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Attitudes of Women Toward Film Screen Mammography:

Are there Differences Among Ethnic Women?

by

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THESIS

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in the

GRADUATE DIVISION

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Acknowledgments

I wish to dedicate this thesis to : 1) the members of my thesis committee; Christine Miaskowski, Sue Dibble, and Julienne Lipson. Chris was not only the chair of my thesis committee but also my advisor for my tenure at the University of California at San Francisco. I thank Chris for her seemingly never ending supply of patience, knowledge, and support in this endeavor. I wish to thank Sue for her knowledge about statistics and her compassion during my years at UCSF. I wish to thank Julienne for exposing me to different cultures and demonstrating how ethnicity can affect a person's attitude and health care behaviors; 2) the members of my family who have encouraged me and given hope when I needed it most, especially my fiancé, Pete Vanoni, who gave me courage and support to continue even when I did not want to; and 3) my friends and colleagues who have given me support, especially Luanne Linard Palmer who so strongly urged and supported my decision to apply to graduate school.

Abstract

The purposes of this study were: 1) to determine if there were differences in attitudes toward mammography between women born in the United States and women not born in the United States and 2) to determine if there were differences in attitudes among five ethnic groups of women, (i.e., Asian, Black, Hispanic, Pacific Islander, and White women) who had undergone film screen mammography. This study was part of a larger descriptive study and was composed of a convenience sample of 624 women. For this part of the study, the women were asked to respond to 16 statements about their attitudes toward mammography and indicate their level of agreement or disagreement with the statements using a five point Likert type scale ranging from one (strongly agree) to five (strongly disagree).

The results showed differences in attitudes between women born in the United States and women not born in the United States around the issues of fear of pain, fear of radiation, fear of developing breast cancer, fear of embarrassment, and other general concerns about breast cancer. The women not born in the United States reported significantly higher levels of fears and general concerns than the women born in the United States. There were also statistically significant differences in attitudes toward mammography among the different ethnic groups of women.

Further research concerning how ethnicity effects a woman's attitude toward mammography is warranted. Specifically more research is needed that involves non-White populations such as Asian and Pacific Islander women.

Christine Kucelawski, RN, PhD, FAAN

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Chapter One : Introduction To The Problem

Breast cancer is the leading cause of death in women ages 15 to 54 and the second leading cause of death in women ages 55 to 74. It has been increasing at a rate of 1% per year since 1975 (Marchant, 1993). Although breast cancer can not be prevented, if detected early enough it may be cured.

The American Cancer Society (ACS) recommends specific behaviors that women can do to promote early detection. These behaviors include self breast exam (SBE), clinical breast exam (CBE), and mammography. The ACS encourages women to follow specific guidelines for performing each of these behaviors. The ACS guidelines recommend that: (1) every woman should perform monthly SBE, starting at age 20; (2) every woman between the ages of 30 and 39 should have a CBE every 3 years and annually after age 40; and (3) every woman should have a baseline mammogram at age 35, a mammogram every two years between 40 and 49 years of age, and annually thereafter (Bastani, Marcus, & Brown, 1991). All three behaviors are part of a complete early detection program and none of the three should be devalued in its importance. However, this study focused on one component of the triad, namely, mammography.

A mammogram can detect lesions years before they are palpable using either SBE or CBE (Bassett , Liu, Giulano, & Gold, 1991). Lesions are found earlier when the cancer is still considered 'curable' and the disease is at an earlier stage. In a descriptive study involving older women (>65 years), Kopans (1992) reported that mammography detected 87% of the lesions in asymptomatic women. Lerman and colleagues (Lerman, Rimer, Trock, Balshem, & Engstrom, 1990) stated that 90% of breast cancer can be cured if the tumor is found at stage 1 with no lymphatic involvement.

Evidence suggests that the use of mammography as a screening device

can decrease mortality as much as 30% (Constanza, D'Orsi, Greene, Gaw, Karellas, & Zapka, 1991) or even up to 40% in women over 50 years of age (Lerman et al., 1990). Yet the majority of women in the United States do not follow the ACS guidelines concerning mammography. This is particularly true for women whose primary language is not English (Burr & Mutchler, 1993; Jenkins, McPhee, Bird, & Bonilla, 1990).

Significance

As well as problems with language, numerous barriers to obtaining mammograms have been described including cost of the exam, fear of radiation, fear of pain, fear of results, embarrassment, and lack of physician referral (Caplan, Wells, & Haynes, 1992; Lantz, Remington, & Cautley, 1991; Mandelblatt, 1992; Wolosin, 1989). A limited number of studies have compared differences in barriers among various ethnic groups. While some researchers have found similarities in barriers across distinct ethnic groups (Stein & Fox, 1990), others have documented differences (Swanson, Satariano, Satariano, & Threatt, 1990).

Women's attitudes toward mammography have been evaluated prior to and after participating in mammography screening. Various ethnic groups such as Black, Asian, Pacific Islander, Hispanic, and White women have been included in the studies. Some of the studies have been descriptive in nature (Jenkins et al., 1990; Jepson, Kessler, Portnoy, & Gibbs, 1991), while others have compared the differences among two or three ethnic groups (Stein, Fox, Murata, & Morisky, 1992). A comparison of the attitudes of women from the five ethnic groups mentioned above toward mammography has not been performed.

With the increasing number of immigrants coming to the United States, it is very important to determine if there are ethnic differences in women's

attitudes toward having a mammogram. These data might allow for more targeted educational interventions for women from different ethnic backgrounds.

Purposes of the Study

The purposes of this study were:

1. To determine if there are differences in attitudes toward mammography between women who were born in the United States and women who were not born in the United States.
2. To determine if there are differences in attitudes toward mammography among five different ethnic groups of women (i.e., Black, Asian, Pacific Islander, Hispanic, and White) who have undergone screening mammography.

Assumptions

The underlying assumptions in this study were as follows:

1. Attitudes are influenced by a person's culture or ethnicity.
2. Persons from the same cultural or ethnic background share similar attitudes.

Definitions of Terms

The following definitions of terms were used in this study:

1. Screening mammography - an x-ray of the breast done to screen asymptomatic women for breast cancer.
2. Attitudes toward mammography - the self-reported opinions of women about various aspects of the mammography procedure measured by the Attitudes Toward Mammography Questionnaire.
3. Ethnic group - self-reported sociocultural group (i.e., Black, Asian, Pacific Islander, Hispanic, or White) with whom the individual shares particular customs, beliefs, social behaviors, and traits.

Chapter Two: Literature Review

Factors that may influence a woman's attitude toward having a mammogram have been reported in numerous studies (Bastani et al, 1991; Bryant & Mah, 1992; Caplan et al, 1992; Frazier & Cummings, 1990; Glockner, Holden, Hilton, & Norcross, 1992; Gram & Slenker, 1992; Lerman et al., 1990; Longman, Saint-Germaine, & Modiano, 1992; Lovejoy, Jenkins, Wu, Shankland, & Wilson, 1989; Mandelblatt, 1992; Mo, 1992). These factors include cost of the mammogram, fear of radiation, fear of discomfort or pain during the procedure, fear of breast cancer, and embarrassment. Other factors including level of education, language barriers, and general knowledge about cancer and knowledge about breast cancer in particular also may influence a woman's decision to have a mammogram.

While several studies have begun to compare differences in deterrents based on ethnic group (Bastani et al., 1991; Caplan et al., 1992; Jepson et al., 1991; Schechter, Vanchieri, & Crofton, 1990), the data on perceived deterrents by ethnicity remain inconclusive. This literature review summarizes the findings from a variety of studies that have evaluated different deterrents to having a mammogram. The review is organized around specific deterrents or barriers, namely concerns about cost, fear of pain, fear of radiation, fear of developing breast cancer, embarrassment, and other general concerns.

Concerns About Cost

Contrary to what some people might believe, only one study has evaluated the influence of cost as a deterrent to having a screening mammogram. Caplan and colleagues (1992) found that cost was not a significant factor influencing elderly minority women's decision not to have a mammogram. Participants (n=44,123) were separated into one of three self-reported ethnic groups (i.e., Hispanic, non-Hispanic White, and non-Hispanic

Black). Only 5.3% of the Hispanic women (n=1708), 5.7% of the non-Hispanic White women (n=9646), and 1.3% of the non-Hispanic Black women (n=3896) stated that cost was a factor in their decision not to have a mammogram. No explanation is offered as to why Hispanic and non-Hispanic White women would be more affected by cost than non-Hispanic Black women.

Fear Of Pain During Mammography

There is little controversy that mammography causes some degree of discomfort (Eklund, 1991; Jackson, Lex, & Smith, 1988; Nielsen, Miaskowski, & Dibble, 1993; Nielsen, Miaskowski, Dibble, Beber, Altman, & McCoy, 1991). However, the amount or level of discomfort reported by women is not consistent across studies. In addition, most studies suggest that mammography related pain is not severe enough to prevent women from having another mammogram.

In one study (Stomper et al., 1988), asymptomatic women (n=1847) were questioned about their experience after undergoing screening mammograms. Eleven percent of the women stated that they had experienced either moderate discomfort, severe discomfort, or moderate pain. Yet none of the women had such severe pain that they would not undergo another mammogram. In a British study (Brew, Billings, & Chisholm, 1989), only 4% of 203 women had significant pain and only one woman (0.5%) stated she would refuse another mammogram. Gram and Slenker (1992) noted that when women were asked to recall the amount of discomfort they had felt during mammography, the women who had positive or suspicious mammograms recalled a higher level of discomfort.

