THE RELATIONSHIP BETWEEN SELECT VARIABLES AND THE BREAST CANCER SCREENING PRACTICES OF A CONVENIENT SAMPLE OF AFRICAN-AMERICAN WOMEN FROM GRAMBLING STATE UNIVERSITY AND THE WILLIS-KNIGHTON NEIGHBORHOOD CLINIC

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ABSTRACT

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One of the leading causes of mortality for African-American women is breast cancer. The national breast cancer mortality rate for African-American women is 28.0 per 100,000. However, African-American women residing in Northwest Louisiana have a breast cancer mortality rate of 34.5 per 100,000 (American Cancer Society; National Cancer Institute; Landis, Murry, Boldern & Wingo, 1998). This is the fourth highest of all women living in the United States (Early Cancer Detection Program, Annual Report, 1999).

Breast cancer mortality is correlated to the stage at diagnosis. The earlier breast cancer is diagnosed and treated, the more likely women can survive the disease (Davis, Axelrod, Osborne & Telang, 1997). African-American women are frequently diagnosed with breast cancer at an advanced stage (Phillips, Cohen, & Moses, 1999). The frequent advanced stage diagnosis may be due to African-American women breast cancer screening practices. When done correctly and as recommended, breast cancer screening

can help women detect breast cancer at an early stage, when it is most treatable. Since African-American women residing in Northwest Louisiana have the fourth highest national mortality rate, and little is known about their compliance with the recommendations of the American Cancer Society regarding breast cancer screening, there is a need to identify these practices of African-American women in Northwest Louisiana.

The purpose of this study was to examine the relationship between select variables and breast cancer screening practice. A questionnaire was used to gather information from a convenient sample of 273 African-American women recruited from two sites located in Northwest Louisiana -- Grambling State University and the Willis-Knighton Neighborhood Clinic. The questionnaire was used to gather information about: demographics, knowledge, and individual breast cancer risk factors (age of menarche, full term pregnancy, history of breast condition or disease, type of breast condition or disease, age when gave birth to first child, menopause, age menopause began). Andersen's theoretical framework served as the guiding theory for the study. The hypotheses were analyzed by the chi square test of independence and logistic regression.

Results from the chi-square test of independence indicated that breast cancer screening is dependent upon age, education, income, age when gave birth to first child, menopause, and age menopause began. In contrast, breast cancer screening is independent of breast cancer knowledge, age of menarche, full term pregnancy, history of breast condition or disease, type of breast condition or disease, and family history of breast cancer.

Logistic regression was used to predict the odds of breast cancer screening compliance by the women in this study. The analysis found that having an annual income of 25,000 – 39,999 as the strongest income predictor of non-compliance. Logistic regression analysis found that having a Master's degree was the strongest educational attainment predictor of non-compliance.

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CHAPTER I

INTRODUCTION

Breast cancer is one of the leading causes of mortality for African-American women (Falik & Collins, 1996; American Cancer Society, 1999; National Cancer Institute, 1999). The national breast cancer mortality rate for these women is 28.0 per 100,000 with a 5-year survival rate of 80.4 per 100,000 (American Cancer Society; National Cancer Institute; Landis, Murry, Boldern & Wingo, 1998). Mortality and survival rates differ for African-American women depending on where they live. For example, in Northwest Louisiana, African-American women have a breast cancer mortality rate of 34.5 per 100,000, which is the fourth highest of all women living in the United States, and a 5-year survival rate of 65.8 per 100,000 (Early Cancer Detection Program, Annual Report, 1999). The specific rationale for the high mortality rate has not been delineated. However, inconsistent performance of breast self-examinations, and not receiving clinical breast examinations or mammography, may be significant factors.

Compliance with the recommended beast cancer screening practices of both the American Cancer Society (ACS) and the National Cancer Institute (NCI) can lead to the early detection of breast cancer (American Cancer Society, 1999; National Cancer Institute, 1999). There is a critical point when a developing breast cancer can be prevented or delayed (Jatoi, 1999). This point is usually characterized by no outward symptoms, or the initial appearance of a lump, thickening of the breast tissue, or changes in the size or shape of the breast (Jatoi). The discovery of breast cancer during this critical point is referred to as early detection. Early detection reduces breast cancer mortality rates by enabling women to seek treatment. Research has shown that select

variables such as age, education, income, breast cancer knowledge, and individual breast cancer risk factors influence women's compliance (Ziff, Conrad & Lachman, 1995). In fact, the ACS and NCI estimate that the breast cancer morality rates of African-American women could be reduced by 25-30%, if these women were compliant with the breast cancer screening recommendations set forth by these organizations (American Cancer Society; National Cancer Institute).

Statement of the Problem

The breast cancer mortality rate of African-American women is correlated to the stage of the breast cancer when they are diagnosed. When breast cancer is diagnosed in its early stage and treated, the women have a greater chance of survival. Breast cancer screening can detect cancer at an early stage when it is done correctly and as recommended by the American Cancer Society and the National Cancer Institute. Yet, African-American women are frequently diagnosed with breast cancer at an advanced stage (Axtell & Myers, 1978; Chu, Tarone, & Kessler, 1997; Phillips, Cohen, & Moses, 1999; Ries, Kosary, & Hankey, 1999; Young, Ries, & Pollack, 1984). Consequently, African-American women residing in Northwest Louisiana have a mortality rate of 34.5 per 100,000, which is the fourth highest breast cancer mortality rate in the United States (Early Cancer Detection Program: Annual Report, 1999). Their mortality rate is higher than the national breast cancer mortality rate for African-American women, which is 28.0 per 100,000 (American Cancer Society; National Cancer Institute; Landis, Murry, Boldern & Wingo, 1998). The increased mortality may be due to their lack of screening, which is essential to early detection (American Cancer Society, 1999).

Purpose of the Study

The purpose of the study was to examine how income, age, education, breast cancer knowledge, and individual breast cancer risk factors affect breast cancer screening among African-American women affiliated with Grambling State University and the Willis-Knighton Neighborhood Clinic.

Hypotheses

1. Breast cancer screening practice and breast cancer knowledge are dependent.
2. Breast cancer screening practice and income are dependent.
3. Breast cancer screening practice and age are dependent.
4. Breast cancer screening practice and education are dependent.
5. Breast cancer screening practice and individual breast cancer risk factors are dependent.

Significance of the Study

Northwest Louisiana has the fourth highest breast cancer mortality rates for African-American women in the United States (Early Cancer Detection Program: Annual Report, 1999). The breast cancer mortality rate of African-American women is directly related to their compliance of breast cancer screening (Davis et al., 1997). When the appropriate measures are used for the early detection of breast cancer, the likelihood that breast cancer will be found is increased and thereby, reducing the threat of mortality. Health professionals such as health educators, nurses and physicians have a responsibility

to provide women with the necessary information regarding breast cancer and to emphasize the importance of consistently performing medically recommended breast cancer screening methods.

In order for health professionals to be able to give guidance to these women, they need to understand their breast examination practices. Specific to this study is the influence of select variables on the performance of breast cancer screening by a select group of African-American females residing in Northwest Louisiana; specifically, women seeking care at the Willis-Knighton Neighborhood Clinic in Shreveport Louisiana and women associated with Grambling State University in Grambling, Louisiana.

This study contributes to the current literature by shedding light on the breast cancer screening compliance of the sample population and by illustrating the relationship between compliance and the selected independent variables. Two sites located in Northwest Louisiana were used for this study: Grambling State University and The Willis-Knighton Neighborhood Clinic. Grambling State University and the Willis-Knighton Neighborhood Clinic were in a partnership to educate African-American women in Northwest Louisiana about breast health issues. The findings from this study are being used in to develop a Women's Health Course at Grambling State University.

Theoretical Framework

The guiding theoretical framework used to conduct this study was Andersen's Behavioral Model of Health Services. It postulates that breast cancer compliance is determined by the following: factors that predispose a given population to seek services; factors that enable them to use services; and a self-determination of need for those

services (Andersen, 1974). For the present study, the predisposing component included those variables that describe the propensity of individuals who comply with breast cancer screening. The predisposing variables are age and knowledge. The enabling component describes the “means” individuals have available to them for the use of health services. The enabling variables are income and education. The “need” component refers to the individual’s perception of “need.” The need variable is the individuals’ breast cancer risk factors.

