 62-93 years. To reside in the housing, the individual must be capable of independent living. The women could be of any ethnic background and marital status while their economic class varied due to the sliding-scale fees. A descriptive, correlational design was used to examine the relationship between frequency of BSE practice and the HBM variables of susceptibility, seriousness, benefits, barriers, and health motivation; knowledge of breast cancer; and health history using Champion's (1984) instrument and the Williams Breast Inventory (WBI).

According to the results, 74% reported that they practiced BSE occasionally while 34% performed the procedure at least once a month or on a more frequent basis. However, 26% of the women reported no current BSE practice. The findings of this study support four of the five HBM variables as being predictive of BSE frequency (Multiple R= .55; $p \leq .05$). Health motivation accounted for the most explained variance in practicing BSE followed by barriers, andsusceptibility, then benefits. However, no significant relationship was found between frequency of BSE and perceived seriousness. The relationship between breast cancer and BSE was explored using correlational analysis of the knowledge portion of the WBI with the reported frequency of BSE (Williams, 1988).

The results indicated that knowledge of breast cancer was significantly related to frequency of BSE (p=.009). Seventy-two percent of subjects correctly answered five of the six knowledge items. Most subjects (85%) were aware of the importance of both visual inspections and palpation in BSE (Williams, 1988).

The item missed most frequently was, "Most breast lumps are found by a woman's health care provider." Forty-two percent of the subjects incorrectly answered this question. The relationship between health history of the subject and frequency of BSE was also researched. Variables that were predictive of the frequency of BSE were 1) examination by a doctor or nurse at the subject's last physical and 2) whether the subject was taught BSE by a doctor or nurse. Variables not predictive of frequency of BSE practice were: treatment for benign disease, close friends with breast cancer, personal experience with cancer, and a family history of breast cancer (Williams, 1988).

The fact that health motivation provided a positive relationship with BSE should offer direction for nursing practice. Since this group of older women already engaged in health motivation activities, Williams (1988) recommended that they be assessed for BSE practice in settings where you would find this group, such as exercises classes in senior citizen centers or other locations of health activities. Williams (1988) also suggested that nurses may need to adapt BSE practice to the older woman's special needs, provide continued encouragement to practice BSE, and plan time to listen to any concerns related to BSE findings.

Champion's Research

The purpose of Champion's (1985) research was to identify the relationship of

attitudes about BSE and breast cancer to the frequency of BSE, using the HBM as a theoretical base. Likert scales were developed for the independent variables of susceptibility, seriousness, benefits, barriers, and health motivation. A convenience sample of 301 women, age 17 to 82 (M=50 years) were selected from a large metropolitan city in the Midwest. Women were recruited from local churches, day care centers, senior citizen centers, businesses, industry, university classes, and local swim teams. The women answered questionnaires that contained the HBM variables scales, a measure of frequency of BSE, and demographic variables. The two research hypotheses were: 1) the combination of HBM variables would predict the frequency of BSE, and 2) the concepts of the HBM variables would discriminate between groups who are low, moderate, or high on frequency of BSE.

Data on hypothesis 1 were analyzed using a step-wise multiple regression to test the combined HBM variables on BSE. Results of the research supported the HBM's prediction of frequency of BSE (Multiple R=.51; p≤ .001). When examining each variable independently, barriers and health-motivation were the two most important predictors. Persons perceiving few barriers to BSE and with high scores on health motivation reported greater frequency of BSE (Champion, 1985).

Hypothesis 2 was evaluated using a discriminant analysis. Subjects were divided into three groups depending upon their responses to frequency of BSE. The group who reported frequent BSE (examined their breasts every month or more frequently) indicated few barriers to performing BSE, high motivation towards maintaining health, and more benefits from performing BSE. The variables of susceptibility and seriousness did not

predict the frequency of BSE. In addition, demographic variables of age, marital status, socioeconomic status (SES), race, and education did not influence the frequency of BSE. Lastly, a measure of knowledge of BSE and breast cancer was obtained at the end of the questionnaire. Persons who were younger, better educated and had a higher SES, demonstrated higher knowledge, but did not differ in the frequency of BSE (Champion, 1985).

Champion (1985) felt a major limitation to the study was the homogenous sample. The majority of the participants were white and Protestant, with an educational level of a college sophomore. As such, it was recommended that future research should include a population with a more varied racial representation, religious background, and less education.

Champion's (1987) study looked at the relationship between frequency of BSE and HBM variables in a convenience sample of 588 women between the ages of 12 to 74 (M-33.86, SD=13.90). Women were recruited from a waiting room in a large outpatient clinic at a university medical center in the Midwest. Susceptibility, seriousness, benefits, barriers, health motivation, control, knowledge of breast cancer, and BSE were measured by Likert scales which were previously tested for validity and reliability. The research hypotheses were: 1) The combination of the HBM variables would significantly correlate with the frequency of BSE, and 2) The concepts of the HBM variables would discriminate between groups on frequency of BSE. Approximately 33% of the women reported monthly BSE, with another 11% reporting more than once a month BSE. Hypothesis 1 was supported (Multiple $R=.53$, $F=32.38$, $p \leq .001$) accounting for 28% of the variance.

The variables of barriers and knowledge accounted for 26% of the variance, leaving the other variables adding insignificant amounts to the total variance. As such, barriers and knowledge were found to significantly predict BSE which was different from the previous study.

Hypothesis 2 was evaluated using discriminant analysis. Subjects were divided into three groups based upon their responses of frequency of BSE. The results indicated that subjects who reported few barriers, higher susceptibility to breast cancer, and higher knowledge of breast cancer and BSE performed BSE more frequently. The variables of seriousness, health motivation, benefits, and control did not significantly predict frequency of BSE. The demographic variables of race, marital status, SES, age, and religion did not predict frequency of BSE. A significant correlation was found between frequency and years of school. Subjects with more education perceived greater benefits and fewer barriers to BSE. Subjects who had themselves experienced breast disease or knew friends or relatives being treated for breast disease reported increased frequency of BSE. Subjects who were taught by nurses or doctors reported a significant increase in frequency of BSE than those who were taught in other ways (Champion, 1987).

Since the barriers variable was consistently significant with previous research (Champion, 1984; 1985), Champion recommended that nurses identify barriers women perceive in completing BSE and develop strategies for overcoming these problems. Also, increasing a woman's knowledge to accurately perform BSE and what the findings mean would increase their sense of benefit and health motivation, therefore increase the frequency of BSE.

A correlational study by Champion (1988) was conducted to identify attitudinal variables specified by the HBM that were related to intent, frequency, and proficiency of BSE. A probability sample of 380 women, age 35 to 81 (m=50.8 years), were selected by random digit dialing from a large metropolitan area and surrounding counties. Data were collected by in-home interviews conducted by graduate nursing students. Susceptibility, seriousness, benefits, barriers, and health motivation were measured by Likert scales previously developed from past work (Champion, 1984). A control scale was developed for this research using the concept of control from Attribution theory. Three criterion variables were utilized for this research: 1) intent to practice BSE, 2) frequency of BSE, and 3) proficiency of BSE. Participants were also asked occupation, marital status, race, religion, education, family history of breast disease, and number of children. Results of the research supported that attitudinal variables would predict the behavior of BSE. Results indicated that participants felt only moderately susceptible to breast cancer, but had high scores relative to perceived seriousness, benefits, health motivation, and control. Most participants reported few perceived barriers. Of the 380 women interviewed, 30% reported that they had not performed BSE in the past year and only 17.4% reported performing monthly BSE.