Although most women do not experience a level of discomfort or pain that would prevent future mammograms, some women do state that the level of discomfort was more than they had expected. In one study (Wolosin, 1989),

15% of the women surveyed (n= 985) stated that the pain was more than they had expected. Eardley and Elkind's study (1991) found similar results. Responding to a mailed questionnaire women received after undergoing a mammogram (n=312), 15% of the sample reported that the discomfort was more than they had expected. On the other hand, Rutter and colleagues (Rutter, Calnan, Vaile, Field, & Wade, 1992) questioned women (n=593) before and immediately after their mammograms, and found that almost two thirds (402/593) of the women stated that the procedure caused less discomfort than had been anticipated.

Stein and Fox (1990) compared the level of discomfort reported by Hispanic women who spoke primarily English (n=70) to Hispanic women who spoke primarily Spanish (n=80). No explanation was given by the author as to why, the English speaking Hispanic women complained of more pain (5.8% versus 1.3%).

In conclusion, although the majority of women do report some measure of discomfort during the mammography procedure, very few women report such discomfort or pain that they would refuse a future mammogram.

Fear Of Radiation During Mammography

Although there is much anecdotal information about women's fear of radiation, research does not appear to confirm this as a major deterrent to having a mammogram. Bryant and Mah (1992) compared urban and rural women's attitudes toward mammography (n=1350) and found that neither group was concerned about the amount of radiation received during the procedure.

In contrast, the studies that have compared women of different ethnic backgrounds and their fear of radiation associated with mammography have produced confounding results. Stein and Fox's work (1990), comparing

Spanish speaking Hispanic women to English speaking Hispanic women, found that over one fifth (21.4%) of the English speaking Hispanic women believed that the radiation they received during a mammogram was harmful while only 7.5% of the Spanish speaking Hispanic women reported a fear of radiation. Trying to clarify their results, Stein and colleagues (1992) surveyed women who had undergone mammography (n=1057) about various attitudes toward mammography and breast cancer. Women were categorized by ethnic backgrounds (i.e., Black, Hispanic, White, and Other). Fear of radiation was not found to be a significant deterrent to mammography screening in any ethnic group.

In summary, in none of the studies done to date have women reported that their fear of radiation was so intense that they would refuse to undergo future mammograms.

Fear Of Developing Breast Cancer

Many women have mammograms to reassure themselves that there is no abnormality in their breasts. In one study (Wolosin, 1989), women (n=985) were classified by whether or not they had had a previous mammogram. In both groups, even though only 16% of the women said that they were worried about their breasts, over 80% of the participants stated that they had undergone the mammogram to be reassured. In another study (Frazier & Cummings, 1990), women (n=135) participating in an ACS sponsored breast screening project were interviewed about the experience. Over half (54.1%) of the women cited reassurance as a reason for their participation. However, neither study evaluated the women's responses for ethnic differences.

Some women undergo mammography because they believe they are at higher risk for developing breast cancer than other women. In Stein et al.'s study (1992), 14% of the women questioned (n=985) believed themselves to be

more likely to develop breast cancer than other women. More women having repeat mammograms believed they were more likely to get breast cancer than those women having their first mammogram (20% and 10%, respectively). Bryant and Mah (1990) compared urban and rural women and found that 30% of the women, in both groups, felt that they were more likely to get breast cancer than other women in the general population.

Several studies (Bastani et al., 1991; Caplan et al., 1992; Glockner et al., 1992; Jenkins et al., 1990; Longman et al., 1992; Lovejoy et al., 1989; Mandelblatt, 1992; Mo, 1992) have evaluated ethnic differences related to fears of breast cancer. Longman and colleagues (1992) interviewed older Hispanic women (n=150) about their perceived likelihood of getting breast cancer. Only 5% of the women thought they had a higher than average likelihood of developing the disease. Mo (1992) found that Chinese-American women believed that their risk for breast cancer declined after their childbearing years, i.e., that the likelihood of developing breast cancer decreased with age. Lovejoy and associates (1989) noted the same finding when trying to establish a program to increase the participation of Chinese-American women in their own health care. In another study (Schechter et al., 1990), Black and White women were compared in their attitudes toward mammography. Even though the majority of the participants were over 50 years of age, the women of both ethnic groups failed to recognize that increasing age was a risk factor for developing breast cancer. In general, most women in the study did not believe themselves to be at greater risk for developing breast cancer unless there was a family history of breast cancer or the woman had symptoms.

Embarrassment During Mammography

Embarrassment during a breast exam or mammogram appears to be a deterrent for some women. In a study done in New Zealand (Richardson, 1990), 31% of the women (n=290) surveyed listed embarrassment as a reason for not having a mammogram. In another study (Glockner et al., 1992), 20% of the sample (n=381) stated embarrassment was one of the reasons for not having a mammogram.

Data suggest that certain ethnic groups appear to be more embarrassed than other ethnic groups during a mammogram. Chinese-American women appear reluctant not only to touch themselves but also to have other people touch their breasts, especially if the stranger is a male Caucasian physician (Lovejoy et al., 1989). Mo (1992) noted the same attitude in her observations of Chinese-American women. Vietnamese immigrants (n=799) appear to have a similar attitude (Jenkins et al., 1990).

In interviewing Hispanic women, Stein and Fox (1990) noted some differences in the level of embarrassment felt by Hispanic women depending on whether they spoke English or Spanish as their primary language (n=70 and n=80, respectively). Of the women who spoke Spanish as their primary language, 31.2% declared they had no embarrassment. In contrast, in the English speaking group slightly less than two-thirds (62.9%) of the women stated that they were not embarrassed during the mammogram. A study done in a Hispanic community in Arizona (Longman et al., 1992), demonstrated that out of 150 women 47% were embarrassed about having their breasts examined by a physician.

Taken together these studies suggest that many women do feel some level of embarrassment during a mammogram. This particular attitude is common among many different ethnic groups including Asian, Hispanic, and White

women. It is important to know that feeling embarrassed during mammography is a very real concern for some women and can prevent their participation in future mammograms (Glockner et al., 1992). Health care providers need to be aware of the issue of embarrassment and promote education to decrease this anxiety. However, no studies have compared differences in embarrassment about mammography in five different ethnic groups.

General Concerns About Mammography

Several other factors have been reported to influence women's attitudes toward mammography. One factor influencing women's attitudes is the media. In one study (Wolosin, 1989), 20% of the women (n=985) having their first mammogram stated they had been influenced by the media. Only 12% of the women having a repeat mammogram stated that this was the case. However, Wolosin did not clarify whether the media influence had encouraged or inhibited the women from having their mammograms. In another study (Glockner et al., 1992), women with a higher educational level and higher socioeconomic status (SES) seemed to be less influenced by the media than women with less education or lower SES. Again, no mention is made of whether this lack of influence had any effect on a woman's participation in a breast cancer screening program.

Studies that have differentiated between ethnic groups demonstrate interesting findings regarding women's general concerns about breast cancer. Fox and colleagues (Fox, Klos, Worthen, Pennington, Bassett, & Gold, 1990) concluded that White women appear to have more knowledge about mammography than Hispanic women. However, they did not report how the women obtained their increased knowledge or if increased knowledge changed their behavior and attitudes toward mammography. In another

study, Jepson et al. (1990) compared Black and White women (n=198) regarding their cancer knowledge and prevention behaviors. The results showed for that particular group of women that level of education rather than race was a significant predictor of cancer prevention behavior.

Summary

As stated previously, the majority of women in the United States do not follow the ACS screening guidelines for mammography. Some of the research on the deterrents to mammography is described above. Most of the research has evaluated deterrents from a White woman's perspective. For women of other ethnic groups (e.g., Black, Asian, Pacific Islander, and Hispanic), these barriers may or may not be applicable. A health care provider needs to acknowledge a woman's ethnic background and be aware of its possible influence on her attitude toward mammography. If a health care provider ignores ethnic differences and cultural influences, then women may not have mammograms. Without mammograms as part of an early detection program, women of all ethnic groups may not detect their breast lesions early enough and they may die.

This study was undertaken to investigate the attitudes toward mammography of women from different ethnic groups after they had undergone a screening mammogram and to see if any differences in attitudes could be attributed to their different cultures and ethnic backgrounds. Any barriers that the women may have encountered before deciding whether to have a mammogram or not were not studied.

To date, there has been no study comparing the above listed five ethnic groups of women and their attitudes toward mammography. The results of this study may provide useful information in designing educational interventions for these five ethnic groups of women that may result in

Chapter Three: Methodology

Research Design

This study was part of a larger descriptive study that investigated the sensations of pain and discomfort associated with having a mammogram. A comparative approach was used to examine the differences of attitudes toward mammography among women of five different ethnic groups (i.e., Black, Asian, Pacific Islander, Hispanic, and White). In addition, an approach was used to determine the differences in attitudes toward mammography between women born in the United States and women not born in the United States.

Sample and Setting

A convenience sample of 624 women was recruited from 16 mammography screening facilities throughout the state of California. Criteria for sample selection included that the participants: 1) were able to read and write English; 2) agreed to participate and were able to give informed consent; and 3) were having a film screen mammogram.

The proposal was approved by the Committee on Research at San Francisco State University and by each of the Human Subjects Committees at the individual mammography screening sites. Mammograms were conducted in either fully equipped mammography vans or screening facilities. The mammograms were performed by licensed radiologic technologists. In order to obtain a high quality mammogram, adequate compression was applied to the breast, and medial-lateral and cephalo-caudal views were obtained. However, if the compression produced pain, the degree of compression was reduced to a level which was considered "tolerable" by the women.