CHAPTER II

REVIEW OF THE LITERATURE

A review of some of what is known and has been reported in the literature that pertains to African-American women and breast cancer is presented in this chapter. This chapter is organized as follows: (a) guiding theoretical framework; (b) African-American women, breast cancer, and breast cancer screening; and (c) a summary.

Guiding Theoretical Framework

A basic framework for the study of breast cancer screening practice is Andersen's Model of Health Services Utilization (1995). The purpose of the model is to discover conditions that either facilitate or impede the utilization of health care services. This model also recognizes that personal health practices such as breast cancer screening interact with the use of formal health services such as breast self-examination (BSE) training, clinical breast examination (CBE), and screening mammography (Aday & Awe, 1997). Health Services Utilization provides a framework to describe those variables that inhibit or facilitate an individual's breast cancer screening practice. The model contains two major components: characteristics of the population at risk and utilization of health care services.

Historical Background

This model was initially developed in the late 1960's to help health care professionals understand why individuals use health services and to help health care professionals develop policies to promote equitable access (Andersen, 1995), as well as predict health services utilization. The behavior component of this model suggests that individuals' use of health services is a function of their predisposition to use services, which enable or impede use, and their need for care.

Andersen initially developed and empirically tested the model in a nationwide personal interview of 2,367 families in 1964 (Andersen, 1968). The model organized and integrated an array of correlates of health and health care behavior from the disparate literatures in sociology, psychology, economics, and medicine into predisposing, enabling, and need predictors of utilization (Aday & Awe, 1997). On the one hand, each component might be conceived of as making an independent contribution to predicting use. On the other hand, the model suggests an explanatory process or casual ordering where the predisposing factors might be exogenous, some enabling resources are necessary but not sufficient conditions for use, and some need must be defined for use to actually take place.

Utilization of Health Care Services

The utilization of health services is characterized in terms of its type, purpose, and time interval involved. The type of utilization refers to the kind of service received, such as BSE, CBE, and screening mammography. The purpose refers to the use of preventive

care such as early detection. The time interval may be expressed in terms of volume. Volume refers to the number of actual breast cancer screening practices. For example, this can be: BSE practiced each month; CBE practiced bi-annually for women age 30 and/or practiced annually for women age 40 and older; and/or mammography practiced annually for women age 50 and older. This measure reflects how often women practice breast cancer screening.

African-American Women, Breast Cancer and Breast Cancer Screening

The existing breast cancer research regarding African-American women is scattered, inconsistent, and almost non-existent. However, there are five phenomenon consistently reported: (1) breast cancer is the most common cancer seen in African-American women (American Cancer Society, 1999; Garfinkel, Boring & Heath, 1994; National Cancer Institute, 1999); (2) African-American women with breast cancer face more than twice the risk of dying compared to Caucasian women and other minority groups (American Cancer Society; Ashing-Giwa, 1999; Garfinkel et al., 1994; National Cancer Institute; Romer, 2000); (3) breast cancer is more likely to be detected during Stage IV in African-American women (American Cancer Society; Ansall, Whiteman & Lipton, 1993; Garfinkel et al.; Lannin, Matthews, Mitchell, Swanson & Edwards, 1998; Lyman et al., 1997; McDonald, Thorne, Pearson & Adams-Campbell, 1999; National Cancer Institute); (4) African-American women living in Northwest Louisiana have the fourth highest breast cancer mortality rate in the United States (Partners in Wellness, 1999); (5) over the past twenty-seven years, African-American women have experienced increases within breast cancer incidence and mortality rates, as well as decreases in five-

year survival rates (American Cancer Society; Garfinkel et al.; Reis, Kosary, Hankey, & Miller, 1997).

Incidence, Mortality, and Five-Year Survival Rates

Breast cancer statistics pertaining to African-American women have been reported since 1973. Current data show that African-American women have experienced an increase in incidence and mortality, as well as a low 5-year survival rates over the twenty-seven year span.

Incidence. Between 1973 and 2000, incidence of breast cancer increased from 68.7 to 101 per 100,000 in African-American women (American Cancer Society, 1999). The current rate is lower than the breast cancer incidence rate for Caucasian women (112.7 per 100,000). The breast cancer incidence rate leads the researcher to believe that African-American women, regardless of age, have a lower breast cancer incidence rate than Caucasian women; however, that is false. The breast cancer incidence rate differs among age groups, with some age groups of African-American women having a breast cancer incidence rate higher than the rate for Caucasian women.

For African-American women below the age of 45, the breast cancer incidence rate exceeds that for Caucasian women belonging to the same age group (Jatoi, 1999). This excess has been apparent since the Third National Cancer Survey of 1969-1971 (Jatoi). The difference is most pronounced for very young African-American women (20-30 years of age) who have a breast cancer incidence rate of 74 per 100,000, which is higher than their Caucasian counterparts who have a breast cancer incidence rate of 65 per 100,000 (Jatoi).

A second inconsistency exists in the rate of increase in the incidence of breast cancer. During 1973 to 1990, incidence rates for women below the age of 45 increased sixteen percent among African-American women and six percent among Caucasian women. Breast cancer risk rates increased by twenty-seven percent for African-American women 50 years of age and older and twenty-nine percent for Caucasian women 50 years of age and older (Jatoi, 1999). This illustrates that African-American women below the age of 45 have a higher breast cancer incidence than their Caucasian counterparts and a greater breast cancer risk as well. This also illustrates that by the age of 50 (+), African-American and Caucasian women experience a similar increase in breast cancer incidence, with Caucasian women experiencing a slightly higher incidence (two- percent). Researchers speculate that the increase in breast cancer incidence rates since 1973 may be due to reproductive patterns, environmental changes, and breast examination practices, specifically screening mammography (Crane, Kaplan, Bastani & Scrimshaw, 1996; Davis, Axelrod, Osborne, & Telang, 1997; Garfinkel, Boring, & Heath, 1994; Johnson-Thompson & Guthrie, 1999; Jatoi, 1999; Lane & Fine, 1983).

Reproductive patterns have changed over the past twenty years (Davis et al., 1997); researchers speculate this as being a causative factor for changes in breast cancer incidence. Overall, women are having fewer children and delaying childbirth until a later age (Jatoi, 1999). This statement is a general one because it alludes to all women experiencing changes in their reproductive patterns. The literature does not provide any information regarding whether African-American women have changed the their reproductive patterns. Therefore, this factor cannot be assumed to be a causative factor for the increase in breast cancer incidence for African-American women.

A second factor is exposure to environmental chemicals. Environmental chemicals, such as DDT, may also contribute to the increase in the incidence of breast cancer for African-American women (Davis et al., 1997; Garfinkel et al., 1994; Johnson-Thompson & Guthrie, 1999). Although the environmental chemicals had been examined as a causative factor regarding breast cancer (Jatoi; Johnson-Thompson & Guthrie), the relationship between African-American women, the chemicals in their environment, and breast cancer has not been examined. To clearly determine how the environmental chemicals contribute to breast cancer for African-American women, these women must be studied in the environment they live and work in throughout the course of their lives. Because data reports in this area are based upon studies that examined environmental chemicals as a contributing factor for breast cancer in general, it is not feasible to generalize reports in this area to African-American women.

A third factor is breast cancer examination practices, specifically the use of screening mammography. Increased use of screening mammography has resulted in breast cancers being found earlier in their development when they are small and at early stages of development (Crane, Kaplan, Bastani, & Scrimshaw, 1996; Jatoi, 1999; Lane & Fine, 1983). Of the three factors, the utilization of screening mammography by African-American women has been researched and reported on the most in the literature. Reports pertaining to African-American women and their use of screening mammography are often based on research that is location specific, have no controls for participant age differences, or have only contained African-American women who are over the age of fifty.