The intent score was predicted by susceptibility, seriousness, barriers, health motivation and control with a total of 37% of the variance explained (Multiple R=.61, p ≤ .001). Barriers, health motivation and susceptibility were related to actual frequency of BSE. These variables supported that those who perceived many barriers, perceived low susceptibility, and low health motivation were infrequent practitioners of BSE.

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Proficiency of BSE was predicted by scores high in health motivation, low barriers, and high susceptibility (Champion, 1988).

Participants were also asked if they had recently heard about breast cancer or BSE. Participants who answered "yes," had higher scores relating to intent, frequency, and proficiency. Two demographic variables, marital status and religion were significantly related to intent to practice BSE. Women who had never married had a significantly lower intent to practice BSE, while women who indicated that religion influenced their daily lives to a greater degree, had stronger intent to practice BSE. Neither frequency or proficiency of BSE differed on the basis of marital status or degree of religious influence (Champion, 1988).

Champion's (1988) research found an increase frequency of BSE for women who had recently heard about breast cancer and BSE. Recommendations from the study included the development of innovative methods that would remind women to perform monthly BSE. Also, it was suggested that having a health care provider actually teach BSE would increase confidence and health motivation and decrease perceived barriers. Education should be provided about a woman's susceptibility to breast cancer and the seriousness if not discovered at an early stage.

More recently, Champion (1990) examined variables specified by the HBM that were related to frequency and total performance of BSE. This correlational study involved a probability sample of 362 women, ages 35 to 90 (M= 50.4), who were contacted by random digit dialing. Data were collected by in-home interviews initially (year 1) and then one year later via a telephone interview (year 2) by graduate nursing students. Assessment

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of attitudinal variables, frequency, and total behavior were made at the first in-home interview (year 1), along with collection of demographic variables, experience and history of BSE, and breast cancer. Data collected during the telephone interview (year 2) included an assessment of frequency of BSE and total behavior of BSE for the previous year. The HBM variables (susceptibility, seriousness, benefits, barriers, control, and health motivation) were measured by instruments from previous work (Champion, 1984) using Likert scales. Other instruments were used to measure social influence, confidence, and knowledge (Ronis, 1985). The research hypotheses were: 1) present total performance will be significantly related to a combination of past total performance, HBM variables, social influence, confidence, and knowledge; and 2) present frequency of BSE will be significantly related to the combination of past frequency, HBM variables, asocial influence, confidence, and knowledge.

Results for the first hypothesis indicated that past total performance, barriers, and knowledge predicted present total performance. The analysis for hypothesis 2 indicated that past frequency, barriers, health motivation, control, being taught by a doctor, confidence, having BSE procedure checked, benefits, and susceptibility at year 1 were significantly related to frequency at year 2. Infrequent practitioners were women who reported infrequent BSE in year 1 and who perceived high barriers. Women who felt susceptible, perceived benefits to BSE, had confidence in their ability, were motivated toward health, and perceived control, reported higher frequency of BSE at year 2. In year 1, 17% of the women reported every month BSE and 30% reported not completing BSE at all the previous year. In year 2, 34% of the women reported monthly BSE, whereas

fewer than 1% reported no BSE during the previous year. Demographic variables were insignificant in predicting frequency and total performance of BSE. Increased frequency of BSE was reported in women who were taught BSE by a doctor and having the BSE procedure checked.

Champion (1990) recommended that health professionals assess perceived barriers when teaching BSE and develop interventions to decrease these barriers into a teaching program. Also, the findings indicated that the increase frequency of BSE was positively related to a woman's perceived benefit, health motivation and control, therefore more teaching programs need to be developed that look into methods by which BSE is taught and reinforced.

Summary of the Review of the Literature

The diagnosis of breast cancer presents great fear to women who may be at high risk for the disease. Women may or may not perform BSE on a routine basis due to their past knowledge, fears about cancer, social pressures, and their comfort level with BSE. The literature has documented that women who regularly practice BSE and find a lump that is diagnosed as cancerous more frequently have a lower clinical stage at initial diagnosis.

Review of the literature reveals that many studies identify the relationship of attitudes about BSE and breast cancer to the frequency of BSE using the Health Belief Model as the theoretical framework. The HBM is the most frequently used theory to examine behaviors for the prevention and detection of disease and maintenance of health in healthy individuals. Much of Champion's research has examined the relationship between the frequency of BSE and the HBM variables. Each study revealed that at least one HBM

variable was able to predict the frequency of BSE yet the findings were inconsistent. Champion has also developed an instrument to measure the variables of the HBM when examining the frequency of BSE. The likert-scale instrument was further refined in Champion's 1993 research in which a study was conducted for instrument revision.

Research Objective

The purpose of this study was to identify the relationship between Health Belief Model variables and the frequency of Breast Self-examination in women who participated in the Breast Cancer Prevention Trial.

Research Hypotheses

1. The combination of susceptibility, seriousness, benefits, barriers, health motivation, and confidence will be significantly correlated with the frequency of breast self-examination.

2. The concepts of susceptibility, seriousness, benefits, barriers, health motivation, and confidence will discriminate between groups on frequency of breast self-examination.

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CHAPTER 3

METHODOLOGY

Purpose and Design

The purpose of this study was to identify the relationship between the Health Belief Model variables and the frequency of breast self-examination in high risk women who participated in the Breast Cancer Prevention Trial. The study utilized a nonexperimental, descriptive, correlational research design to identify the relationship between HBM variables and frequency of BSE in women who participated in the BCPT. This study was modeled after research conducted by Champion (1987). To facilitate the examination of these relationships, Champion developed and refined an instrument to measure the HBM variables when examining BSE frequency (1984; 1993).

Selection of Participants

This study replicated Champion's 1987 research, using a different population and inclusion criteria. In Champion's study, women were approached in a waiting room of a large outpatient university medical center clinic. All the women who were approached and agreed to participate were included in the sample. Questions were read to the individual and responses coded by an interviewer if the individual could not read or write. The questionnaires were completed in the waiting room, while the participants were

waiting for their appointment, or if time was not sufficient, the questionnaires were returned by mail. In this research, the change in the population involved women who were deemed high risk in developing breast cancer through their participation in the Breast Cancer Prevention Trial (BCPT).

Breast Cancer Prevention Trial

The BCPT is a clinical trial currently being conducted by the National Surgical Adjuvant Breast/Bowel Program (NSABP) to determine the worth of Tamoxifen for preventing breast cancer. The primary objective of this trial is to test whether long-term Tamoxifen therapy is effective in: a) preventing the occurrence of invasive breast cancer and b) reducing mortality attributed to breast cancer.