Instruments

The instruments used in this study included: a Demographic Questionnaire and an Attitude Toward Mammography Scale.

1. Demographic Questionnaire - (see Appendix A)

a) Description - the Demographic Questionnaire is a 29 item self-report questionnaire recording age, marital status, number of years of education, ethnic group, generational status of the woman and her family, employment status, yearly family income, caffeine intake, pregnancy history, breast health, family history of breast cancer, menstrual history, mammogram history, and a descriptive rating scale for anxiety.

b) Scoring - data were coded and descriptive statistics generated.

c) Reliability and Validity - the Demographic Questionnaire was developed by a panel of experts in oncology nursing and has been used in previous studies by these investigators.

2. Attitude Toward Mammography Scale - (see Appendix B)

a) Description - the Attitude Toward Mammography Scale is a 16 item self-report questionnaire adapted from Wolosin's instrument (1989). Wolosin's 11 item self-administered survey questioned women on their attitudes about mammography and breast cancer. The Attitude Toward Mammography Scale elicits women's attitudes and beliefs about various aspects of the mammography procedure and about breast cancer. Women's attitudes about fear of embarrassment during a breast exam by a physician and/or during a mammogram; fear of pain during a mammogram; fear of the amount of radiation received from a mammogram; concerns about breast health; fear of the results of a mammogram; and general concerns such as the influence of the media on their choice of having a mammogram are evaluated

using a Likert-type scale. Respondents are asked to indicate their level of agreement or disagreement to a written statement using a five point scale from one (Strongly Agree) to five (Strongly Disagree).

b) Scoring - data were coded and descriptive statistics generated

c) Reliability and Validity - the Attitude Toward Mammography Scale was developed by the primary investigators of this study by adapting Wolosin's instrument. This is the first use of the Attitude Toward Mammography Scale. It has face validity.

Data Collection Procedures

Women were approached by one of the investigators at the time of arrival for the mammography appointment. After obtaining informed consent, women were asked to complete Part I of the questionnaire. Part I contained the demographic information questions and descriptive rating and visual analog scales for anxiety. Immediately following the procedure, the women were asked to complete Part II of the questionnaire. Part II contained visual analog scales for pain and discomfort, the McGill Pain Rating Index, descriptive rating scales for pain and discomfort, the Attitude Toward Mammography Scale, and two questions asking when the woman would return to have another mammogram.

Data Analysis and Interpretation

Data were analyzed using the Crunch® Statistical Software Package. Descriptive statistics were generated from the study data. In order to determine if there were differences in attitudes toward mammography between women born in the United States and women not born in the United States, Student's t-tests were performed on the responses to each of the questions on the Attitudes Toward Mammography Scale. In order to determine if there were differences in attitudes toward mammography among

the five ethnic groups of women, a one way analysis of variance (ANOVA) was performed for each of the items on the Attitudes Toward Mammography Survey. Post-hoc contrasts using a Scheffé procedure were done to determine differences between the groups.

The assumptions underlying each technique were also examined for violations. Interpretations of the findings were accomplished by carefully reviewing the data in light of previous research findings and clinical experience.

Chapter Four: Results

1. Study Sample Demographics - Six hundred and twenty four women participated in this study and completed the Attitudes Toward Mammography Questionnaire. Out of the 624 women, 127 (21%) were Black, 58 (9%) were Asian, 118 (19%) were Pacific Islanders, 61 (10%) were Hispanic, and 233 (38)% were White. Other ethnic groups who responded to the survey included American Indian (n=3, 0.5%), women of mixed ethnic background (n=14, 1%), and women who did not indicate their ethnic origin (n=11, 1%). Because the numbers of women in these last ethnic groups were so small, they were not included in this analysis.

The following demographics refer to the women who participated in this study and are summarized in Table One.

a. Age - The mean age of the entire sample was 53 years (S.D. = 12.6 years). The youngest woman who participated was 26 years old and the oldest woman was 85. An one-way ANOVA revealed that there was a statistically significant difference ($F(4, 577) = 5.6, p = 0.0002$) among the ages of the five ethnic groups of women with the Hispanic women being the youngest (48.6 ± 12.5) and the Pacific Islander women being the oldest (56.6 ± 11.6).

b. Education - the mean years of education for the entire sample was 13.9 (S.D.= 3.4), the equivalent of almost two years of college. A one-way ANOVA demonstrated a statistically significant difference ($F(4, 591) = 21.8, p \leq 0.001$) among the years of education completed by the women in the five different ethnic groups. The White women had completed the largest number of years of education (15.3 ± 3.0) and the Hispanic women had completed the least number of years of education (12.1 ± 4.1).

c. Mean Family Income - Overall, 43% of the women in this study had a

yearly family income of less than or equal to \$20,000. Eleven percent had a yearly family income of greater than \$70,000. A Chi-square analysis, summarized in Table 2, revealed a statistically significant difference ($X^2=73.52$, $p \leq 0.001$) among the responses of the five ethnic groups when the yearly family income reports were divided into two groups (namely, yearly family income \leq \$30,000 and yearly family income \geq \$30,001). Analyzing the five ethnic groups for yearly family income \leq \$30,000, the Hispanic women reported the lowest yearly family income. The Asian women reported the highest yearly family income. Further post-hoc analyses demonstrated statistically significant differences between the yearly family incomes of the Asian women and the Hispanic women ($p \leq 0.001$), and the yearly family income of the Asian women and the Black women ($p \leq 0.001$). There were no statistically significant differences in yearly family income between the Asian women and the White women, the Black women and the Hispanic women, or the Black women and the Pacific Islander women.

d. Birthplace - In the total sample, the majority of all the women (75%) were born in the United States. A Chi-square analysis revealed a statistically significant difference ($X^2=168.4$, $p \leq 0.001$) among the responses of the five ethnic groups of women. The ethnic group with the largest percentage of women born in the United States was the Black women (97%) and the ethnic group with the smallest percentage of women born in the United States was the Pacific Islander women (6%). There was a statistically significant difference between the percentage of Pacific Islander women and the percentage of Black women born in the United States ($p \leq 0.001$). There was also a statistically significant difference between the percentage of Black women and the percentage of White women ($p=0.004$), as well as between the percentage of White women and the percentage of Hispanic women ($p \leq 0.001$)

and between the percentage of Hispanic women and the percentage of Pacific Islander women ($p= 0.000$) born in the United States. There was no statistically significant difference between the percentage of Asian women and the percentage of Hispanic women born in the United States.

e. Family History of Breast Cancer - The majority of the women (78%) in the sample did not report a family history of breast cancer. A Chi-square analysis revealed a statistically significant difference ($X^2= 20.35$, $p= 0.001$) among the responses of the five ethnic groups of women. A family history of breast cancer was most frequently reported by the White women (30%) and least frequently reported by the Asian women (9%). There was a statistically significant difference between the percentage of Asian women and the percentage of White women ($p= 0.002$) who reported a family history of breast cancer. There was no other statistically significant difference between the remaining groups regarding a reported family history of breast cancer.

f. Previous Experience with Mammography - The majority of the women in this study (79%) reported having had a previous mammogram. A Chi-square analysis revealed a statistically significant difference ($X^2= 14.52$, $p= 0.006$) among the responses of the five ethnic groups of women. The largest percentage of women who reported having had a previous mammogram were the White women (87%) while the Asian women reported the lowest percentage of women having had a previous mammogram (68%). There were statistically significant differences between the percentage of Black women and the percentage of White women ($p= 0.02$), between the percentage of Asian women and the percentage of White women ($p= 0.001$), as well as between the percentage of White women and the percentage of Pacific Islander women ($p= 0.001$) who reported having had a previous mammogram. There were no statistically significant differences between the percentage of

Asian women and the percentage of Black women, between the percentage of White women and the percentage of Hispanic women, or between the percentage of Pacific Islander women and the percentage of Hispanic women who reported having had a previous mammogram.

The women who reported having had a previous mammogram were asked to report how long it had been since their prior test. A little over half of the women (53.8%) stated that they had had a mammogram one year ago while 27% stated that the mammogram had been done within the last two years.

2. Study Purpose 1: To determine if there are differences in attitudes toward mammography between women who were born in the United States and women who were not born in the United States

Independent Student's t-tests were performed on each of the items in the Attitudes Toward Mammography Questionnaire to determine if there were differences in attitudes toward mammography between women who were born in the United States and women who were not born in the United States. A p value of ≤ 0.05 was considered statistically significant.