The research presented in the literature regarding screening mammography report conflicting findings. Some reports (Bloom, Grazier, Hodge & Hayes, 1991; Champion & Menon, 1997; Rajaram & Rashidi, 1998) suggested African-American women utilized screening mammography as recommended by the ACS and NCI. Other reports (Phillips, Cohen, & Moses, 1999; Price, Desmond, Slenker, Smith & Stewart, 1992; Roetzheim et al., 1999) suggested African-American women under utilize screening mammography. The conflicting findings may be due to sample size differences.

There were no reports in the literature that were specific to the utilization of screening mammography by African-American women affiliated with Grambling State University or who seek care at the Willis-Knighton Neighborhood Clinic. Research presented in the literature was also location specific, typically focusing on metropolitan areas such as Atlanta, Washington DC, and Detroit (Aziz et al., 1999; Lannin, Matthews, Mitchell, Swanson & Edwards, 1998; Lyman et al., 1997; Price et al., 1992; Sung, Blumenthal, Coates & Alema-Mensah, 1997) or disadvantaged areas such as housing projects (Danigelis, Roberson & Worden, 1995; McDonald, Thorne, Pearson & Adams-Campbell, 1999; Paskett, Rushing, D'Agostino, Tatum & Velez, 1997). Consequently, the population assessed limits the literature. The literature is not an accurate in its depiction of the utilization of screening mammography by all African-American women. African-American women who live in rural areas, such as Northwest Louisiana are not depicted in the literature. Women in rural areas may not have access to breast cancer education and treatment centers.

Additionally, several reports are based on research that did not control for age, or contained only African-American women age fifty and over. Breast cancer incidence, as

well as the recommendations for screening mammography is age specific; therefore, this section of the literature also depicts an incomplete picture of African-American women and their utilization of screening mammography. Conducting breast cancer research that contains only African-American women over 50 does not produce clear results because as noted earlier, African-American women have a higher breast cancer incidence during the ages of 20-30, which is twenty to thirty years earlier than their Caucasian counterparts.

Mortality. Nationally, the breast cancer mortality rate for African-American women is 28 per 100,000. The breast cancer mortality rate for African-American women in Northwest Louisiana is 34.5 per 100,000. Both nationally and in Northwest Louisiana African-American women have a higher mortality rate than Caucasian women, as well as Asian and Pacific Islanders, American Indians, and Hispanics (Romer, 2000). From 1973 to 1989, breast cancer mortality rates increased sixteen percent among African-American women (Garfinkel et al., 1994; Ries, Kosary, Hankey & Miller, 1997). Between 1990 and 1994, breast cancer mortality declined six percent among the general population.

Yet, during this time (1990-1994), Garfinkel et al. (1994) report that breast cancer mortality declined approximately one percent among African-American women. In contrast, the American Cancer Society (2000) reported breast cancer mortality increased by three percent among African-American women between 1990-1994. The reports are conflicting; one suggested a decline in breast cancer mortality for African-American women and the other suggested an increase in breast cancer mortality for African-American woman. However, both reports suggested that African-American women have breast cancer mortality rates that warrant attention. These statistics lead the investigator

to ask, why are African-American women experiencing such high breast cancer mortality rates? Additionally, why are the breast cancer mortality rates not declining?

The high mortality rate without decline affecting African-American women may be due to late stage diagnosis (during stage IV) when breast cancer is most difficult to treat (Ansall, Whiteman & Lipton, 1993; Lannin et al., 1998; Lyman et al., 1997). When breast examination is practiced as recommended by the ACS, there is a good probability that breast cancer can be detected early, reducing late stage diagnosis.

Five-Year Survival Rates. The breast cancer five-year survival rate has not improved for African-American women within the last twenty years. Newman et al. (1998) found the survival rates at all breast cancer stages low among African-American women. The low breast cancer survival rates were due to late stage diagnosis and aggressive tumors. This information is disconcerting and it alludes to the idea that when their breast cancer is detected early, African-American women still have poor five-year survival rates. Several studies that explored the five-year survival rates are retrospective reviews of clinical records (Eley et al., 1994; Lyman et al., 1997; Yood et al., 1999). Retrospective review is an appropriate way to examine past phenomenon; however, with a phenomenon as dynamic as breast cancer, retrospective review does not offer an explanation for existing phenomenon. Additionally, retrospective review of clinical records may produce inaccurate results due to missing data that cannot be verified, erroneous information, or illegible information that may exist in clinical records. Recent research has reported similar findings; for example, a study conducted in South Florida, which found that the African-American respondents were more likely to be diagnosed with stage III and IV breast cancer, suggested that the poor survival is due to late stage

diagnosis (Lyman et al., 1997). This study was limited by its small sample size of African-American women (47 African-American women and 392 Caucasian women). Regardless of the study's limitations, researchers consistently agree that the breast cancer five year survival rate has not improved for African-American women within the last twenty years (American Cancer Society, 1995; Ansall et al., 1993; Lyman et al., 1997; Natarajan, Nemoto, Mettlin & Murphy, 1985).

Risk Factors

The specific agent or agents that cause breast cancer remain unknown (Davis et al., 1997). Speculation has determined that one factor cannot be identified as the single cause for breast cancer. According to Johnson-Thompson & Guthrie (1999) breast cancer is caused by multiple factors. Researchers have identified primary risk factors, which are suspected to contribute to a fairly small breast cancer risk (approximately ten-fifteen percent). These factors are gender, age, family history, reproductive and menstrual history and history of breast disease (Colditz et al., 1993; American Cancer Society, 1999; National Cancer Institute, 1999).

Few studies were reported in the literature that examined ethnic differences as a risk factor for breast cancer (specific to African-American women). Three of these studies were hospital-based (Austin, Cole & Wynder, 1979; Schatzkin & Palmer, 1987; Laing, Demenais & Williams, 1993), and one used a population-based approach (Mayberry & Stoddard-Wright, 1992). Each of these studies, except that of Austin et al. (1979), used adequate samples of African-American women. Mayberry and Stroddard-Wright (1992) examined risk in both African-American and Caucasian women. The

findings of all the previously mentioned studies suggest that African-American women are susceptible to the same breast cancer risk factors as other women. Yet, the evidence does not provide a rationale for African-American women having a higher breast cancer mortality rate than other women, when they are susceptible to the same risk factors.

Gender. Simply being a woman is the main risk factor for developing breast cancer (American Cancer Society, 1999). Male breast cancer is rare; less than one percent of all breast cancers occur in men (Borgen, Wong & Vlamis, 1992). About 1,600 new cases of male breast cancer were diagnosed in the United States in 1998, and about 400 men died of the disease (Landis, Murry, Bolden & Wingo, 1998). In contrast, 175,000 new cases of female breast cancer were diagnosed in 1998, with approximately 44,500 mortalities (American Cancer Society). Breast cancer is about 100 times more common among women than men (American Cancer Society).

Age. Breast cancer risk increases with age (American Cancer Society, 1999). Breast cancer affects 1 out of 2,525 women aged 30-39. The majority (75%) of breast cancer cases has been reported for women over age 50 (American Cancer Society). Women aged 20-29 accounts for less than one percent of breast cancer cases (American Cancer Society). However, when it comes to African-American women, breast cancer risk is higher for African-American women 20-30 years of age than it is for Caucasian women (Aziz et al., 1999) or for African-American women aged 31 and over.

Researchers have shown that African-American women develop breast cancer ten years earlier than other women (Aziz et al., 1999). The researchers also found two extremes of age groups either young women (20-30 years of age) or older women (over

60 years of age) to be vulnerable to greater mortality and an increase in incidence (Aziz et al., 1999).

Family History. Family history has also been identified as a risk factor. Family is generally defined as biological relatives. Having one first-degree relative (mother, sister, or daughter) with breast cancer approximately doubles a woman's risk, and having two first-degree relatives increases her risk for breast cancer five fold (American Cancer Society, 1999). Therefore, women who have one or more first-degree relatives with breast cancer have two to five times the risk of developing breast cancer than women who do not have familial risk factors.