Eligibility criteria for the BCPT include the following: 1) the participant must be 35 years of age or older and have an increased risk for developing breast cancer as determined from the Breast Cancer Risk Assessment Profile generated by the NSABP Biostatistical Center; 2) the participant must have a life expectancy of at least 10 years; 3) the participant must have a breast examination demonstrating no clinical evidence of breast cancer; 4) the participant must have a mammogram within 180 days prior to randomization that shows no evidence of invasive breast cancer; 5) the participant must have a WBC $\geq$ 4,000/cu.mm and a platelet count $\geq$ 100,000/cu.mm; 6) participants with a previous history of benign neutropenia are eligible if the granulocyte count is $\geq$ 1,500 cu.mm; 7) there must be evidence of adequate hepatic and renal function (SGOT, SGPT, bilirubin, serum creatinine within normal range); 8) the participant must be ambulatory and capable of reasonable normal activity; 9) the participant must not be on Coumadin or have

a history of deep vein thrombosis or pulmonary embolus; 10) the participant must not be pregnant while she is receiving protocol therapy; 11) no prior use of Tamoxifen; 12) no prior or suspected invasive breast cancer of any type; intraductal carcinoma in situ (DCIS); or previous LCIS treated by mastectomy, radiation, or systemic therapy; 13) no prior malignancy of any type which occurred less than 10 years previously, except basal or squamous cell carcinoma of the skin or carcinoma in situ of the cervix; 14) no current use of estrogen or progesterone replacement therapy, oral contraceptive, or androgens; 15) no prior history of macular degeneration of the retina; 16) no current use of chemotherapy for benign disease, such as arthritis; and 17) no current participation in any other cancer prevention study involving pharmacologic interventions.

Each participant upon completion of the pretherapy evaluation who met the eligibility criteria received placebo/Tamoxifen in the dosage of two 10 mg tablets, once a day, for a duration of at least five years. During the trial, participants were evaluated every six months for treatment compliance, side effects of treatment, and had a breast exam performed by a physician. Furthermore, participants were assessed for the presence of new medical events and to have cardiovascular monitoring (blood pressure, cholesterol, and triglycerides testing, and an electrocardiogram for women over the age of 55).

The BCPT accrued 13,388 women to the study between 1992 to 1998. The results of the study as determined thus far include a 45% reduction in the incidence of invasive breast cancer and fewer diagnoses of noninvasive breast cancer in the Tamoxifen participants.

<u>Characteristics of the Participants</u>

The sample was selected from a target population of 109 women who were currently participating in the BCPT in an urban setting in a Midwestern state. The women were deemed high risk for developing breast cancer through the eligibility requirements for the prevention study. All the participants in the BCPT were asked to complete a risk assessment profile that determined their risk for developing breast cancer in their lifetime. If the women met the criteria for increased risk, they could participate in the prevention study that randomized them in the double-blinded study to determine if Tamoxifen could improve their chances for not developing breast cancer. The participants in this current study were a convenience sample of 80 women who returned completed questionnaires within a two week time period after receiving the original mailing, resulting in a response rate of 73%.

The demographic variables that were examined in this study were: age, race, education, marital status, employment status, yearly income, and insurance. The 80 women who completed the questionnaires ranged in age from 45 to 83 years (M=61.98; SD= 9.32). While the majority of the participants were between the ages of 45 and 69 years (75%), 17 women (21%) were in their 70s. Three women exceeded the age of 80 years. Whereas 98% of the sample reported being white, one participant identified herself as being African American and another as Asian.

In regards to marital status, 55 (69%) women reported being married or in a marriage-like relationship. Fourteen women (18%) indicated they were widowed and ten women (12%) were either divorced or separated. On average, the women had 14 years of

education (range=6 to 25; SD=2.77). One participant reported herself as never being married. Although the majority had some college education (75%), 18 women had only completed high school. One individual reported only having six years of formal education.

Forty-two of the women were employed either on a full-time (36.3%) or part-time (16.3%) basis. Four women identified themselves as full-time homemakers and two as disabled individuals. The remaining participants (n=32) had retired from employment. Even though 47.5% of the participants were not employed, 29 of the women reported annual household incomes that exceeded $60,000. While 33 women had a yearly income that ranged between $20,000 and $59,999, 11 women reported incomes less that $19,999. However, seven of the participants did not provide information concerning their annual incomes.

All but one of the participants reported having some type of insurance. When asked about the specific type of insurance coverage, 58% of the women reported having private insurance, while 38% described having a combination of Medicare or Medicaid and private insurance coverage.

All of the women reported receiving some form of education concerning the performance of BSE. The women identified multiple sources of BSE education, including by person (86%) and through written sources (7%). Five women described receiving BSE education through multiple sources (individuals, literature, and audiovisual). The most frequently cited person who taught BSE was identified as a nurse (48%). These results are summarized in Table 1.

Table 1

Sources of BSE Education

Sources	n	%
Nurse	38	48
Physician	19	24
Other Person	6	7
Multiple Persons	6	7
Multiple Sources (person, literature, AV)	5	6
Literature	6	7

Note. AV = Audiovisual.

When asked about actual performance of BSE, 44% of the women reported completed BSE on monthly basis, while 13% described performing BSE more than once a month (Table 2). However, 33 women reported that they conducted BSE less frequently that the recommended ACS guidelines. Two women reported never performing BSE.

Lastly, the women were asked what treatment they received during the BCPT. Forty-three of the participants were taking Tamoxifen (54%), 34 were taking a placebo (42%), and three women did not know their treatment (4%).

Table 2

Frequency of BSE Performance

Frequency	n	%
Never	2	2
1-3 times yearly	21	26
Every other month	12	15
Every month	35	44
>Once a month	10	13

Procedure

The procedure for this study was completed in the following steps:

1) Approval for use of the HBM was received from Victoria Champion (Appendix A).

2) Approval was obtained for collection of the data through Human Subjects Review Committee at Grand Valley State University (Appendix B)

3) Approval was obtained for collection of data through the Investigational Review Board at the research site in an urban setting in a Midwestern state.

4) The Researcher oriented the BCPT coordinator of the research site to the study. The study coordinator was given a copy of: a) study design and purpose; and b) data collection instruments.

5) Using a scripted approach (Appendix C), the BCPT coordinator introduced the study, including its purpose and time commitment of approximately 15 minutes to the potential participants. If the women were willing to participate, the BCPT coordinator asked permission to provide the researcher with their name and address.

6) The potential participants were assured that in no way would their care be affected regardless of their decision to participate in this study by the BCPT coordinator.

7) The potential participants were informed that there would be no identifying markers (i.e. social security numbers, telephone numbers, etc.) that could trace their responses. Each participant's responses on the questionnaires would be anonymous and that published results would reflect group responses.

8) If the potential participant agreed to be involved in the study, a cover letter, postcard, and questionnaires (Appendix D,E,F,G) were sent to the participant's home, along with a self-addressed, stamped envelope to return the completed questionnaire. If the participants desired a copy of the results from this study, they were instructed to return the prepaid postcard to the researcher in a separate mailing.