The women were asked to rate 16 statements about mammography using a five-point Likert scale ranging from strongly agree (1) to strongly disagree (5). The results of the analysis for each of the items are summarized below and in Table 3.

a. I was looking forward to having the mammogram - An independent Student's t- test demonstrated no statistically significant difference between the mean responses of the women born in the United States (2.3 ± 1.5) and the mean responses of the women not born in the United States (2.0 ± 1.3).

b. I feel embarrassed when a doctor examines my breast - An independent Student's t- test revealed a statistically significant difference ($t=2.16, p=0.03$) between the mean responses of the women born in the

United States (4.1 ± 1.3) and the mean responses of the women not born in the United States (3.7 ± 1.6). The women not born in the United States agreed more strongly with the statement that they felt embarrassed by having a physician examine their breasts.

c. I have worried about my breasts lately - An independent Student's t-test demonstrated no statistically significant difference between the mean responses of the women born in the United States (4.0 ± 1.4) and the mean responses of the women not born in the United States (3.7 ± 1.6).

d. The pain I felt during this mammogram will stop me from having another mammogram - An independent Student's t-test revealed a statistically significant difference ($t=3.4$, $p=0.001$) between the mean responses of the women born in the United States (4.8 ± 0.6) and the women not born in the United States (4.4 ± 1.2). The women not born in the United States agreed more strongly with the statement that the pain they felt during the mammogram would stop them from having a future mammogram.

e. I worry about the amount of radiation I get when I have a mammogram - An independent Student's t-test demonstrated no statistically significant difference between the mean responses of the women born in the United States (3.8 ± 1.4) and the mean responses of the women not born in the United States (3.5 ± 1.4).

f. The cost of the mammogram will stop me from having another mammogram - An independent Student's t-test revealed no statistically significant difference ($t=0.5$, $p=0.660$) between the mean responses of the women born in the United States (4.6 ± 0.9) and the women not born in the United States (4.6 ± 0.9).

g. I found the mammogram to be more painful than I imagined - An independent Student's t-test demonstrated a statistically significant

difference ($t=2.5$, $p=0.012$) between the mean responses of the women born in the United States (4.5 ± 1.0) and mean responses of the women not born in the United States (4.1 ± 1.5). The women not born in the United States agreed more strongly with the statement that they found the mammogram to be more painful than they had imagined.

h. Things I heard or read made me afraid to have a mammogram - An independent Student's t-test revealed no statistically difference between the mean responses of the women born in the United States (4.6 ± 1.0) and the mean responses of the women not born in the United States (4.4 ± 1.2)

i. I felt embarrassed during the mammogram - An independent Student's t-test demonstrated no statistically significant difference between the mean responses of the women born in the United States (4.6 ± 1.0) and the mean responses of the women not born in the United States (4.4 ± 1.2).

j. I was dreading the mammogram - An independent Student's t-test revealed a statistically significant difference ($t= 2.3$, $p=0.02$) between the mean responses of the women born in the United States (4.3 ± 1.2) and the mean responses of the women not born in the United States (4.0 ± 1.4). The women not born in the United States agreed more strongly with the statement that they were dreading the mammogram.

k. My fear of radiation will stop me from having another mammogram - An independent Student's t-test demonstrated no statistically significant difference between the mean responses of the women born in the United States (4.7 ± 0.8) and the mean responses of the women not born in the United States (4.5 ± 1.0).

l. I am afraid of what the mammogram will show - An independent Student's t-test revealed a statistically significant difference ($t=2.30$, $p=0.02$) between the mean responses of the women born in the United States ($3.8 \pm$

3.4) and the mean responses of the women not born in the United States (3.4 ± 1.6). The women not born in the United States agreed more strongly with the statement that they were afraid of what the mammogram would show.

m. I believe I am more likely than other women to get breast cancer - An independent Student's t-test revealed no statistically significant difference between the mean responses of the women born in the United States (4.1 ± 1.2) and the mean responses of the women not born in the United States (3.9 ± 1.3).

n. I believe that the amount of radiation I receive when I have a mammogram is harmful to me - An independent Student's t-test demonstrated a statistically significant difference ($t= 3.18, p \leq 0.001$) between the mean responses of the women born in the United States (4.1 ± 1.1) and the mean responses of the women not born in the United States (3.7 ± 1.3). The women not born in the United States agreed more strongly with the statement that they believed that the amount of radiation they receive when having a mammogram was harmful to them.

o. I had this mammogram to make sure nothing is wrong with my breasts - An independent Student's t-test revealed no statistically significant difference between the mean responses of the women born in the United States (1.4 ± 1.1) and the mean responses of the women not born in the United States (1.4 ± 1.1).

p. Having this mammogram made me feel so embarrassed. I will never have another mammogram - An independent Student's t-test demonstrated a statistically significant difference ($t=2.23, p= 0.03$) between the mean responses of the women born in the United States (4.9 ± 0.4) and the mean responses of the women not born in the United States (4.7 ± 0.8). The women not born in the United States agreed more strongly with the statement that

having the mammogram made them feel so embarrassed that they would not have another one.

3. Study Purpose 2: To determine if there are differences in attitudes toward mammography among five different ethnic groups of women (i.e.: Black, Asian, Pacific Islander, Hispanic, and White) who have undergone screening mammography

To determine if there were differences in attitudes toward mammography among five ethnic groups of women, the participants were asked to indicate their level of agreement or disagreement with 16 statements about mammography using a five-point Likert scale. The scale ranged from one, strongly agree, to five, strongly disagree.

A one-way ANOVA was performed on each of the items in the Attitude Toward Mammography Questionnaire. Post-hoc contrasts using a Scheffé procedure were also calculated to determine where the significance between group differences were. A p value of ≤ 0.05 was considered statistically significant. The results are summarized below and in Table 4.

a. I was looking forward to having the mammogram - A one-way ANOVA revealed a statistically significant difference ($F(4, 548) = 14.35, p = 0.000$) among the mean responses of the five ethnic groups of women. The groups that agreed most strongly with the statement were the Black women (1.7 ± 1.2) and the Pacific Islander women (1.7 ± 1.2). The White women agreed less strongly with the statement (2.6 ± 1.5), as did the other two ethnic groups of women.

b. I feel embarrassed when a doctor examines my breasts - A one-way ANOVA demonstrated a statistically significant difference ($F(4, 547) = 7.64, p \leq 0.001$) among the mean responses of the five ethnic groups of women. The groups of women who agreed most strongly with the statement were the

Asian women (3.3 ± 1.6) followed by the Hispanic women (3.4 ± 1.6) The other three groups of women agreed less strongly with the statement.

c. I have been worried about my breasts lately - A one-way ANOVA revealed no statistically significant difference ($F(4, 543) = 1.84, p = 0.12$) among the mean responses of the five ethnic groups of women.

d. The pain I felt during this mammogram will stop me from having another mammogram - A one-way ANOVA demonstrated a statistically significant difference ($F(4, 550) = 3.72, p = 0.005$) among the mean responses of the five ethnic groups of women. The women who agreed more strongly with the statement were the Pacific Islander women (4.5 ± 1.1) and the Asian women (4.5 ± 1.0). The Black women disagreed the most with the statement (4.9 ± 0.6).

e. I worry about the amount of radiation I get when I have a mammogram - A one-way ANOVA revealed a statistically significant differences ($F(4, 554) = 4.76, p = 0.001$) among the mean responses of the five ethnic groups of women. The Hispanic women agreed the most with the statement (3.2 ± 1.6) while the Black women disagreed the most with the statement (4.1 ± 1.3).

f. The cost of the mammogram will stop me from having another mammogram- A one-way ANOVA demonstrated no statistically significant difference ($F(4, 539) = 1.66, p = 0.156$) among the mean responses of the five ethnic groups of women.

g. I found the mammogram to be more painful than I imagined - A one-way ANOVA revealed a statistically significant difference ($F(4, 549) = 2.60, p = 0.036$) among the mean responses of the five ethnic groups of women. All of the women disagreed with the statement however, the Asian women (4.2 ± 1.3) and the Pacific Islander women (4.3 ± 1.3) disagreed less strongly with

the statement than did the White women (4.4 ± 1.2) or the Black women (4.7 ± 0.9).

h. Things I heard or read made me afraid to have a mammogram - A one-way ANOVA demonstrated a statistically significant difference ($F(4, 550) = 5.19, p = .001$) among the mean responses of the five ethnic groups of women. Although all the women disagreed with the statement, the two groups of women who agreed the least with the statement were the Hispanic women (4.1 ± 1.4) and the Asian women (4.3 ± 1.1). The White women and the Black women agreed the most with the statement (4.6 ± 0.9 and 4.7 ± 0.8 , respectively).

i. I felt embarrassed during the mammogram - A one-way ANOVA revealed a statistically significant difference ($F(4, 548) = 5.57, p = 0.001$) among the mean responses of the five ethnic groups of women. The Asian women (4.1 ± 1.2) agreed more strongly with the statement while the Black women (4.8 ± 0.8) expressed the most disagreement.

j. I was dreading the mammogram - A one-way ANOVA demonstrated a statistically significant difference ($F(4, 541) = 4.06, p = 0.003$) among the mean responses of the five ethnic groups of women. Although all five groups of women disagreed with the statement, the Asian women (4.0 ± 1.2) and the Hispanic women (4.0 ± 1.3) agreed more strongly with the statement than the White women (4.2 ± 1.3), the Pacific Islander women (4.5 ± 1.0), or the Black women (4.6 ± 1.0).

k. My fear of radiation will stop me from having another mammogram - A one-way ANOVA revealed a statistically significant difference ($F(4, 543) = 3.73, p = 0.005$) among the mean responses of the five ethnic groups of women. Although all five groups of women disagreed with the statement, three groups of women agreed more strongly. They were : the Pacific Islander

women (4.4 ± 1.1), the Hispanic women (4.5 ± 1.0), and the Asian women (4.5 ± 0.8).

l. I am afraid of what the mammogram will show - A one-way ANOVA demonstrated a statistically significant difference ($F(4, 549) = 2.47, p = 0.044$) among the mean responses of the five ethnic groups of women. The Hispanic women agreed more strongly with the statement (3.3 ± 1.6), followed by the Pacific Islander women (3.6 ± 1.6), the Asian women (3.7 ± 1.3), the White women (3.8 ± 1.4), and the Black women (4.0 ± 1.4).

m. I believe I am more likely than other women to get breast cancer - A one-way ANOVA revealed no statistically significant difference ($F(4, 551) = 1.46, p = 0.212$) among the mean responses of the five ethnic groups of women.