The risk conferred by a family history has been assessed in both case-control and cohort studies, using volunteer and population-based samples with generally consistent results (Pharoah, Day, Duffy, Easton & Ponder, 1997). In a pooled analysis of 38 studies, the relative risk of breast cancer conferred by a first-degree relative with breast cancer was two percent (Pharoah et al., 1997). A risk of two percent is relatively high, even though the individual still has a ninety-eight percent chance of not getting breast cancer. Yet, a breast cancer risk of 1.7 percent or higher is considered high and is the marker for Breast Cancer Prevention Trials conducted by the NCI (National Cancer Institute, 2000). Risk varies with the age at which the affected relative was diagnosed. The younger the age diagnosed, the greater the risk posed to relatives (Colditz et al., 1993; Hemmink & Vaittinen, 1998; Negri et al., 1997; Pharoah et al., 1997; Slattery & Keber, 1993; Yang et al., 1998).

When assessing family history risk for breast cancer, the accuracy and completeness of the family history data are important. A reported family history risk may be erroneous, or the individual may be unaware of relatives affected with cancer. When a reported family history risk is erroneous or based on conjecture, individual breast cancer risk may be incorrect, overestimated or underestimated.

A comparison of self-reported family history with data from the Utah Population Database indicates a sensitivity of eighty-three percent for a reported family history of breast cancer (Keber & Slattery, 1997), meaning that eighty-three percent of all reports are accurate. In a Canadian study, accuracy of a reported family history of breast cancer was assessed through review of medical records of relatives reported as affected for a consecutive series of women with breast cancer and for a population-based sample of women without breast cancer (Parent, Ghadirian, Lacroix & Perret 1997). Among the family history reports assessed, sixteen percent reported a first-degree relative with breast cancer; ninety-one percent of verifiable histories were confirmed. Among controls, nine percent reported a first-degree relative with breast cancer; ninety-seven percent of verifiable histories were confirmed (Parent et al., 1997). This illustrates that whether a study uses self-reported data or medical records, inaccuracy may exist when accessing a woman's family history risk; however, fewer inaccuracies occur when medical records are used versus self-reported data. It may be concluded that when assessing women's family history risk for breast cancer, medical records provide the most accurate data.

Reproductive and Menarche History. Breast cancer risk increases with early menarche and late menopause, and it is reduced by early first full term pregnancy (Jatoi, 1999). This risk factor is based on the theory that exposure to estrogen increases breast

cancer risk (Davis et al., 1997). Early menarche has been associated with small, non-significant increases in risk among pre-menopausal women in three of four studies (Davis et al.; Johnson-Thompson & Guthrie, 1999; Jatoi, 1999). A trend toward decreasing breast cancer risk with increased reproduction was observed in a study conducted by Jatoi and then again in a study conducted by Johnson-Thompson & Guthrie.

Jatoi (1999) and Johnson-Thompson & Guthrie (1999) found that full term pregnancy reduces breast cancer risk and that breast cancer risk decreases with each full term pregnancy. Both researchers conducted hospital-based studies; however, the number of African-American respondents limited both studies. Out of a sample of 758, only 5 were African-American women in the study conducted by Jatoi. Out of a sample of 1679, only 15 were African-American women in the study conducted by Johnson-Thompson & Guthrie. Full-term pregnancy decreases breast cancer risk; however, hormone replacement therapy will counteract this decrease.

Of all the variables associated with reproductive and menstrual history, hormone replacement therapy during menopause has been the most researched and reported in the literature (Anonymous, 1997; Gorsky, Koplan, Peterson & Thacker, 1994; Schuurman, van den Brandt & Goldbohm, 1995). Conflicting data exist regarding the association between postmenopausal hormone replacement therapy (HRT) and breast cancer. A meta-analysis of data from 51 studies indicated a relative risk of breast cancer of 1.35 percent for women who have used HRT for five or more years after menopause. This risk is slightly lower than the marker for high breast cancer risk, but it can be considered borderline. The excess risk is reduced with cessation of HRT therapy and has largely disappeared within five years (Anonymous, 1997). Breast cancer risk associated with

postmenopausal HRT has been randomly reported to increase (Schuurman et al., 1995). Other studies show short-term use of hormones for treatment of menopausal symptoms appears to confer little or no breast cancer risk (Anonymous, 1997; Gorsky et al., 1994). The research in this area is conflicting. There also seems to be no difference in the breast cancer risk associated with HRT between African-American and Caucasian women. No studies were found that compare the effects of HRT on breast cancer risk between African-American women and women of other ethnic backgrounds.

History of Breast Disease. Benign breast disease (BBD) is a risk factor for breast cancer, independent of the effects of other major risk factors for breast cancer (i.e., age, age at menarche, age at first live birth, and family history of breast cancer) (Gorsky et al., 1994). The risk of developing breast cancer varies by the result of the breast biopsy (i.e., type of benign breast disease). Women with a previous primary breast cancer have a three to four fold increase in risk of a second breast cancer in the contra lateral breast (Kelsey & Gammon, 1991). Most studies report an annual risk of development of a second breast cancer of less than one percent (Singletary, Taylor, Guinee & Whitworth, 1994). While the risk of contra lateral breast cancer persists for up to 30 years after the original diagnosis, the median interval between primary breast cancer and contra lateral disease is approximately four years (Cook et al., 1996). Lobular carcinoma in situ (LCIS), which is often an incidental finding in breast biopsies, is associated with an increased risk of subsequent invasive cancer. Long term follow-up studies of women diagnosed with LCIS report relative risks of developing breast cancer ranging from 7 to 12 percent, which is high. Risks are higher for women diagnosed at a younger age, and for those with a family history of breast cancer. Subsequent breast cancers are most often of ductal histology and

occur equally in either breast, suggesting that LCIS is a marker of risk rather than a pre-cancerous lesion itself (Bodian, Perzin & Lattes, 1996).

None of these studies concerning history of breast disease as a risk factor contained African-American women. It can be either assumed that conclusions from these studies are generalizable to all women or that they are not applicable to African-American women. Because most clinical trials are conducted in cancer research facilities where the population of African-American women is low or non-existent, more research is needed in this area before definite statements can be made regarding the connection between history of previous breast disease and individual breast cancer risk in African-American women.

Other Risk Factors. Another breast cancer risk factor is radiation exposure. Observations in Hiroshima/Nagasaki survivors and in women who have received therapeutic radiation treatments to the chest and upper back documented increased breast cancer risk as a result of such exposure (National Cancer Institute, 2000). The significance of this risk factor in African-American women is unclear.

A second breast cancer risk factor is lifestyle. Several lifestyle factors are associated with breast cancer risk; these include weight gain, obesity, fat intake, and level of physical activity. Weight gain and being overweight are commonly recognized risk factors for breast cancer, with overweight women most commonly observed to be at increased risk of postmenopausal breast cancer (Johnson-Thompson & Guthrie 1999). This risk is thought to be due estrogen from estrogen replacement therapy being retained

by fat cells. The relationship between the factors and breast cancer has not been established for African-American women.

Although the number of studies examining risk factors in African-American women is small, the studies that did examine risk factors in these women employed appropriate methods, and most studies had adequate sample sizes. Furthermore, the results were fairly consistent across studies. It was consistently shown that African-American women are susceptible to the same breast cancer risk factor as Caucasian women; however, African-American women age 20-30 have a higher breast cancer incidence than Caucasian women.

It is important to note that having a risk factor, or even several, does not necessarily mean that a woman will develop breast cancer. African-American women with one or more breast cancer risk factors have not necessarily developed the disease. In contrast, some African-American women who have developed breast cancer have no apparent risk factors (American Cancer Society, 1999; Ernster, Barclay, Kerlikowski & Grady, 1996). Therefore, when a woman with breast cancer has a risk factor, there is no definitive way to prove that the risk factor actually caused her cancer (Ernster et al., 1996). Since the specific agents which cause breast cancer have not been delineated and risk factors have only a minimal contribution to development of the disease early, detection is a key to breast cancer survival.

Detection

The American Cancer Society (1999) lists breast changes such as a lump or thickening, swelling, dimpling, skin irritation, distortion, retraction, scaling, pain,

tenderness or nipple discharge as possible symptoms for breast cancer. Women usually identify their own symptoms first (Murphy, Morns & Lange, 1997).