9) If the total number of completed questionnaires returned to the researcher were less than 50% of the number distributed within two weeks of the initial mailing, a second set of questionnaires would be mailed with a reminder letter (Appendix H) to the participants with a self-addressed, stamped envelope to return the completed questionnaires. However, due to the response rate of 73% after the original mailing, this strategy was not implemented.

10) All information regarding this study was kept in a secure, locked office at the

research site.

11) All questionnaires and information regarding the participants will be destroyed three years after completion of the study.

<u>Protection of Human Subjects</u>

Approval to conduct this study was obtained from the Human Subjects Review Committee at Grand Valley State University and the Investigational Review Board at the research site in an urban setting in a Midwestern state. Also, a letter of support was obtained from the BCPT coordinator of the research site. Each participant was sent a cover letter detailing the purpose of the study and the time commitment involved. In addition, the cover letter emphasized that participation in this study was voluntary with minimal risks.

Possible risks to the participants included: 1) feelings of anxiety and guilt over not performing monthly BSE; 2) feelings of anxiety of not performing BSE accurately; 3) fear and anxiety over finding an abnormality and the meaning of the finding; and 4) fear of being diagnosed with breast cancer. If the women had any questions or concerns about participating in this study, they were encouraged to contact the researcher or the Chair of the Institutional Review Board at the granting university. If any of the participants experienced any of the potential risks, the women would be provided with a list of community resources. The researcher was not contacted by any of the participants to voice concerns or to request information.

Although the participants did not receive direct benefit from participating in this study, indirect benefits involved the following: 1) reminding the participant to perform

monthly BSE; 2) the feeling of comfort in performing monthly BSE to ensure good health;

3) the feeling of comfort that performing monthly BSE would ensure finding a potential

cancer in an early curable stage. Woman were assured that a decision to not participate in

this study would not affect their care or treatment in the BCPT in any way.

Each participant's responses to the questionnaires were anonymous and analyzed as

groups. If the participants desired a copy of the results, a request could be sent to the

researcher using a prepaid postcard that was mailed separately from the completed

questionnaires. Return of the completed questionnaires was considered informed consent.

Instruments

Two instruments were used in this study: a demographic questionnaire developed by

the researcher and the HBM questionnaire developed by Champion (1993). The

demographic questionnaire was used to collect data for each subject. These data included

age, racial/ethnic background, years of school completed, marital status, method of

payment for medical care, employment status, total family income before taxes each year,

frequency of BSE, how the participant was taught BSE, and what treatment did the

participant receive on the BCPT.

The development of the HBM scale originally was derived from Hochbaum's research

conducted in the 1950s that identified factors related to decisions by 1,200 subjects to

have chest x-rays for the detection of tuberculosis. Many researchers have since used the

HBM scale to explain a multitude of preventive behaviors and illness behaviors as it relates

to the HBM (Champion, 1984). A major problem with these studies has been the lack of

reliability and validity for the instrument. Other problems include that: 1) many studies

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used only one or two items for measuring a health belief concept; 2) earlier scales were developed to measure the original four variables, thus there is less research conducted on all six variables; and 3) operational definitions varied greatly from one study to the next (Champion, 1984).

Champion's (1984) research centered around the need to develop scales for measuring concepts in the HBM and to test these scales for validity and reliability so that the theory could be used in nursing practice. In the 1987 research, Champion established content validity for her instrument by submitting all items to a panel of judges well versed in the HBM. Construct validity was established by analyzing all items with principal component factor analysis and varimax rotation. Factor analysis established independent factors that matched each of the scales as specified in the HBM. Internal consistency reliabilities using Cronbach alphas ranged from .63 to .76. Test-retest reliabilities utilizing Pearson *r* correlations ranged form .47 to .62.

Champion further refined the HBM instrument in her 1993 research. The original instrument that was reported in 1984 was completely reevaluated and a new scale to measure confidence was developed. This scale was developed based on Rosenstock's reconceptualization of the HBM, which incorporated self-efficacy. The addition of self-efficacy to the HBM added a different dimension, that of perceived competence to carry out a behavior. The items in the new scale for self-efficacy included items from Lauver and Angerame (1988) and Bandura (1977). All items for the six scales were formated with a 5-point Likert scale from strongly agree to strongly disagree. The instrument now contained five items in the susceptibility category, seven items each in the seriousness and

health motivation category, six items each in the benefits and barriers categories, and eleven items in the confidence (self-efficacy) category.

Items were subjected to content analysis by national experts. Construct validity was established using exploratory factor analysis. Predictive validity was established by relating breast self-examination behavior to breast self-examination attitudes, using simultaneous multiple regression and bivariate correlations. Cronbach alpha reliability coefficients for the revised scales ranged from .80 to .93, with test-retest correlations of .45 to .70.

For this study, the HBM questionnaire refined in Champion's (1993) was used without modification. Approval for use of the HBM questionnaire was obtained from the author (Appendix E). A reliability analysis of the instrument obtained Cronbach alpha coefficients that ranged from .76 to .88. These results are summarized and compared with Champion's (1993) findings in Table 3. Similar results were noted between the two studies in the variables of seriousness, benefits, and confidence, with slight differences noted in the scales measuring susceptibility, barriers, and heath motivation.

These reliability coefficients indicate that the scale is internally consistent and that all of its statements have an acceptable level of consistency in measurement of the HBM variables. Polit and Hunger (1995) report that reliability coefficients normally range between 0.0 and +1.00 with higher numbers reflecting a higher degree of internal consistency. Reliability coefficients above .70 are considered acceptable, although coefficients of .80 or greater are highly desirable.

Table 3

Reliability Analysis

Variables	Cronbach Alphas	
	Champion (1993)	Moore (2000)
Susceptibility	.93	.88
Seriousness	.80	.78
Benefits	.80	.81
Barriers	.88	.77
Confidence	.88	.88
Health Motivation	.83	.76

CHAPTER 4

RESULTS

The purpose of this study was to determine if there was a relationship between the HBM variables and the frequency of BSE in women who participated in the BCPT. The two hypotheses were: 1) The concepts of susceptibility, seriousness, benefits, barriers, health motivation, and confidence will be significantly correlated with the frequency of breast self-examination; and 2) The concepts of susceptibility, seriousness, benefits, barriers, health motivation, and confidence will discriminate between groups on frequency of breast self-examination. The data for this study were analyzed using the Statistical Package for the Social Studies (SPSS). The level of significance for all statistical procedures was $p < .05$.

The HBM variables questionnaire is a Likert-type scale that measures the beliefs of women regarding breast cancer and BSE. The choices for each item on the scale ranged from 1 (strongly disagree) to 5 (strongly agree). The items in each dimension are summed to provide interval level scores reflecting perceived health beliefs of the participants. The possible scores for the HBM variables were: susceptibility (5-25), seriousness (5-35), benefits (5-30), barriers (5-30), health motivation (5-35), and confidence (5-55).

Health Belief Scores

Prior to testing the hypotheses developed for this study, the HBM scores were examined by frequency of BSE. Descriptive statistics were used to summarize the presentation of the data.