n. I believe that the amount of radiation I receive when I have a mammogram is harmful to me - A one-way ANOVA demonstrated a statistically significant difference ($F(4, 548) = 6.54, p = 0.000$) among the mean responses of the five ethnic groups of women. The three groups of women who agreed more strongly with the statement were the Hispanic women (3.4 ± 1.4), the Pacific Islander women (3.8 ± 1.3), and the Asian women (3.9 ± 1.1). The two groups of women who disagreed the most strongly with the statement were the Black women (4.4 ± 0.9) followed by the White women (4.0 ± 1.2).

o. I had this mammogram to make sure that nothing is wrong with my breasts - A one-way ANOVA demonstrated a statistically significant difference ($F(4, 558) = 3.45, p = 0.009$) among the mean responses of the five ethnic groups of women. Although the women all agreed with the statement, the Pacific Islander women (1.2 ± 0.9), the White women (1.3 ± 0.9), and the Hispanic women (1.4 ± 0.9) agreed more strongly than the Asian women (1.4 ± 1.2) or the Black women (1.7 ± 1.5).

p. Having this mammogram made me feel so embarrassed. I will never have another mammogram - A one-way ANOVA revealed a statistically significant difference ($F(4, 553) = 3.01, p = 0.018$) among the mean responses of the five ethnic groups of women. All of the women strongly disagreed with the statement. However, the White women (5.0 ± 0.2) expressed the highest level of disagreement than the other four groups of women.

Chapter V: Discussion

The results of this study indicate that there are differences in attitudes toward mammography between women born in the United States and women not born in the United States. The results also demonstrated that there are differences in attitudes toward mammography among women of five different ethnic groups.

This large scale study (n= 624) of women is the first of its kind to evaluate the attitudes of these five ethnic groups at the time of their screening mammograms. This approach contrasts the method of previous studies (Bastani et al., 1991; Bryant & Mah, 1992; Caplan et al., 1992; Eardley & Elkind, 1991; Jepson et al., 1991; Lantz et al., 1991; Nielsen, 1990; Schecter et al., 1990; Wolosin, 1989) that have been done based on the recall of the experience or through public opinion surveys.

The women who participated in this study reported being well-educated and had almost two years of college education. This finding concurs with data from previous studies (Anda, Sienko, Remington, Gentry, & Marks, 1990; Bastani et al., 1991; Caplan et al., 1992; Longman et al., 1992; Price, Desmond, Slenker, Smith, & Stewart, 1992; Zapka, Hosmer, Constanza, Harris, & Stoddard, 1992) that women who have a mammogram tend to have more education.

For the majority of the women in this study, their yearly family income was low (55% had incomes \leq \$30,000). Yet neither access to mammography screening nor the cost of the mammogram appeared to be an issue for these women. This finding is in concurrence with other literature (Caplan et al., 1992) that states, contrary to popular belief, that cost is not a factor in a woman's decision to have a mammogram. Since other studies suggest that a women's socioeconomic status does effect her decision to have a mammogram

(Coates et al., 1992; Frazier & Cummings, 1990; Glockner et al., 1992; Horton, Romans, & Cruess, 1992; McCoy, Khoury, Hermanns, & Bankston, 1992; Zapka et al., 1992), more research needs to be done in this area to clarify this issue.

Another finding of note was the fact that almost 80% of the women in this study reported having had a previous mammogram. When the data was further analyzed, at least two-thirds of the women in all of the five ethnic groups reported having had a previous mammogram. Several studies have reported that minority women do participate in early cancer screening procedures including mammograms (Mandelblatt, 1992). However, most of the literature suggests that minority women, especially those women from lower socio-economic levels, do not have routine mammograms (Bastani et al., 1991; Caplan et al., 1992; Jenkins et al., 1990; Lovejoy et al., 1989; Mo, 1992; Price et al., 1992).

Over half of the Asian women (52%), the Hispanic women (57%), and almost all of the Pacific Islander women (94%) who participated in this study were not born in the United States. Over four-fifths of the White women (87%) and almost all the Black women (97%) reported being born in the United States.

One of the aims of this study was to determine if there were differences in attitudes toward mammography between women born in the United States and women not born in the United States. There were statistically significant differences in 7 of the 16 attitude statements when the responses of the women born in the United States were compared to the responses of the women not born in the United States.

One question on the survey addressed the issue of cost, namely the statement "The cost of the mammogram will stop me from having another

mammogram". Both the women born in the United States and the women not born in the United States disagreed with this statement. This finding is in agreement with the literature that cost is not a deterrent to mammography (Caplan et al., 1992). However, this finding must be placed in the context that most of the women in this study were having mammograms in low cost screening facilities.

Two questions on the survey addressed the issue of pain, namely: "The pain I felt during this mammogram will stop me from having another mammogram" and "I found the mammogram to be more painful than I imagined". The women not born in the United States agreed more strongly with both of these statements. Controversy exists in the literature (Brew et al., 1989; Eklund, 1991; Jackson et al., 1988; Nielsen et al., 1991 and 1993; Rutter et al., 1992; Stomper et al., 1988) as to the intensity of pain or discomfort women experience during the mammography procedure. As part of this particular study, women also rated the amount of pain and/or discomfort they had experienced during the mammogram. Further data analysis is warranted to determine if a correlation exists between more positive attitude ratings and decreased pain and discomfort ratings in this specific cohort of women.

Three questions on the survey addressed the issue of fear of radiation associated with having a mammogram. For two of the three questions there were no statistically significant differences in the responses between the women born in the United States and the women not born in the United States. Both groups of women had mean responses in the "don't know" to "disagree" range. The third question about radiation, namely, "I believe that the amount of radiation I receive when I have a mammogram is harmful to me", did show a statistically significant difference between the two groups of

women. The women not born in the United States agreed more strongly with this statement. These data suggest that women are uncertain about the amount of radiation they are exposed to during a mammogram and that further education about this issue is warranted.

Four questions on the survey addressed the issue of fear of developing breast cancer. Responses to only one of the four questions demonstrated a statistically significant difference between the women born in the United States and the women not born in the United States, namely, "I am afraid of what the mammogram will show". While the women not born in the United States agreed more with this statement, their mean score (i.e., 3.4) suggests that the women were uncertain about this response and that additional research in this area is warranted.

Three questions on the survey addressed the issue of embarrassment during a mammogram. Responses to two of the three questions revealed statistically significant differences between the women born in the United States and women not born in the United States. Those were "I feel embarrassed when a doctor examines my breast" and "Having this mammogram made me feel so embarrassed, I will never have another mammogram". Most of the respondents in both groups of women tended to disagree with these statements. However, for both of these questions, the women not born in the United States agreed more. One hundred and seventy-six women in this study were either Asian or Pacific Islander, and out of those women, 52% of the Asian women and 94% of the Pacific Islander women were not born in the United States. This finding, that women who were not born in the United States were more embarrassed during their breast exams and their mammograms, may reflect the attitudes of the large number of Asian and Pacific Islander women in this study. These data are in

agreement with previous work (Glockner et al., 1992; Jenkins et al., 1990; Lovejoy et al., 1989; Mo, 1989) demonstrating that these two groups of women report more embarrassment with clinical breast exams.

Three questions on the survey were categorized as addressing women's general concerns about breast cancer and mammography. Responses to only one of the three questions revealed a statistically significant difference. It was the statement "I was dreading the mammogram". The women not born in the United States agreed more with this statement. However, their responses were still largely in the disagree range.

The results of this study suggest that women not born in the United States are more concerned about the issues of embarrassment, fear of pain, and fear of radiation associated with having a mammogram. Although the women in this study had overcome many of the reported barriers to mammography, the women not born in the United States still demonstrated their concerns about these issues by their responses to the items on the Attitude Toward Mammography Questionnaire.

One reason for the differences may be that the women born in the United States have a greater access to and knowledge of breast cancer and early detection methods. This increased knowledge may result in fewer fears and concerns about mammography. Additional research is warranted to determine if educational programs influence women's attitudes toward mammography.

Another analysis was done to determine if there are differences in attitudes toward mammography among five ethnic groups of women (i.e., Black, Asian, Pacific Islander, Hispanic, and White). Differences in responses were found among the five ethnic groups in 13 out of 16 questions on the Attitude Toward Mammography Questionnaire.

There was one question on the survey that addressed the issue of cost. There was no statistically significant difference in the mean responses to the question among the five ethnic groups. Women in all five groups disagreed with the statement. This finding is in agreement with the work by Caplan and colleagues (Caplan et al., 1992) who found that cost was not a significant issue for women undergoing film-screen mammography.

Two questions on the survey addressed the issue of pain associated with mammography. Responses to both of the statements, "The pain I felt during this mammogram will stop me from having another mammogram" and "I found this mammogram to be more painful than I imagined", demonstrated statistically significant differences among the five ethnic groups. The mean responses of all of the women revealed a fairly strong level of disagreement with these statements. However, the Asian and Pacific Islander women expressed the highest level of agreement with both of the statements. Additional analysis of these data are warranted to determine if a correlation exists between actual pain intensity scores reported by the women during the mammogram and their attitudes expressed in the survey responses completed following the mammography procedure.