Women themselves detect more than ninety percent of breast cancers, either through accident or breast self-examination (BSE) (Davis et al., 1997; Murphy et al., 1997). The American Cancer Society recommends that women aged 20 and older perform BSE every month, 2-3 days after their menstrual period. Postmenopausal women should perform BSE the same time each month. Other breast cancer screening practice recommendations endorsed by the American Cancer Society and the National Cancer Institute include an annual clinical breast examination (CBE) for women aged 40 and older, a screening mammogram every 2 years for women between the ages of 40 and 49, and a yearly screening mammogram for women 50 and over (American Cancer Society, 1999; National Cancer Institute, 199).

Breast Cancer Screening

The ultimate aim of early detection through screening is to prevent or delay the development of disease. Compliance with the breast cancer screening methods recommended by the American Cancer Society and the National Cancer Institute appears to be the best way to detect breast cancer early (Lewis, 1999). Proponents of breast cancer screening argue that there is a critical point in breast cancer development when screening is easier and more effective (Jatoi, 1997). The critical point refers to an early development stage when treatment is easier and more effective than at a later development stage.

Researchers have found African-American women are more likely to have aggressive tumors that progress from stage 0 to stage IV in less time than tumors that are not aggressive (Feuer et al., 1993, Underwood, 1998). Therefore, it is imperative that African-American women examine their breasts as recommended by the American Cancer Society and the National Cancer Institute. Many experts believe that breast cancer mortality among African-American women could be significantly reduced if breast cancer screening recommendations were effectively used (American Cancer Society, 1999; Champion & Menon, 1997; National Cancer Institute, 1999; Underwood, 1998).

Roetzheim, Fox & Leake (1994) found that although breast cancer screening rates have increased for the general population of women, African-American women have demonstrated few gains. To date, no clinical trials have been conducted which assess how breast cancer screening compliance affects the breast cancer mortality among African-American women. Breast cancer screening research trials have all but ignored African-American women (Ashing-Giwa, 1999). It has been speculated that since most cancer research occurs in academic centers where African-American women are not typically present, they are unable to participate (Nelson, 1994).

Breast Self-Examination (BSE). Breast self-examination (BSE) is based on the concept that women themselves first notice the majority of breast cancers (Champion & Menon, 1997) and has been recommended as a breast cancer screening technique. Presently, BSE is promoted to women as a convenient, low-risk, and low-cost self-screening procedure for detecting tumors at the smallest palpable size and at a more clinically treatable stage (Osteen, Connonlly, Costanze, Harris & Hayes, 1996).

Despite the reported awareness and BSE being recommended for over thirty years, the literature indicates that fewer than thirty-six percent of all women complete this procedure monthly (Phillips et al., 1999). Ninety-nine percent of African-American women are aware of BSE (Phillips et al., 1999). However, they are less likely than all women to perform adequate BSE (Gillyatt, 1996).

After surveying low-income African-American women between the ages of 18 and 75, Hankey, Miller, Curtis & Kosary (1994) found that women who performed BSE were more likely to be over 65 and believe breast self-examination to be beneficial. The study contained only low-income African-American women; thereby, its results are limited. Also, researchers failed to offer an explanation for older African-American women being more likely to believe BSE to be more beneficial.

A limitation of the BSE studies is that neither study controlled for or reported how BSE behavior was being assessed in the study group. Specifically, how did the researchers determine if the BSE group actually practiced BSE as prescribed by the study? Also, how did the researchers access the BSE group's BSE efficacy? Additionally, the study may have produced different results if the length of the study was increased from 5 to 10 years. Breast cancer is typically slow in its growth (American Cancer Society, 1999); therefore, breast cancer trials that address BSE's effectiveness may be better suited with longer duration. Finally, the researchers did not take into consideration the amount of time needed for an individual to become confident in her ability to perform BSE once she has received training or how different age groups may respond to BSE training differently. Addressing these flaws could have an impact upon the findings of both trials.

Clinical Breast Examination (CBE). Clinical breast examination is identical to breast self-examination except the examination is done by a trained professional. CBE is recommended annually for women age 40 and over (American Cancer Society, 1999; National Cancer Institute, 1999). Although CBE is a recommended breast cancer screening technique, it has not been well evaluated in the literature. Studies that access the efficacy of CBE are combined with mammography. Trials, which compared CBE to no screening, have not been conducted (Jatoi, 1999). Consequently, trial findings cannot be attributed to CBE alone.

According to Hall, Roter, Milburn & Daltroy (1996), ninety percent of African-American women in this study (n = 120) were familiar with clinical breast examination. However, according to the National Center for Health Statistics (1999), only forty to fifty-five percent of African-American women aged 40 and over report having the recommended yearly clinical exam.

Mammography. Although it is now widely available and recommended for women over the age of 40, until the early 1980's, mammography was not used for widespread screening (Sirovich & Sox, 1999). Mammography itself is not new. It was developed shortly after Roentgen's discovery of radiography in the late 1800s and was used in the differential diagnosis of breast masses in symptomatic women (Sirovich & Sox).

Regular mammography has been shown to reduce mortality from breast cancer in women aged 50 and older (Shapiro, Strax & Venet, 1990). However, utilization rates for mammography were sixty-five percent, below the Year 2000 goal of eighty percent, with

utilization rates for African-American women being even lower (approximately forty-five percent) (National Cancer Institute Screening Consortium for Underserved Women, 1995).

Of the recommended breast cancer screening techniques, mammography has been reviewed most regarding African-American women. In a sample of predominately low-income African-American women aged 35 and older, researchers found that older women and those who performed BSE were more likely to receive a screening mammogram (Bloom, Grazier, Hodge, & Hayes, 1991). Having insurance and having received an annual clinical breast examination have been shown to not relate significantly to mammography use (Roetzheim et al., 1999). Researchers have found that African-American women who receive a screening mammogram perceived themselves to be more susceptible to breast cancer and considered breast cancer to be serious compared with women who did not want a mammogram (Price, Desmond, Slenker, Smith & Stewart 1992).

In a study conducted by Champion & Menon (1997), almost two-thirds of African-American women had at least one mammogram in their lifetime (Champion & Menon). However, only thirty-one percent of the women in their study reported following the recommended breast cancer screening practices for women aged 40 and over (Champion & Menon). Thirty percent of the women who had only one mammogram believe if their first mammogram showed no problem, they did not need to have any more (Champion & Menon).

Phillips et al. (1999) compared the adherence to breast cancer screening guidelines among 154 low-income African-American women aged 40-65. Although sixty-three percent of all respondents practiced monthly breast self-examination, seventy-six percent had received a yearly CBE and only twenty percent had received a mammogram. Breast cancer screening was lower than recommended (Phillips et al., 1999). Phillips' findings raise more questions related to breast cancer screening among African-American women. For instance, why did such a low percentage of African-American women in her study adhere to breast cancer screening guidelines? How could these women be encouraged to practice breast cancer screening according to the guidelines?

Variables Related to Breast Cancer Screening by African-American Women

Variables associated with breast cancer screening compliance include demographic factors (age, income, and education), breast cancer knowledge (Champion, & Menon, 1997), and individual breast cancer risk factors (Falik & Collins, 1996). Studies that access these variables among African-American women have focused mostly on specific groups, such as low-income women.

Breast Cancer Knowledge

Breast cancer knowledge refers to a woman's knowledge of breast cancer risk, breast cancer screening as described by the American Cancer Society, and breast cancer treatment. It is a predisposing variable that determines women's breast cancer screening compliance. Bloom, Grazier, Hodge & Hayes (1991) reported breast cancer knowledge is important because women who have an appropriate amount of breast cancer knowledge

are more aware of their risk for breast cancer and are more likely to comply with breast cancer screening. A lack of breast cancer awareness and its associated risks has been the most common reason given by African-American women for not practicing breast cancer screening (Paskett et al., 1997).

Breast cancer knowledge is one factor influencing the likelihood of women practicing the following breast cancer screening techniques: breast self-examination, clinical breast exam, and screening mammography. Empirically, breast cancer knowledge has been directly correlated with breast self-examination (Ashing-Giwa, 1999). Phillips et al. (1999) stated that women's overall knowledge of breast cancer and breast cancer screening has increased in recent years. Research findings have shown a positive relationship between breast cancer knowledge and the frequency of breast self-examination (Ashing-Giwa; Champion & Menon, 1997; Phillips et al., 1999). Champion and Menon cited breast cancer knowledge as the best predictor of breast self-examination.