Susceptibility. The assessment of this health belief variable reflects the woman's perceived likelihood that she will be diagnosed with breast cancer. Upon examination of the scores, women who performed BSE more frequently tended to have higher susceptibility scores (Table 4). Although the women who reported performing BSE on a limited basis (n = 21) had a mean susceptibility score of 14.48 (SD=4.19), at least 11 of these participants had scores less than 15. Based on these results, these participants did not perceive that they were susceptible to breast cancer.

Table 4

Susceptibility Scores by BSE Frequency

Frequency of BSE	Mean	SD
Never	12.00	5.66
1-3 times yearly	14.48	4.19
Every other month	13.17	4.20
Every month	14.22	3.87
>Once a month	16.00	5.35

NOTE. Possible scores = 5 to 25.

Seriousness. This variable measures the degree of personal harm that a woman would feel if she thinks about breast cancer or if she was actually diagnosed with breast cancer. Surprisingly, the two participants who reported that they had never performed BSE, had the highest mean score (M=23.50; SD=2.12) in this dimension. Although they perceived themselves at risk, their perceptions did not encourage them initiate BSE performance. As expected, the participants who frequently performed BSE (more than once a month and every month) had similar perceptions. These results are summarized in Table 5.

Table 5

Seriousness Scores by BSE Frequency

Frequency of BSE	Mean	SD
Never	23.50	2.12
1-3 times yearly	17.20	3.87
Every other month	19.55	3.88
Every month	17.65	5.29
>Once a month	20.88	6.64

NOTE. Possible scores = 5 to 35.

Benefits. The perceived positives attributes related to a woman performing BSE are reflected in the assessment of this variable. Not surprisingly, the higher the benefit the women perceived from performing BSE, the more frequent the task was performed (Table

6). The women who practiced BSE greater than every month had the highest scores with a mean of 25.40 (SD=3.95). In close proximity, were the groups who practiced BSE every month (M=24.29; SD=3.06) and at least six times a year (M=23.58; SD=2.78). The women who were infrequent practitioners of BSE had the lowest scores with a mean of 21.50 (SD=4.45).

Table 6

Benefits Scores by BSE Frequency

Frequency of BSE	Mean	SD
Never	21.50	0.71
1-3 times yearly	21.50	4.45
Every other month	23.58	2.78
Every month	24.29	3.06
>Once a month	25.40	3.95

NOTE. Possible scores = 5 to 30.

Barriers. The assessment of this variable measures the obstacles the woman experiences in performing BSE. Based on the results, the women who perceived more challenges to performing BSE, tended not to perform BSE on a routine basis (Table 7). Women who performed BSE perceived fewer barriers in performing BSE, tended to follow or exceed the guidelines established by ACS.

Health motivation. This fifth variable measures the amount of concern the woman has

about maintaining her health. All the BSE performance groups revealed that they were highly motivated to maintain good health. However, those who reported performing BSE more frequently had higher perceptions of their health motivation. Women who performed BSE more than once a month had the highest mean score of 31.10 (SD=3.54) These results are presented in Table 8.

Table 7

Barriers Scores by BSE Frequency

Frequency of BSE	Mean	SD
Never	15.50	4.95
1-3 times yearly	12.33	4.54
Every other month	9.67	2.99
Every month	9.29	3.57
>Once a month	8.20	2.57

NOTE. Possible scores = 5 to 50.

Table 8

Health Motivation Scores by BSE Frequency

Frequency of BSE	Mean	SD
Never	24.50	3.54
1-3 times yearly	29.09	4.39
Every other month	29.75	3.79
Every month	29.31	3.08
>Once a month	31.10	3.54

NOTE. Possible scores = 5 to 35.

Confidence. The last variable reflected the woman's perceived ability to perform BSE

accurately to detect breast cancer. The responses in this health belief dimension revealed

interesting results. All the women were confident in performing BSE accurately (Table 9).

The women who performed BSE on a monthly basis perceived the greatest confidence.

However, those who performed BSE more than once a month had lower scores than the

women who performed monthly BSE. This finding may reflect the over uncertainty in

actually finding an abnormality when performing BSE. Although the women were

confident in performing the BSE as a procedure, 47.6% of the respondents were uncertain

about their ability to distinguish between normal and abnormal findings. Moreover, 47.5%

of the women did not feel that they would be able to detect a lump in their breast through

self-examination.

Table 9

Confidence Scores by BSE Frequency

Frequency of BSE	Mean	SD
Never	42.00	2.83
1-3 times yearly	39.76	7.54
Every other month	41.50	7.34
Every month	44.29	5.05
>Once a month	42.60	6.33

NOTE. Possible scores = 5 to 55.

Hypothesis #1

It was hypothesized that the HBM variables would be significantly correlated with the frequency of BSE. This hypothesis was tested using Spearman's rho correlation coefficients to identify the magnitude of the relationship between the HBM variables and frequency of BSE. This analysis identified two significant correlations.

The first finding revealed a positive correlation between the HBM variable of benefits and the frequency of BSE (r = .37; p = .000). Women who perceived an advantage of doing BSE, performed the task more frequently. Seventy-two participants (90.1%) felt that by completing BSE monthly, it allowed them to find lumps early. In particular, the performance of BSE helped them find lumps that may be cancerous before it was later detected by a doctor or nurse. Women (n=65) felt by completing BSE monthly during the

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next year that they would decrease their chance of dying from breast cancer. Fifty-four women (67.6%) agreed that completing BSE monthly would decrease their chances of requiring radical or disfiguring surgery if breast cancer occurred. When performing BSE monthly, 65.1% of the women (n=52) reported that they felt good about themselves. In addition, 42 women (52.2%) reported that they did not worry as much about breast cancer when they routinely performed BSE.

A negative correlation was revealed between the HBM variable of barriers and the frequency of BSE ($r = .-41$, $p = .000$). Participants who performed BSE less frequently felt there were obstacles preventing them from taking action. When reviewing the participants' answers to the barrier questions, 12.5% agreed that they felt "funny" performing BSE. Participants felt performing BSE was embarrassing (8.8%) and would add to their worries about breast cancer in the coming year (8.8%). Six out of the 80 women (7.6%) felt performing BSE was unpleasant.

Although these significant, moderate relationships were identified, there were no significant correlations found between the remaining HBM variables of confidence, seriousness, susceptibility, and health motivation with frequency of BSE. As a result, the first hypothesis was not supported.

Hypothesis #2

The second hypothesis addressed whether the concepts of the HBM variables would reveal differences between groups on frequency of BSE. This hypothesis was tested using an Analysis of Variance (ANOVA) procedure with a post hoc Scheffe to determine if there were differences between the groups. The results revealed there was a significant

difference between the groups regarding the HBM variable of barriers ($F_{(3,74)}$ = 4.08; p = .01) and benefits ($F_{(3,73)}$ = 3.62; p = .02). However, following the stringent post hoc Scheffe test, the only HBM variable that revealed a difference between groups was barriers. The women who performed BSE every month (M=9.28) and more than once a month (M= 8.20) had significantly lower barriers scores than those who only performed BSE 1-3 times a year (M=12.33). Inasmuch as the only HBM concept that discriminated between groups was barriers, the second hypothesis generated for this study was not supported.