Three questions addressed the women's fears of radiation during the mammography procedure. Responses to all three statements demonstrated statistically significant differences among all five of the ethnic groups. With two of the statements, "I worry about the amount of radiation I get when I have a mammogram" and "I believe that the amount of radiation I receive when I have a mammogram is harmful to me", the Hispanic women reported higher levels of agreement. The Pacific Islander women expressed the highest level of agreement with the statement "My fear of radiation will stop me from having another mammogram". The responses to all three questions

indicated that the women were uncertain about the amount of radiation exposure they received during the mammogram. Our data suggest that women may not have sufficient knowledge about how much radiation they are exposed to during the procedure. This finding supports previous research (Stein & Fox, 1990) that suggests that fear of radiation is not a major deterrent in a woman's decision to have a mammogram.

Four questions in the survey addressed the issue of the fear of developing breast cancer. Responses to two of the four questions revealed statistically significant differences among the five ethnic groups. With the statement "I am afraid of what the mammogram will show", the Hispanic women agreed more strongly with the statements than the other ethnic groups of women. The Hispanic women also agreed more strongly with the statement "I believe I am more likely than other women to get breast cancer". Additional research is warranted in this area to determine if different ethnic groups have more fears or anxiety about developing breast cancer and what specific concerns might be amenable to nursing interventions.

Three questions on the survey addressed the issue of embarrassment. With all three statements, "I feel embarrassed when a doctor examines my breast", "I felt embarrassed during the mammogram", and "Having this mammogram made me feel so embarrassed, I will never have another mammogram", the Asian women had the highest level of agreement. This finding concurs with previous reports in the literature (Jenkins et al., 1990; Lovejoy et al., 1989; Mo, 1992) that Asian women report a higher level of embarrassment during clinical breast exams and during the mammography procedure. In this particular study, the Hispanic women followed the Asian women in agreement with the statement "I feel embarrassed when a doctor examines my breast". This finding agrees with the literature that suggests

that Hispanic women tend also to report a high level of embarrassment during clinical breast exams (Longman et al., 1992; Stein & Fox, 1990).

Three questions on the survey addressed a woman's general concerns associated with the mammography procedure. Statistically significant differences among the responses of the five ethnic groups of women were found for all three statements. With the statement "I was looking forward to having the mammogram", the Black women and the Pacific Islander women expressed the highest level of agreement while the White women expressed the lowest level of agreement. With both of the statements "Things I heard or read made me afraid to have a mammogram" and "I was dreading the mammogram", the Black women expressed the most disagreement. The finding that Black women, when compared to other ethnic groups of women, appear to have less general concerns about mammography is contrary to what has been reported previously in the literature (Brown & Williams, 1994; Coates et al., 1992; Price et al., 1992).

The findings from this study suggest that there are differences in attitudes toward mammography among different ethnic groups of women. Overall, one of the most significant findings was that the Black women, compared to the White women, reported that they have less fear of radiation, pain, embarrassment, concerns of costs, and other general concerns about breast cancer and mammography. An hypothesis for this finding may be that an effort has been made by the ACS, the media, and health care providers to promote early breast cancer detection in the Black community and that some of these efforts appear to have been effective. Our data suggest that educational efforts need also to be extended to other non-White population, such as the Asian, the Hispanic, and the Pacific Islander communities. Educational outreach programs may increase women's knowledge, attitudes,

and improve women's use of early cancer detection and screening programs.

Limitations

Several limitations of this study need to be acknowledged. First, the sample was a convenience sample. By making a conscious effort to choose women who 'looked' like minority women, some women who were of minority background yet did not have any 'obvious ethnic characteristics' may have been excluded from the study. Their responses may have been different from the responses of the 'ethnic looking' women.

Another limitation was that the study was confined to one urban geographical area. Therefore, the results may not be generalizable to other geographical areas.

Another limitation was that the questionnaire was available only in English. One of the inclusion criteria did state that the women had to be able to read and write English, but their English comprehension level was not assessed. This may account for the contradictory answers in the demographic section of the questionnaire. Women were asked in three different questions if they were born in the United States and there were three different sets of responses. Also, a difficulty in English comprehension may account for the large number of "don't know" responses on the Attitude Toward Mammography Questionnaire.

Another limitation of the study was that the sample was well-educated. Therefore the results can not be generalized to women with less education who are undergoing mammography. The women in the study may have had more knowledge about breast cancer and mammography than other women in the general population. This increased knowledge might have influenced their attitudes toward the procedure. Further research is warranted to evaluate if a correlation exists between more education and a

woman's attitude toward mammography.

Another limitation was that the questionnaire was not culturally sensitive. For example, many women may not know or use the American measurement system. Therefore they might not know how to report their height and weight. In addition, research has demonstrated that some minority women, namely Asian, feel embarrassed when talking about their bodies. These women may have been too embarrassed to answer questions about their menstrual cycle, history of pregnancies, or even their attitudes about breast examinations and mammography truthfully. They may have responded to the questions and statements in the manner that they thought was expected of them. Therefore, the study findings need to be interpreted cautiously.

In summary, although the investigators of this study made a tremendous effort to recruit and gather data from women of different ethnic backgrounds, the results may not depict an accurate picture of all minority women and their attitudes toward mammography.

Implications for Practice

Results of this study emphasize the need for health care professionals to be aware of how ethnic background can affect a woman's attitude toward mammography. Other areas for future investigations might include the questions of when an immigrant woman's attitude toward mammography changes and how long after being in the United States does it take before her attitude becomes more "American"? Investigators might conduct a longitudinal study that follows immigrant women for several years to see if there are changes in their attitudes toward breast cancer and early detection. This type of study could also evaluate what influences a women to change her attitudes and perceptions about deterrents to mammography.

Another area worth studying is to compare the attitudes toward mammography of different ethnic women who elect to have mammography to those who do not and see what influence their ethnic background has on their decision.

Another area of study would be to interview the different ethnic groups of women in their primary language and to observe if their responses are different than when they are questioned in English.

The data from this study point out the need for additional research into the area of ethnicity and attitudes toward mammography. Specifically more research needs to be done that involves the Asian and Pacific Islander communities.

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Tables

Title

Table 1. Demographic characteristics

Table 2. A Comparison of family yearly income by ethnic group

Table 3. A comparison of the responses to the items on the attitudes toward mammography questionnaire between women who were born in the United States and women not born in the United States

Table 4. A comparison of the responses to each of the items on the attitudes toward mammography questionnaire among five ethnic groups

Table One

Demographic Characteristics

	Total (n= 596)	Black	Asian	Pacific Islander	Hispanic	White	Statistics
Age (years) (mean \pm S.D.)	53 \pm 12.6	50.9 \pm 11.5 (n= 122)	51.2 \pm 11.5 (n= 54)	56.5 \pm 11.6 (n= 116)	48.6 \pm 12.5 (n= 60)	53.8 \pm 13.3 (n= 230)	F=5.6 p= 0.002
Education (years) (mean \pm S.D.)	13.9 \pm 3.4	12.7 \pm 2.7 (n= 122)	13.8 \pm 2.8 (n= 58)	13.3 \pm 3.4 (n= 116)	12.1 \pm 4.1 (n= 60)	15.3 \pm 3.0 (n= 223)	F=21.8 p \leq 0.001
Income							See Table 2
<\$10,000	26%	39%	13%	47%	39%	9%	
10,001-20,000	17%	24%	9%	23%	21%	13%	
20,001-30,000	11%	8%	13%	4%	15%	14%	
30,001-40,000	14%	12%	19%	10%	6%	15%	
40,001-50,000	9%	5%	13%	4%	10%	12%	
50,001-60,000	5%	4%	9%	4%	4%	7%	
60,001-70,000	5%	1%	9%	5%	2%	6%	
70,001-80,000	3%	2%	4%	0%	2%	5%	
80,001-90,000	2%	1%	5%	1%	0%	4%	
>\$90,001	6%	2%	2%	1%	0%	12%	

Table One (Continued)

	Total	Black	Asian	Pacific Islander	Hispanic	White	Statistics
Birth Place							
U.S.	75%	97%	48%	6%	43%	87%	$X^2= 168.4$
Not U.S.	25%	3%	52%	94%	57%	13%	$p \leq 0.001$
Family history of breast cancer							
yes-----	22%	21%	9%	12%	15%	30%	$X^2= 20.35$
no-----	78%	79%	91%	87%	85%	70%	$p \leq 0.001$
Previous mammo							
yes-----	79%	77%	68%	73%	79%	87%	$X^2= 14.52$
no-----	21%	23%	32%	27%	21%	13%	$p \leq 0.001$

Table Two

A Comparison of Yearly Family Income by Ethnic Group

<u>Ethnic Group</u>	<u>< \$30,000</u> n (%)*	<u>> \$30,001</u> n (%)*	<u>Statistics</u>
<u>Black</u>	79(73%)	30(27%)	X²= 73.52 p≤ 0.001
<u>Asian</u>	19(36%)	34(64%)	
<u>Pacific Islander</u>	77(75%)	26(25%)	
<u>Hispanic</u>	39(77%)	12(23%)	
<u>White</u>	79(36%)	138(64%)	

* Within group percentages are reported

A Comparison of the Responses to the Items on the Attitudes Toward Mammography Questionnaire Between Women Who Were Born and Those Not Born in the United States

Item	birthplace	n	mean	S.D.	t	p
Looking forward to having mammogram	yes, U.S.	338	2.3	1.5	t= 1.91	p= 0.06
	no, not U.S.	106	2.0	1.3		
Embarrassed by M.D. exam	yes, U.S.	339	4.1	1.3	t= 2.16	p= 0.03
	no, not U.S.	105	3.7	1.6		
Worried about breasts	yes, U.S.	341	3.9	1.4	t= 2.16	p= 0.15
	no, not U.S.	104	3.7	1.6		
Pain during mammo will prevent future mammograms	yes, U.S.	342	4.9	0.6	t= 3.36	p≤ 0.001
	no, not born in U.S.	105	4.4	1.2		
Worry about amt. of radiation during mammo	yes, U.S.	344	3.8	1.4	1.68	p= 0.09
	no, not U.S.	107	3.5	1.4		