Proponents of the theory that breast cancer knowledge has a positive relationship with breast cancer screening believe that as a woman's breast cancer knowledge is increased, her breast cancer screening practices will increase as well. Various studies have found African-American women are unaware of breast cancer risk factors, the appropriate time and technique to perform breast cancer screening, and treatment for breast cancer (Champion & Menon, 1997; McDonald et al., 1989; McCaul, Bransetter, Schoeder & Glasgow, 1996). The random selection of respondents in this study allows the findings to be generalizable to similar public housing communities. The drawback,

however, is that the findings are based upon subjective responses from respondents, which allows for false or overestimated responses.

Opponents of the theory that breast cancer knowledge has a positive relationship with breast cancer screening believe that breast cancer knowledge does not always translate into practice. Opponents believe that women who have knowledge about breast cancer and breast cancer screening may still not practice breast cancer screening. Chavez, Hubbell, McMullin, Martinez & Mashra (1995), stated that biomedical knowledge, which is the type of knowledge related to biomedical and epidemiological based information relating to breast cancer risk and screening guidelines, does not translate into actual practice. These researchers believe a discrepancy exists between women's knowledge of breast cancer screening methods and their actual practices (Danigelis et al., 1995).

Women's breast cancer knowledge is not enough to explain their breast cancer screening compliance. However, without breast cancer knowledge, women are unable to consciously comply with recommended breast cancer screening. Given the lack of definitive data related to breast cancer knowledge affecting breast cancer screening compliance in African-American women and the high mortality rates among African-American women who have breast cancer, it is important to develop a better understanding of the relationship between breast cancer knowledge and the breast cancer screening practices of this population.

Demographic Factors

Demographic factors allude to a woman's potential abilities and barriers regarding her breast cancer screening compliance (Crane et al., 1996). Generally, demographic

factors influencing breast cancer screening have included income, education, and age. Research regarding income and breast cancer screening consistently show that low-income women comply less with screening than their more wealthy counterparts (Falik & Collins, 1996; Paskett et al., 1997). Little research regarding African-American women with an income status other than low-income has been conducted or reported in the literature. Furthermore, research regarding education and breast cancer screening consistently shows that low educational attainment is related to low screening compliance (McDonald et al., 1999). Some research regarding age and breast cancer screening practice show age to be a predictor of breast cancer screening; however, other research states that age is not a predictor of breast cancer screening practice.

Income. Low-income women (total household income of $10,000 per year) are not as likely to practice breast cancer screening as women with incomes greater than 10,000 per year (Davis et al., 1996). Lannin et al. (1998) reported that only eight to twenty-two percent of low-income women receive regular breast cancer screenings. Rajaram and Rashidi (1998) argued that breast cancer screening practices among lower-income African-American women is the result of financial constraints. Therefore, an African-American woman's decision to practice breast cancer screening may depend on whether she can take time off from work or has adequate health insurance. In a study conducted by Sung, Blumenthal, Coates & Alema-Mensah (1997), income was found to be a predictor of screening histories. Overall, upper-income (greater than $25,000 per year) women were significantly more likely to have received a breast examination within the past year than were lower-income women.

Miller & Champion (1997) found support for the influence of income on breast cancer screening practice. They reported breast cancer screening compliance to be lower among women with lower incomes than for women with higher incomes. Miller & Champion found lower income to be related to a decrease in access to CBE and mammography screenings. Additionally, Paskett et al. (1997) stated that lower income was the strongest predictor of non-compliance with nearly eighty percent of women in their study who were below poverty, never having had a CBE or mammogram, compared to fifty percent of women in the highest income category. Plotkin (1996) also stated that women least likely to practice breast cancer screening were those of low socioeconomic status.

In contrast, Underwood (1994) stated that women of low-income status were more likely to comply or just as likely to comply with breast cancer screening recommendations as were women of other income levels. This is supported by results from a study conducted by Woods (1996) that reported that women with low income do practice breast cancer screening. Woods (1996) suggested that early detection as well as appropriate therapy may help reduce the mortality among African-American women, thereby offsetting the effect of income.

Education. Low educational attainment is an under recognized problem in health care today (Crane et al., 1996). The National Adult Literacy Survey found that twenty-one percent of adults do not have a high school education and another twenty-seven percent have only a high school education (McPherson, Steel & Dixon, 1994). This suggests that between twenty-one to twenty-seven percent of adult women may not be able to understand breast cancer screening guidelines because of their educational

attainment. This unfortunately is the group of women least likely to practice breast cancer screening (Davis et al., 1996).

Eley et al. (1994) found significant relationships between education and breast cancer screening. However, a study by Champion & Menon (1997) found education to not influence breast cancer screening compliance and suggested that the relationship reported in other studies was due to selection bias.

Age. Results of some studies have not found a relationship between age and compliance with approved breast cancer screening practice (Champion & Menon, 1997; Falik & Collins, 1996; Sung et al., 1997). Sung et al. stated that age was not a predictor of breast cancer screening. In their study, younger women tended to be better educated, employed, have higher incomes, and have more breast cancer knowledge; however, they were less likely to have breast cancer screening than older women.

Others have suggested that younger women are more likely to comply with breast cancer screening recommendations than older women (Rimer, 1993; Lewis, 1999). These researchers suggested that younger women are more likely to comply because they tended to be better educated. Yet, Crane et al. (1996) reported that women 50 years of age and older were more likely to comply with breast cancer screening recommendations than younger women. Crane et al. (1996) suggested that older women tended to have more breast cancer knowledge, which contributed to their compliance.

Individual Breast Cancer Risk Factors

Individual breast cancer risk is also a factor influencing breast cancer screening practice. It refers to a woman's individual risk for breast cancer, specifically her gender, age, family history of breast cancer, and history of reproduction, menarche, and breast disease. When women are aware of their individual breast cancer risk factors, they are more likely to practice the appropriate breast cancer screening (Ashing-Giwa, 1999). Even though individual breast cancer risk is a critical component of understanding why women practice breast cancer screening, few studies have focused on the relationship between individual breast cancer risk and breast cancer screening.

Individual risk for mortality and disease has been linearly related to increased health behavior performance for behaviors such as seatbelt and condom use (Stasson & Fishbein, 1990); however, the case for breast cancer is not so clear. Studies linking individual breast cancer risk and performance of mammography have reported mixed results. Some studies have reported linear relationships; whereas others have reported an inverted U-shaped relationship with very low and very high levels of individual breast cancer risk associated with lowered levels of breast cancer screening practice (McCaul et al., 1996). Hall et al. (1996) found women with an individual breast cancer risk for breast cancer were more likely to practice monthly self-examination. In general, women's self reports overestimate their own risk for breast cancer (Hemminki & Vittinen, 1998), particularly if they have any family history of breast cancer.

Two studies have shown women were least likely to have a yearly clinical exam when they were unaware of their individual breast cancer risk. The first study conducted

by Miller & Champion (1997) found that women were more likely to report having a clinical breast exam in the past 12 months when they were aware of their individual breast cancer risk. A second study conducted by Yood et al. (1999) indicated that forty percent of women reported not having clinical breast exams because they did not have a family history of breast cancer.

Thirty-five out of thirty-eight studies reviewed by McCaul et al. (1996) reported that individual breast cancer risk and breast cancer screening practices are dependent. From these studies, the researchers generalized that individual breast cancer risk has a small to moderate positive effect upon breast cancer screening practice.

Summary

Breast cancer is the second leading cause of cancer deaths among women in the United States. The American Cancer Society has estimated that one out of every nine women will develop breast cancer sometime during her life. The mortality of breast cancer has steadily increased for African-American women. Current research has shown that many African-American women have their breast cancers detected at a later stage when their chance of survival is poorest (National Cancer Institute, 1999). Current research has not identified the cause of this phenomenon.