Additional Findings

Additional analyses were conducted to determine if there was a difference between the women who received Tamoxifen and the women who received the placebo in the HBM variables. A t-test procedure revealed that there was no significant difference between the two groups.

A Pearson's r correlational analysis was competed to determine if there was a relationship between the participants' age and level of education with the HBM variables. The results revealed that the older the women, the more perceived barriers they may experience in regards to performing BSE (r = .21; p = .01). Also, the results indicated that the younger the women, the less they felt susceptible to being diagnosed with breast cancer (r = -.22; p = .05). Lastly, the findings indicated that the higher the level of education, the more motivated women were towards good health maintenance (r = .26; p = .02).

CHAPTER 5

Discussion

Review of Purpose and Hypotheses

It was anticipated that this study would show a relationship between HBM variables

and the frequency of BSE in women who participated in the BCPT. There were two

hypotheses explored in this research: 1) the concepts of susceptibility, seriousness,

benefits, barriers, health motivation, and confidence would be significantly correlated with

the frequency of breast self-examination; and 2) the concepts of susceptibility, seriousness,

benefits, barriers, health motivation, and confidence would discriminate between groups

on frequency of breast self-examination. Neither hypotheses were supported as a result of

this research study.

However, the first hypothesis did reveal a positive correlation between the HBM

variable of benefits and the frequency of BSE. Women who performed monthly BSE felt

they could finds lumps earlier, especially a cancerous lump, decrease their chance of dying

from breast cancer, decrease the likelihood they would need radical or disfiguring surgery

if breast cancer occurred, and worried less about breast cancer. A negative correlation

was found between the HBM variable barriers and frequency of BSE. Women who were

not frequent practitioners of monthly BSE felt there were obstacles preventing them from

performing the task. Feelings of embarrassment or unpleasantness, along with feeling "funny", and having increased worries about breast cancer were reasons for the lack of performing BSE.

The second hypothesis revealed that only one HBM variable revealed a difference between groups on frequency of BSE. Lower barrier scores were obtained for the women who practiced BSE at least every month or more frequently.

Previous Research and Conceptual Framework

Previous research has used the HBM as a theory to explain certain behaviors for asymptomatic subjects for maintenance of health, prevention of disease, and detection of disease. The HBM has been used in numerous studies to evaluate the frequency of BSE in women. According to the HBM, a person would not seek preventive care unless they had minimal levels of motivation and knowledge, and viewed a condition as threatening. The person also must believe that the interventions to prevent that condition are beneficial and there are few difficulties in the recommended action.

Some studies have reported that the increased frequency of women performing BSE was a result of women identifying an increase in benefits and few barriers in performing the task (Kelly, 1978; Hallal, 1982; Champion, 1985, 1987). Increased susceptibility that a women would be diagnosed with breast cancer would increase the performance of BSE was also revealed in several studies (Calan & Moss, 1984; Champion & Miller, 1992; Massey, 1986; Williams, 1988). The more serious a woman felt that great personal harm would occur if she thought about breast cancer or if she was actually diagnosed with breast cancer, increased a women's performance of BSE has been disclosed in a multitude

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of studies (Calan & Moss, 1984; Champion & Miller, 1992; Massey, 1986; Williams, 1988). Women who were concerned about maintaining good health were motivated to perform BSE more frequently was revealed in studies conducted by Turnball (1978) and Champion (1985, 1993). An increase in frequency of BSE was revealed by women who felt confident in their skills were established in studies by Hallal (1982) and Champion (1985, 1987, 1990, 1993).

Findings Related to Previous Research and Conceptual Framework

This research study, as with previous research, did not reveal that all six of the HBM variables would be significantly correlated with the frequency of BSE. Much of the previous research did not test all six of the HBM variables as they were not all developed at the time of those studies. Prior to Champion's work (1987, 1990, 1993), most of the previous research looked at the variables of susceptibility, seriousness, benefits, and barriers.

It was surprising that not more of the HBM variables revealed a significant relationship in this study due to the group of women who were studied. The women who participated in the BCPT were a known group of women who were considered at high risk of being diagnosed with breast cancer. Because of their increased risk to breast cancer, there was a presumption that these women would feel more susceptible to being diagnosed with breast cancer and feel more harm (seriousness) if they were diagnosed with breast cancer, and therefore would practice BSE more frequently. Perhaps the women felt that they had lowered their risk and perceived less harm because they were participating in the BCPT. Their participation would decrease their chances of being

diagnosed with breast cancer by providing them with every six month exams by a health care provider and possibly taking a medication that would reduce their risks. Also, a yearly mammogram was required for the BCPT study, therefore the women were not able to postpone the test for some reason. The women may have felt that performing BSE was not necessary due to their participation in BCPT and their fears of breast cancer were somewhat alleviated due to the frequent required follow up of the BCPT.

Limitations

Sample. While 73% of the BCPT participants returned questionnaires within the two week time period, the sample size was not vast (n=80). Participating in the study was voluntary and those women who chose not to participate in the study may have yielded different attitudes than those who did participate (n=29). A larger sample size may have detected more differences between groups if they existed and may have exposed more variables involved in determining the frequency of BSE.

The women who participated in this study identified themselves as ranging in age from 45 to 83 (M=61.98), mostly white (n=78), and fairly educated. The sample in this study was representative of one area and results may reflect the attitudes of the women who lived in that region only. Women who were younger than 45, identified themselves as nonwhite, and less educated may have yielded different results. Also, the sample only included women who were considered high risk from being diagnosed with breast cancer. The sample, therefore, cannot be construed to be representative of women as a whole, thus the results of this study are not generalizable.

Methodology. This study employed a descriptive correlational design using a

questionnaire to obtain data regarding womens' attitudes toward BSE and thoughts

regarding breast health in women who were considered high risk for developing breast

cancer. A limitation of studies investigating attitudes is that subjects may answer questions

with what they feel represents the correct "answer" rather than what represents their

"true" attitudes. An interview format may have allowed the researcher to obtain

qualitative data and therefore, gain more knowledge regarding what the women truly felt.

Also, the women had already been actively participating in the BCPT for several years.

The trial had already unblinded the study drug, so the women were aware of which drug

they had received, and the results of the BCPT thus far. More information of the

womens' attitudes may have been revealed if the women had filled out the questionnaires

prior to starting the BCPT and at the unblinding of the study drug. There may have been

more differences between the groups in regards to frequency of BSE and an increase in

the variables that may predict the frequency of BSE.

Instrument. The HBM questionnaire utilized in this study was easy to use and found

to be a reliable tool with this population as in previous studies conducted by Champion

(1984, 1987, 1993). A limitation to this questionnaire is the response options to the

questions: 1 (strongly agree), 2 (agree), 3 (neutral), 4 (disagree), 5 (strongly disagree).

The response option of neutral is ambiguous. It is unclear whether neutral means "I have

no opinion", " I don't know the answer", or "I both agree and disagree" with the

statement.