Table three continued

Item	Birthplace	n	mean	S.D.	t	p
Cost will prevent future mammograms	yes, U.S. no, not U.S.	338 99	4.6 4.6	0.9 0.9	t= 0.45	p= 0.65
Mammo more painful than imagined	yes, U.S. no, not U.S.	341 105	4.5 4.1	1.0 1.5	t= 2.53	p= 0.01
Afraid of things read or heard	yes, U.S. no, not U.S.	344 104	4.6 4.4	1.0 1.2	t= 1.84	p= 0.007
Felt embarrassed during mammo	yes, U.S. no, not U.S.	344 103	4.6 4.4	1.0 1.2	t= 1.72	p= 0.09
Fear of radiation will prevent future mammograms	yes, U.S. no, not U.S.	342 102	4.7 4.5	0.8 1.0	t= 1.71	p= 0.09
Afraid of what mammo will show	yes, U.S. no, not U.S.	344 104	3.8 3.4	1.3 1.6	t= 2.30	p= 0.02
More likely to get breast cancer	yes, U.S. no, not U.S.	344 106	4.1 3.9	1.2 1.3	t= 1.12	p= 0.26

Table three continued

Item	Birthplace	n	mean	S.D.	t	p																			
Amt of radiation is harmful	yes, U.S.	341	4.1	1.1	t= 3.18	p≤ 0.001																			
	no, not U.S.	106	3.7	1.3			Had mammo to see that nothing wrong	yes U.S.	346	1.4	1.1	t= 0.11	p= 0.91	no, not U.S.	108	1.4	1.1	So embarrassed will never have another mammo	yes, U.S.	345	4.9	0.4	t= 2.23	p= 0.03	no, not U.S.
Had mammo to see that nothing wrong	yes U.S.	346	1.4	1.1	t= 0.11	p= 0.91																			
	no, not U.S.	108	1.4	1.1			So embarrassed will never have another mammo	yes, U.S.	345	4.9	0.4	t= 2.23	p= 0.03	no, not U.S.	105	4.7	0.8								
So embarrassed will never have another mammo	yes, U.S.	345	4.9	0.4	t= 2.23	p= 0.03																			
	no, not U.S.	105	4.7	0.8																					

Table Four

A Comparison of the Responses to Each of the Items on the Attitudes Toward Mammography Questionnaire Among Five Ethnic Groups

<u>Item</u>	<u>Total Sample</u> (mean \pm S.D.)	<u>Asian</u> (mean \pm S.D.)	<u>Black</u> (mean \pm S.D.)	<u>White</u> (mean \pm S.D.)	<u>Hispanics</u> (mean \pm S.D.)	<u>Pacific Islanders</u> (mean \pm S.D.)	<u>Statistics</u>
<u>Looking Forward to mamm</u>	2.1 \pm 1.4 (n=553)	2.4 \pm 1.4 (n=54)	1.7 \pm 1.2 (n=116)	2.6 \pm 1.5 (n=219)	1.8 \pm 1.1 (n=58)	1.7 \pm 1.2 (n=106)	F= 14.34 p \leq 0.001
<u>Embarrassed by MD exam</u>	4.0 \pm 1.5 (n= 552)	3.3 \pm 1.6 (n= 54)	4.3 \pm 1.2 (n= 114)	4.0 \pm 1.4 (n= 222)	3.4 \pm 1.6 (n= 58)	4.0 \pm 1.4 (n= 104)	F= 7.64 p \leq 0.001
<u>Worried about breasts</u>	3.8 \pm 1.5 (n= 548)	3.7 \pm 1.5 (n= 55)	3.9 \pm 1.5 (n= 112)	4.0 \pm 1.4 (n= 223)	3.4 \pm 1.8 (n= 53)	3.7 \pm 1.6 (n= 105)	F= 1.84 p= 0.119
<u>Pain will prevent future mammograms</u>	4.7 \pm 0.8 (n= 555)	4.5 \pm 1.0 (n= 55)	4.9 \pm 0.6 (n= 114)	4.8 \pm 0.7 (n= 225)	4.7 \pm 0.9 (n= 55)	4.5 \pm 1.1 (n= 106)	F= 3.72 p= 0.005
<u>Worried about radiation</u>	3.7 \pm 1.5 (n= 559)	3.4 \pm 1.4 (n= 55)	4.1 \pm 1.3 (n= 116)	3.8 \pm 1.4 (n= 225)	3.2 \pm 1.6 (n= 56)	3.6 \pm 1.5 (n= 107)	F= 4.766 p= 0.001
<u>Cost will prevent future mammograms</u>	4.6 \pm 1.0 (n= 544)	4.6 \pm 0.7 (n= 52)	4.6 \pm 1.0 (n= 115)	4.7 \pm 0.8 (n= 219)	4.4 \pm 1.1 (n= 55)	4.5 \pm 1.1 (n= 103)	F= 1.66 p= 0.156

Table Four (Continued)

Item	Total Sample (mean \pm S.D.)	Asian (mean \pm S.D.)	Black (mean \pm S.D.)	White (mean \pm S.D.)	Hispanics (mean \pm S.D.)	Pacific Islanders (mean \pm S.D.)	Statistics
More pain than imagined	4.4 \pm 1.2 (n = 554)	4.2 \pm 1.3 (n = 54)	4.7 \pm 0.9 (n = 112)	4.4 \pm 1.1 (n = 225)	4.4 \pm 1.2 (n = 57)	4.3 \pm 1.3 (n = 106)	F = 2.60 p = 0.036
Afraid of things read or heard	4.5 \pm 1.0 (n = 555)	4.3 \pm 1.1 (n = 54)	4.7 \pm 0.8 (n = 115)	4.6 \pm 0.9 (n = 225)	4.1 \pm 1.4 (n = 56)	4.5 \pm 1.1 (n = 105)	F = 5.19 p \leq 0.001
Felt embarrassed during mammogram	4.6 \pm 1.0 (n = 553)	4.1 \pm 1.2 (n = 54)	4.8 \pm 0.8 (n = 115)	4.6 \pm 1.0 (n = 225)	4.3 \pm 1.3 (n = 56)	4.6 \pm 0.9 (n = 103)	F = 5.56 p \leq 0.001
Dread having mammogram	4.3 \pm 1.2 (n = 546)	4.0 \pm 1.2 (n = 51)	4.6 \pm 1.0 (n = 115)	4.2 \pm 1.3 (n = 225)	4.0 \pm 1.3 (n = 53)	4.5 \pm 1.0 (n = 102)	F = 4.06 p = 0.003
Fear of radiation will prevent future mammograms	4.6 \pm 0.9 (n = 548)	4.5 \pm 0.8 (n = 53)	4.7 \pm 0.8 (n = 115)	4.7 \pm 0.8 (n = 223)	4.4 \pm 1.0 (n = 53)	4.4 \pm 1.1 (n = 104)	F = 3.73 p = 0.005
Afraid of what will show	3.8 \pm 1.4 (n = 554)	3.7 \pm 1.3 (n = 54)	4.0 \pm 1.4 (n = 1.3)	3.8 \pm 1.6 (n = 224)	3.3 \pm 1.6 (n = 55)	3.6 \pm 1.6 (n = 104)	F = 2.47 p = 0.044

Table Four (Continued)

Item	Total Sample (mean \pm S.D.)	Asian (mean \pm S.D.)	Black (mean \pm S.D.)	White (mean \pm S.D.)	Hispanic (mean \pm S.D.)	Pacific Islander (mean \pm S.D.)	Statistics
Believe more likely to get breast cancer	4.0 \pm 1.3 (n= 556)	4.2 \pm 0.9 (n= 55)	4.2 \pm 1.2 (n= 116)	4.0 \pm 1.3 (n= 224)	3.8 \pm 1.4 (n= 57)	4.0 \pm 1.4 (n= 104)	F= 1.46 p= 0.212
Amount of Radiation is harmful	4.0 \pm 1.2 (n=553)	3.9 \pm 1.1 (n= 55)	4.4 \pm 0.9 (n= 115)	4.0 \pm 1.2 (n= 223)	3.4 \pm 1.4 (n= 55)	3.8 \pm 1.3 (n= 105)	F= 6.54 p \leq 0.001
Had mammo to see that nothing wrong	1.4 \pm 1.1 (n= 563)	1.4 \pm 1.2 (n= 55)	1.7 \pm 1.5 (n= 119)	1.3 \pm 0.9 (n= 225)	1.3 \pm 0.9 (n= 57)	1.2 \pm 0.9 (n= 107)	F= 3.45 p= 0.008
So embarrassed that no further mamm	4.9 \pm 0.6 (n= 558)	4.8 \pm 0.5 (n=55)	4.8 \pm 0.7 (n=116)	5.0 \pm 0.2 (n= 224)	4.7 \pm 0.8 (n= 57)	4.8 \pm 0.7 (n= 106)	F= 3.01 p= 0.018

APPENDIX A

PATIENT INFORMATION

1. Your Age: _____

2. What is your current marital status?

- Married/Partnered Separated
 Widowed Never Married
 Divorced Not married but living together

3. Circle the highest grade or year you completed in regular school, vocational school, college, or graduate professional training?