According to the National Cancer Institute, mortality rates could be reduced by as much as thirty percent through breast cancer screening compliance. Despite the evidence supporting breast self-examination (BSE), clinical breast examination (CBE), and screening mammography, many women do not comply with recommended breast cancer screening practices. It is estimated that only thirty to forty percent of African-American

women practice monthly BSE. Though most women aged 40 and over are aware of CBE, recent data from the National Cancer Institute have shown that only forty-five to fifty-five percent have them once a year. Finally, though mammography screening has doubled in the past decade, only about fifty percent of women aged 40-49 comply with recommendations, and the percentage of women aged 50 and over who have mammograms at the appropriate intervals substantially decrease with age (i.e., thirty-four percent: 50-59, twenty-seven percent: 60-69, eighteen percent: 70+). The literature does not report what specific percentage of African-American women who utilize CBE or screening mammography.

Studies have been conducted in order to determine the reasons for the under utilization of or noncompliance with the recommended breast cancer screenings. Data have reported that demographic factors such as age, race, religion, economic status, and education level significantly relate to a woman's compliance with breast cancer screening practices. Data also show that breast cancer knowledge is related to breast cancer screening utilization. Other data show that individual breast cancer risk is significantly related to compliance with breast cancer. Inconsistencies are present in the literature.

It does not appear that breast cancer can be prevented. The only mechanism to increase an African-American woman's chance of survival is through breast cancer screening. Although the literature identifies factors related to mammography screening in general populations, little attention has been paid to variables related specifically to breast cancer screening in African-American women. The current study is the first to study this population.

CHAPTER III

METHODOLOGY

The purpose of this study was to find out whether age, income, educational attainment, breast cancer knowledge, and individual breast cancer risk affect the compliance with breast cancer screening practices among African-American women who attended or are employed at Grambling State University in Grambling, Louisiana or who utilized the Willis-Knighton Neighborhood Clinic in Shreveport, Louisiana. This chapter describes how the data were collected. Included are the following: description of the sample population, instrumentation, pilot study, and data collection.

Sample Population

Four hundred questionnaires were distributed to prospective respondents. One hundred and fifty questionnaires were distributed to Grambling State University female employees. Fifty questionnaires were distributed to female head start teachers seeking an Associate's of science degree in Child Development from Grambling State University. Two hundred questionnaires were distributed to women who sought medical care at the Willis-Knighton Neighborhood Clinic. The total number of respondents and questionnaires used for analysis was 273.

Table 3.1 shows the distribution of respondents race, marital statue, income, education, age and employment according to site. There were a total of two hundred and seventy-three African-American women who participated in this study. Twenty-eight attended Grambling State University and ninety-nine were employed at Grambling State

University in Grambling, Louisiana. One hundred and forty-six utilized the Willis-Knighton Neighborhood Clinic in Shreveport, Louisiana.

Table 3.1

Respondent Distribution by Race, Marital Status, Income, Education, Age and According to Site

Characteristic	GSU (n = 127); %		WKNC (n = 146); %	
Race:				
Black or African-American	108	93	146	100
White or Caucasian	18	06	00	00
Asian	01	01	00	00
Marital Status:				
Never Married	27	21	20	14
Married	82	65	93	64
Divorced, Separated, Widowed	17	13	32	22
Income:				
<5,000	00	00	05	03
5,000 – 9,999	15	12	33	23
10,000 – 14,999	32	25	49	34
15,000 – 19,999	08	06	10	07
20,000 – 24,999	13	10	22	15
25,000 – 39,999	45	35	22	15
40,000 – 49,999	11	09	00	00
>50,000	01	01	02	14
Not Reporting	02	02	03	02
Education:				
<High school	00	00	13	09
High school Graduate or GED	02	02	12	08
Some College or Technical School	05	04	52	36
Associate's Degree	20	16	07	05
Bachelor's Degree	23	18	05	03
Master's Degree	64	50	20	14
Doctorate	08	06	00	00
Other	02	02	22	15
Not Reporting	02	02	16	11
Age:				
Group 1 (Under 25)	05	04	10	07
Group 2 (26-29)	19	15	23	16
Group 3 (30-39)	20	16	46	32
Group 4 (40-49)	69	54	61	42
Group 5 (50-59)	12	09	05	03
Group 6 (Over 60)	02	02	01	01

GSU represents Grambling State University; WKNC represents Willis-Knighton Neighborhood Clinic

Permission

The investigator received permission from the Home Economics Department Head to utilize Grambling State University and from Laverne Carley (The Clinic's Health Educator) to utilize the Willis-Knighton Neighborhood Clinic as research site locations. These sites were chosen because they contained a population of African-American women with varying incomes, educational attainments, and ages.

A cover letter and questionnaire (Appendix A) were distributed to the respondents or potential respondents via the Head of the Grambling State University Home Economics Department Head (by intercampus and interdepartmental mail) and the Health Educator at the Willis-Knighton Neighborhood Clinic. The cover letter explained the nature of the study and explained that participation in the study was voluntary and would not influence promotions, course grades, or pay increases for the Grambling State respondents or treatment as well as access to the clinic's services for the Willis-Knighton respondents. Also, women were told that all data would be kept confidential. The study received approval by the Virginia Tech Human Respondents Review Board (IRB #00-82) (Appendix B).

Site Information

Grambling State University is a historically Black university, located in the center of Grambling, Louisiana, sixty miles east of Shreveport, which is in the Northwest quadrant of Louisiana. Grambling State University is a state-supported co-educational institution. The university was originally created for the purpose of meeting the educational, cultural, and social needs of the Black citizens residing in the northern and western parts of the state (Grambling State University, 2000).

The mission evolved and now focuses on undergraduate, graduate, and professional degrees, as well as continuing and international education programs. The University's mission is designed to meet the educational needs of a primarily state-based clientele.

The Willis-Knighton Neighborhood Clinic is a free clinic located in Shreveport, Louisiana. The clinic is located in the heart of a predominately African-American community. The facility is a newly restored brick building which houses a fitness center on one side and a health clinic on the other. A certified physician's assistant sees all female clients. The support services at the Willis-Knighton Neighborhood Clinic include a licensed practical nurse, a receptionist, administrative staff, health educator, and a laboratory/medical assistant. Monday, Tuesday and Thursday mornings, from 8:00 am until 12 p.m., are devoted to women's health screenings, which include mammograms. Women who do not require mammograms, women who have had recent mammograms, or women with palpable breast lumps also use the Clinic.

Table 3.2 shows the participant distribution breakdown according to parish and data collection site. As illustrated in Table 3.2, all of the respondents from the Willis-Knighton Neighborhood Clinic were from Caddo Parish. The participants from Grambling State University were from either Bienville, Bossier, Desoto, East Carroll, Lincoln, Morehouse, Quachita, Rapides, or West Carroll Parishes.

Table 3.2

Respondent Distribution Breakdown According to Parish and Data Collection Site

	Number	Data Collection Site
Parish:		
Bienville	003	Grambling State University
Bossier	007	Grambling State University
Caddo	146	Willis-Knighton Clinic
Desoto	001	Grambling State University
East Carroll	009	Grambling State University
Lincoln	024	Grambling State University
Morehouse	033	Grambling State University
Quachita	022	Grambling State University
Rapides	027	Grambling State University
West Carroll	001	Grambling State University

Measurement

Instrumentation

The investigator used the literature regarding breast cancer and health assessment in addition to a panel of experts to develop the questionnaire for this study. The panel of experts was selected from a pool of African-American women who have published studies on the culture of African-American women living in Northwest Louisiana, and from a pool of published breast cancer experts at Louisiana State University. Initially the questionnaire was made up of four sections: demographics, breast cancer risk, breast cancer screening practices, and breast cancer knowledge.

Section One: Demographics. Questions 1-10 – Information regarding the participant's age, race, marital status, education, employment classification, and income.

Section Two: Breast Cancer Risk. Questions1-8 – Items recommended by the National Cancer Institute (1999) and those developed by the investigator based on a

review of the literature were used to determine the participant's personal breast cancer risk. Specifically, respondents were asked to report their age at the onset of menarche, age at onset of menopause, age during the birth of their first child, family history of breast cancer, and personal history of breast conditions. When a participant had at least one risk factor, they were considered to have an individual breast cancer risk.