Implications

Nursing practice. The results of this study should be shared with nurses due to its

implications for nursing practice. The participants revealed that 48% of them had been taught BSE by a nurse. Nurses are constantly assessing and evaluating their patients in order to assist them to meet their health care needs. This study supported the utility of the HBM questionnaire developed by Champion (19987, 1993). This questionnaire may be useful for nurses to use in order to provide them with evidence on why women may or may not be performing BSE every month. Using the responses on the questionnaire, nurses would be able to develop a plan of care for their patients who are not performing monthly BSE. Appropriate interventions could be jointly developed by the nurse and patient with follow up evaluations to ensure that the interventions were appropriate and successful. Nurses and other health care professionals could also use this questionnaire to determine if their present teaching guidelines are successful and appropriate for the patients they are involved with.

Nursing administration. Implications, specific to directors of nursing and administrators of health care facilities, also exist. Nursing staff should be provided with the opportunity to learn BSE and become proficient with the skill. A continuing education program should be offered and attendance encouraged. Once the nurse has demonstrated their proficiency they should then be encouraged to teach their patients the skill and provide follow up evaluations to their patients.

Education. Schools of nursing should provide as part of their curriculum a course that teaches students BSE. Once the student has passed the course and become proficient at the task they would be able to teach their patients. Presently in health care, there is a push to look at ways in preventing and detecting disease earlier.

The HBM conceptual framework is focused on a person's behavior in regards to why they may or may not exhibit certain behaviors regarding their health. This conceptual framework should be taught in the nursing schools as a basis to explain this phenomenon and help the students to develop care plans for their patients to improve or maintain their patients' health.

Recommendations. Future research recommendations include replication of this study involving a sample size that is larger, having participants who are not deemed high risk only, utilizing women less than 45 years of age, involving a more varied racial representation of women, and including women who were less educated. To fully determine the attitudes of women regarding why or why not they perform monthly BSE, it would be helpful to study them prior to an intervention and after to determine if the intervention was successful. Also, it would be beneficial to have women inform health care providers what they found as helpful in regards to teaching interventions and follow up evaluations.

Summary

There are women who are still not performing monthly BSE even though they have been deemed at high risk for developing breast cancer. Numerous reasons may prevent them from performing this lifesaving task. The HBM instrument can provide insight as to those reasons and help nurses and other health care professional with developing improved interventions to assist these women in overcome their reasons for not performing monthly BSE.

APPENDICES

APPENDIX A

Health Belief Model--Approval for Use

INDIANA UNIVERSITY

SCHOOL OF NURSING

September 19, 1997

Kelly Moore, RN, BSN, OCN
West Michigan Cancer Center
200 North Park
Kalamazoo, MI 49007

Dear Ms. Moore,

I have enclosed a copy of my Health Belief Model, requested articles and other related materials. You have my permission to use these materials. I only require that you send me a copy of the completed results.

Sincerely,

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

Center for Nursing Research

1111 Middle Drive
Indianapolis, Indiana
46202-5107

317-274-7627
Fax 317-278-2021

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APPENDIX B

Human Subjects Review Committee Aproval

GRAND VALLEY STATE UNIVERSITY

I CAMPUS DRIVE • ALLENDALE. MICHIGAN 49401-9403 • 616/895-6611

June 23, 2000

Kelly Moore
3607 Grand Prairie Road
Kalamazoo, MI 49006

Dear Kelly:

Your proposed project entitled **The Frequency of Breast Self-Examination in Women Who Participated in the Breast Cancer Prevention Trial** has been reviewed. It has been approved as a study which is exempt from the regulations by section 46.101 of the Federal Register 46(16):8336, January 26, 1981.

Sincerely,

Paul A. Huizenga, Chair
Human Research Review Committee

APPENDIX C

Script for Study Coordinator

"Hello_____, this is Colleen Schwartz, the study coordinator for the Breast Cancer Prevention Trial (BCPT). The reason I am calling you is that a graduate nursing student by the name of Kelly Moore from Grand Valley State University is conducting a research study as part of her educational requirements to complete her masters degree. The study will be looking at the frequency of breast self-examination (BSE) and your thoughts regarding breast health. Your participation if you decide you would like to be part of this study would be filling out two questionnaires. The questionnaires would take approximately 15 minutes of your time. There will be minimal risk involved to you and there may be no direct benefit from participating. However, if you experience any emotional effect from the study Kelly would provide you with a list of community resources that may be beneficial to you. If you agree to participate, I would give Kelly Moore your address so that she could send you the questionnaires in the mail. Are you interested?"

If the participant agrees to participate: Colleen would inform the woman, "Kelly will be sending you the information to you and you should receive it in the next few days."

If the participant declines to participate: Colleen would inform the woman: "Thank you for your time and consideration.

APPENDIX D

Cover Letter

Dear Research Participant,

I am a nurse conducting a study as a part of my educational requirements for completion of a masters degree in nursing at Grand Valley State University. The purpose of my research is to look at the frequency of breast self-exam (BSE) and thoughts regarding breast health in women who are considered high risk for developing breast cancer. Although there is no direct benefit from participating in this study, your involvement will help nurses and other health care professionals learn more about women and how often they perform BSE, and to understand their feelings about breast health.

A few days ago you received a postcard from Colleen Schwartz, the study coordinator from the Breast cancer Prevention Trial, informing you that information about my study would be coming in the mail to you.

The responses on the questionnaires are confidential and do not require you to put your name on them or identify yourself in any way. A self-addressed, postage-paid envelope has been provided for your convenience to return the completed questionnaires. I hope you will take a few minutes to complete and return the questionnaires to me. It should only take about 15 minutes of you time. Please return the questionnaire to me within two weeks.

If you have any concerns regarding the research or the questionnaires, I will be happy to answer your questions. I can be reached at 616-373-0126, Monday-Friday from 8 am - 5 pm. If I am unavailable at the time you call, please leave a message and I will be happy to return your call. You may also contact Dr. Paul Huizenga, Chairperson of Human Subjects Review at Grand Valley State University at 616-895-2472 with your questions.

Your participation in this study is entirely voluntary and in no way should you feel obligated to participate. Your decision to not wanting to participant will not affect the care you receive through the Breast Cancer Prevention Trial (BCPT). There are minimal risks associated with this study. If you should experience any emotional effects from your participation, I will provide you with a list of community resources that may be beneficial.

If you would like a copy of the summary of the results of this study, please return the enclosed the yellow post card and mail it separate from the questionnaires. This will ensure confidentiality of your answers. Thank you for your time.