Grade School								High School					
1	2	3	4	5	6	7	8	9	10	11	12		
College						Graduate School							
	13	14	15	16		17	18	19	20	21	22	>22	

4. Circle the number that best describes your ethnic group:

- 1 American Indian
- 2 Asian (Chinese, Japanese, etc)
- 3 Black
- 4 Caucasian/White
- 5 Hispanic
- 6 Pacific Islander (Hawaiian, Philippine, Samoan, etc)
- 7 Mixed Ethnic Background
- 8 Other (specify) _____

5. Which generation are you in the United States?

- First Third > Fourth
 Second Fourth

6. What is your current employment status?

- Full-time Retired
 Part-time Unemployed
 Self-employed Disability
 Homemaker

PATIENT INFORMATION (continued)

7. What is your total yearly family income?

- | | | |
|--|--|---|
| <input type="checkbox"/> <10,000 | <input type="checkbox"/> 40,001-50,000 | <input type="checkbox"/> 80,001-90,000 |
| <input type="checkbox"/> 10,000-20,000 | <input type="checkbox"/> 50,001-60,000 | <input type="checkbox"/> 90,001-100,000 |
| <input type="checkbox"/> 20,001-30,000 | <input type="checkbox"/> 60,001-70,000 | <input type="checkbox"/> >100,000 |
| <input type="checkbox"/> 30,001-40,000 | <input type="checkbox"/> 70,001-80,000 | |

8. How much caffeine do you usually have each day?

- | | |
|--|--|
| <input type="checkbox"/> None | <input type="checkbox"/> 5-6 Cups of coffee/tea/cola |
| <input type="checkbox"/> 1-2 Cups of coffee/tea/cola | <input type="checkbox"/> More than 6 cups/day |
| <input type="checkbox"/> 3-4 Cups of coffee/tea/cola | |

9. What is your:

Height: ft. in.
Weight: lbs.
Bra Size

10. How many times have you been pregnant?

11. Has a lump ever been found in your breast? Yes No

12. Have you ever been diagnosed with breast cancer in the past?

Yes No

13. Family history of breast cancer? Yes No

	<u>Yes</u>	<u>No</u>
Grandmother	<input type="checkbox"/>	<input type="checkbox"/>
Mother	<input type="checkbox"/>	<input type="checkbox"/>
Daughter	<input type="checkbox"/>	<input type="checkbox"/>
Sister	<input type="checkbox"/>	<input type="checkbox"/>
Aunt	<input type="checkbox"/>	<input type="checkbox"/>

14. A friend of mine recently found out that she has breast cancer.

Yes No

15. A relative of mine recently found out that she has breast cancer.

Yes No

PATIENT INFORMATION (continued)

16. Do you have breast implant(s)? Yes No

17. Are you still getting your periods? Yes No

IF YES, GO TO QUESTION #21

18. If no, why not?

Hysterectomy (uterus removed)

Uterus/Ovaries Removed

Menopause (change of life)

Other (please describe) _____

19. When was your last menstrual period? Month Year

20. Have you had any vaginal bleeding since you stopped having your periods?

Yes No

PLEASE GO TO QUESTION #24

21. How many days **before** your next menstrual period?

Less than 1 week

Just had my period less than 1 week ago

Midcycle

Don't know

22. About how many days are there from the **start of one period to the start of the next?**

Days

23. Are you taking birth control pills? Yes No

24. Are you taking any hormones? Yes No

Estrogen

Both Estrogen and Progesterone

Progesterone Other (specify) _____

25. Have you had Norplant inserted? Yes No

PATIENT INFORMATION (continued)

26. Have you had a mammogram before? ___ Yes ___ No

If yes, how long ago? ___ Year(s)

27. Do your breasts hurt today? ___ Yes ___ No

28. Please indicate with a **X** all family members listed below, who were born in the United States.

- ___ You
- ___ Your mother
- ___ Your father
- ___ Your grandmother (mother's side)
- ___ Your grandfather (mother's side)
- ___ Your grandmother (father's side)
- ___ Your grandfather (father's side)

29. Make a mark on the line below to tell us how anxious you are about having a mammogram.

no anxiety _____ anxiety as bad as you can imagine

***Please remember to pick up
PART II of the MAMMOGRAM STUDY questionnaire
from the nurse after you have had your mammogram.***

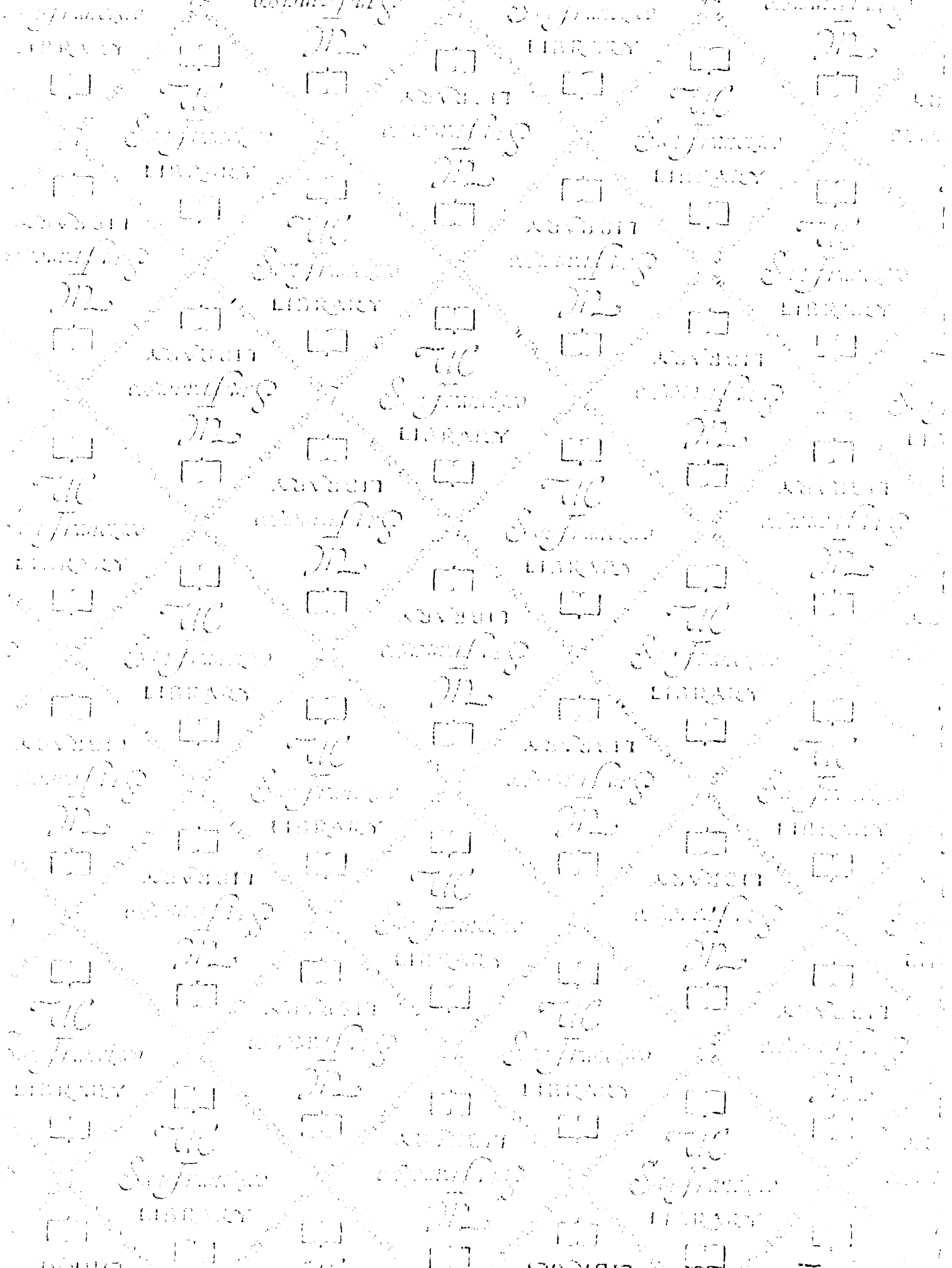
THANK YOU

APPENDIX B

ATTITUDES ABOUT HAVING A MAMMOGRAM

	Strongly Agree		Don't Know		Strongly Disagree
1. I was looking forward to having the mammogram.	1	2	3	4	5
2. I feel embarrassed when a doctor examines my breasts	1	2	3	4	5
3. I have been worried about my breasts lately.	1	2	3	4	5
4. The pain I felt during this mammogram will stop me from having another mammogram.	1	2	3	4	5
5. I worry about the amount of radiation I get when I have a mammogram.	1	2	3	4	5
6. The cost of the mammogram will stop me from having another mammogram.	1	2	3	4	5
7. I found the mammogram to be more painful than I imagined.	1	2	3	4	5
8. Things I heard or read made me afraid to have a mammogram.	1	2	3	4	5
9. I felt embarrassed during the mammogram.	1	2	3	4	5
10. I was dreading the mammogram.	1	2	3	4	5
11. My fear of radiation will stop me from having another mammogram.	1	2	3	4	5
12. I am afraid of what the mammogram will show.	1	2	3	4	5
13. I believe I am more likely than other women to get breast cancer.	1	2	3	4	5
14. I believe that the amount of radiation I receive when I have a mammogram is harmful to me.	1	2	3	4	5
15. I had this mammogram to make sure that nothing is wrong with my breasts.	1	2	3	4	5
16. Having this mammogram made me feel so embarrassed, I will never have another mammogram.	1	2	3	4	5

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