Sincerely,
Kelly Moore RN, BSN, OCN

APPENDIX E

DEMOGRAPHIC QUESTIONNAIRE

The following information will help us to understand your background and how it may relate to your current health. All information in this study that you provide will remain confidential

I. How old are you?_____(in years)

II. What category below best describes your racial/ethnic background? (Mark only one)
1.___White (not of Hispanic origin)
2.___Hispanic
3.___Black
4.___Native American (American Indian, Eskimo)
5.___Filipino
6.___Asian/Pacific Islander
7.___Other (please specify_____)

III. How many of years of school have you completed? _____(in years)

IV. What is your current marital status? (Mark only one)
1.___Never married
2.___Presently married
3.___Living in marriage-like relationship
4.___Divorced or separated
5.___Widowed

V. What is your current employment status? (Mark only one)
1.___Unemployed
2.___retired
3.___full-time homemaker
4.___Full-time or Part-time Student
5.___Employed Full-time
6.___Employed Part-time
7.___On Temporary Medical Leave
8.___Permanently Disabled

VI. Mark the category that best represents your family's total income before taxes each year. (Mark only one)
    1.____under 10,000
    2.____10,000-19,999
    3.____20,000-29,999
    4.____30,000-39,999
    5.____40,000-49,999
    6.____50,000-59,999
    7.____over 60,000

VII. What category below best describes your usual method of payment for your medical care? (Mark only one)
    1.____Private Insurance
    2.____Medicare
    3.____Medicare and Private Insurance
    4.____Medicaid and Medicare
    5.____Military or Veterans Administration-Sponsored
    6.____No Insurance (self-pay)
    7.____No Insurance (No means of payment)

VIII. How often do you do breast self-examination?
(Select an answer that best describes your current practice)
    1.____never
    2.____1 or 2 times a year
    3.____every 3 to 4 months
    4.____every other month
    5.____every month
    6.____more than once a month

IX. Who taught you breast self-examination?
    1.____doctor
    2.____nurse
    3.____other (please specify_____)

X. Which treatment were you taking during the Breast Cancer Prevention Trial?
    1.____Tamoxifen
    2.____Placebo
    3.____Do not remember/Do not know

HEALTH BELIEF MODEL SCALES FOR MEASURING BELIEFS RELATED TO BREAST CANCER

I am interested in finding out about how you feel about breast self-examination, breast cancer, and other breast health related issues.

All scale items are measured on a 5 point Likert scale with the following coding:
1. Strongly disagree   2. Disagree   3. Neutral   4. Agree   5. Strongly agree

Please indicate your response to each question by **circling** the number that best represents your feelings.

1. It is extremely likely I will get breast cancer in the future.   1 2 3 4 5

2. I feel it is important to improve my health   1 2 3 4 5

3. When I do breast self-examination I feel good about myself.   1 2 3 4 5

4. I feel funny doing breast self-examination.   1 2 3 4 5

5. I know how to perform breast self-examination.   1 2 3 4 5

6. I feel I will get breast cancer in the future.   1 2 3 4 5

7. I am afraid to think about breast caner.   1 2 3 4 5

8. I eat well balanced meals.   1 2 3 4 5

9. Doing breast self-examination during the next year will make me worry about breast cancer.   1 2 3 4 5

10. I am confident I can perform breast self-examination correctly.   1 2 3 4 5

11. I am able to find a breast lump which is the size of a pea.   1 2 3 4 5

12. I want to discover health problems early.   1 2 3 4 5

13. There is a good possibility I will get breast cancer in the next   1 2 3 4 5
    10 years.

14. Problems I would experience with breast cancer would last a   1 2 3 4 5
    long time.

15. Completing breast self-examination each month will allow me   1 2 3 4 5
    to find lumps early.

16. Breast self-examination will be embarrassing to me.   1 2 3 4 5

17. I exercise at least 3 times a week.   1 2 3 4 5

18. I am sure of the steps to follow for doing breast self-examination.   1 2 3 4 5

19. My chances of getting breast cancer are great.   1 2 3 4 5

20. Breast cancer would threaten a relationship with my boyfriend,   1 2 3 4 5
    husband, or partner.

21. If I complete breast self-examination monthly during the next   1 2 3 4 5
    year I will decrease my chance of dying from breast cancer.

22. Doing breast self-examination will take too much time.   1 2 3 4 5

23. I am able to find a breast lump if I practice breast self-examination.   1 2 3 4 5

24. I am able to identify normal and abnormal breast tissue when I do   1 2 3 4 5
    breast self-examination.

25. I am more likely than the average woman to get breast cancer.   1 2 3 4 5

26. If I had breast cancer my whole world would change.   1 2 3 4 5

27. If I complete breast self-examination monthly I will decrease   1 2 3 4 5
    my chances of requiring radical or disfiguring surgery if breast
    cancer occurs.

28. Doing breast self-examination will be unpleasant.   1 2 3 4 5

29. I am able to find a breast lump which is the size of a quarter.   1 2 3 4 5

30. When looking in the mirror, I can recognize abnormal changes in my breast.   1 2 3 4 5

31. Maintaining good health is extremely important to me.   1 2 3 4 5

32. When I think about breast cancer, my heart beats faster.   1 2 3 4 5

33. When I complete monthly breast self-examination I don't worry as much about breast cancer.   1 2 3 4 5

34. If I were to develop breast cancer I would be able to find a lump by performing breast self-examination.   1 2 3 4 5

35. I have regular health check-ups even when I am not sick.   1 2 3 4 5

36. The thought of breast cancer scares me.   1 2 3 4 5

37. If I developed breast cancer, I would not live longer than 5 years.   1 2 3 4 5

38. If I complete monthly breast self-examination it will help me to find a lump which might be cancer before it detected by a doctor or nurse.   1 2 3 4 5

39. I don't have enough privacy to do breast self-examination.   1 2 3 4 5

40. I am able to find a breast lump which is the size of a dime.   1 2 3 4 5

41. I can use the correct part of my fingers when I examine my breasts   1 2 3 4 5

42. I search for new information to improve my health.   1 2 3 4 5

APPENDIX G

POSTCARD

Back of Card

Yes, I would like a copy of the summary of the results.

Front of Card

Participant's Name
And address

Kelly J. Moore, RN, BSN, OCN
Address

APPENDIX H

Reminder Letter

Dear Research Participant,

Approximately 2 weeks ago I sent you questionnaires asking for your assistance in a study I am conducting as part of my educational requirements for completion of a masters degree in nursing at Grand Valley State University. I had asked that you complete the questionnaires within 2 weeks and return the information to me in a postage-paid envelope. I am sending everyone a second set of questionnaires in case you were interested in the study but may have misplaced your first set. I apologize if the items have become crossed in the mail. If you are interested in assisting me and my research please read the letter and follow the directions.

The purpose of my research is to look at the frequency of breast self-examination and your thoughts regarding breast health in women who are considered high risk for developing breast cancer. Although there is no direct benefit from participating in this study, your involvement will help nurses and other health care professional learn more about women and how often they perform BSE, and to understand their feeling about breast health.

The responses on the questionnaires are confidential and do not require you to put your name on them or identify yourself in any way. A self-addressed, postage-paid envelope has been provided for your convenience to return the completed questionnaires. I hope you will take a few minutes to complete and return the questionnaires to me. It should only take about 15 minutes of you time. Please return the questionnaire to me within two weeks.

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If you would like a copy of the summary of the results of this study, please return the

enclosed the yellow post card and mail it separate from the questionnaires. This will ensure confidentiality of your answers. Thank you for your time.
Sincerely,

Kelly Moore RN, BSN, OCN

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