Section Three: Breast Cancer Screening Practices. Questions 1-11 - The respondents were asked questions about breast self-examination. Specifically, they were asked whether or not they have heard of it, if they practiced it, and if so, how often. Additionally, the respondents were asked if they had ever had a clinical breast exam by a physician or a nurse, and if so, how often they receive a clinical breast exam. Questions concerning mammography were used to determine whether respondents had heard of mammography, if a physician had ever recommended that they have a mammogram, whether they have had a mammogram, and if so, how often do they have a mammogram.

Section Four: Breast Cancer Knowledge. Questions 1-36 – Items previously used by Sutton (1991), Crane (1996), and Champion (1997), in addition to items developed by the investigator based on a review of the literature regarding breast cancer were used to determine the participant's general knowledge of cancer: the incidence of breast cancer, the treatment of breast cancer; African-American women and cancer; the risk between lifestyle and the environment and breast cancer; the risk factors for breast cancer; breast cancer detection; the common signs and symptoms of breast cancer; and also the recommended frequency and timing of the three breast cancer early detection behaviors and the treatment for breast cancer. All items were constructed using a multiple-choice format with only one correct answer. The correct answers were based upon the American

Cancer Society's Breast Cancer recommendations and cancer facts and figures information obtained from the National Cancer Institute.

Development of the Questionnaire

The items in the questionnaire were selected from the instruments developed by Sutton (1991), Crane (1996), and Champion (1997), as well as those developed by the investigator based on her review of the literature. The initial questionnaire consisted of 70 questions. However, after a review by a panel whose expertise was in African-American women's health issues and breast cancer, some questions were eliminated. Some questions were determined to be too difficult and were reworded. A total of 65 questions resulted. The questionnaire was organized into four sections: demographics (10 questions), breast cancer risk (8 questions), breast cancer screening practices (11 questions), and breast cancer knowledge (36 questions).

Pilot Study. To determine whether there were any problems with the questionnaire or directions for potential respondents, a pilot study was conducted using a convenient sample of African-American women. During the March , 2000, meeting of the Blacksburg Alumnae Chapter of Delta Sigma Theta Sorority, Incorporated, the investigator distributed sixteen questionnaires to members. All respondents were African-American women aged 25-60. Two respondents were between the ages of 25-29. Ten respondents were between the ages of 30-39. Three respondents were between the ages of 40-49. One participant was between the ages of 50-59, and one participant was 60 years of age. All respondents had completed at least four years of college, with fifty percent having an advanced degree. All of the respondents resided in Blacksburg, Virginia: sixty-

four percent were students, thirty percent were Virginia Polytechnic Institute and State University faculty and six percent were retired educators. All questionnaires were filled out completely, returned to the investigator, and reviewed and deemed suitable for analysis by the investigator.

After this survey was conducted, the results were analyzed for questionnaire quality and an item analysis was performed. After the pilot study was conducted and the data were analyzed, and approval received from the Virginia Tech Human Respondents Review Board, the questionnaire was submitted for review to a second panel of experts. The second panel of experts consisted of four cancer specialists from the National Cancer Institute and the Johns Hopkins University Department of Epidemiology. They made recommendations regarding the questionnaire, which was subsequently revised, based on these recommendations. The revised questionnaire, which consisted of sixty-five questions, was used for this study. Table 3.3 shows the demographic profile of the pilot study respondents.

Table 3.3

Profile of Pilot Study Respondents

	Frequency	Percent
Age:		
25-29	02	12%
30-39	10	59%
40-49	03	18%
50-59	01	05%
60	01	05%
Education:		
BS Degree	09	51%
Advanced Degree	08	49%
Employment:		
Full-time Student	10	64%
Faculty	06	39%
Retired	01	06%

Based upon the comments from the respondents, the result of the item analysis and suggestions from the panel of experts, revisions were made. Specifically, the format of the questionnaire was changed from a circle-the-answer format to a multiple-choice format. Also, the question requesting income information was moved to the end of the demographic section.

Data Collection

Before data collection began, permission to conduct the study was applied for and received from the Virginia Polytechnic Institute State University Human Subject Review Board, the Head of the Home Economics Department at Grambling State University, and the Willis-Knighton Neighborhood Clinic Health Education Specialist (Appendix D).

Data collection began in the late spring and ended in the early summer of 2000. The investigator sent the Home Economics Department Head a master copy of the

instrument packet, which contained the questionnaire (Appendix A) as well as the informed consent, and letter of introduction (Appendix C). The Home Economics Department made and distributed four hundred copies of the instrument packet (questionnaire, informed consent form, and letter of introduction). One hundred and fifty instrument packets were sent out via campus mail to Grambling State University female faculty and staff. Fifty instrument packets were distributed to the Head Start Teachers. Two hundred instrument packets were given to the Willis-Knighton Health Education Specialist. The Health Education Specialist then distributed the questionnaire to the first two hundred women to sought care at the Willis-Knighton Neighborhood Clinic. All questionnaires were returned to the Head of the Home Economics Department and then returned to the investigator via postal mail for analysis. The instrument packets were color coded according to site administration. Table 3.4 shows the questionnaire distribution and response rate according to site.

Table 3.4

Questionnaire Distribution and Response Rate by Site

	No. Distributed	No. Returned	Response Rate
Site:			
Grambling State University	200	146	73%
Willis-Knighton Neighborhood Clinic	200	146	73%

Data Analysis

The first step of the analysis process was to eliminate respondents who did not fit the profile of the study population. Nineteen (7%) of the women who returned the

questionnaire were not African-American women. These women were excluded from the analysis. Therefore, all returned data sheets that were filled out by African-American women were used in the analyses. After, the respondents' demographic information was analyzed and a profile of the respondents was developed to describe their employment, income, age, and education.

The second step of the analysis process was to analyze the respondents' breast cancer screening information. The respondents were dichotomized according to their compliance with breast cancer screening practices. Respondents who reported practicing the breast cancer screening as recommended by the American Cancer Society and the National Cancer Institute for their age group were considered compliers.

The third step of the analysis process was to analyze the section of the questionnaire that consisted of the respondents' breast cancer knowledge. Each respondent received twelve knowledge scores - - an overall score and eleven sub-scores. The respondents' overall breast cancer knowledge scores were calculated based on their response to questions (numbers 1-34). The respondents sub-scores were based on their response to questions in each sub-section. There were eleven sub-sections: (1) general cancer information; (2) knowledge about African-American women and cancer; (3) lifestyle cause; (4) environmental cause; (5) risk; (6) detection; (7) symptoms; (8) mammography; (9) clinical breast examination; (10) breast self examination; and (11) treatment.

The final step of the analysis process was to analyze the hypotheses. Each hypothesis was analyzed using the chi-square test of independence. The chi-square test of independence was used to determine if breast cancer screening practices were

independent of: breast cancer knowledge; income; education; age; and individual breast cancer risk factors (age of menarche, full term pregnancy, age when gave birth to first child, menopause, age experienced menopause, previous breast conditions, type of breast condition, family history of breast cancer). Statistical significance was set at a *p*-value of 0.05.

After the chi-square test of independence was completed, logistic regression was conducted as a post hoc analysis. It was to demonstrate the likelihood that women in the sample would practice breast cancer screening and the strength and magnitude of the breast cancer screening practice. Logistic regression was chosen as a post hoc statistical measurement because it is useful for situations in predicting the presence or absence of breast cancer screening practices. It is similar to a linear regression model but is suited to models where the dependent variable is dichotomous. Logistic regression coefficients can be used to estimate odds ratios for each of the independent variables in the model.

CHAPTER IV

RESULTS OF THE STUDY

A presentation of the results of this study is presented in this chapter. It contains the findings from the survey instrument and analysis of data.

Profile of the Respondents

Nineteen (7%) of the returned questionnaires were completed by respondents who were not African-American. These women were excluded from the analysis because they did not fit the profile of the study population. All data sheets that were filled out by African-American women were used in the analyses. Table 4.1 shows a profile of the respondents' race, marital status, income, education, and age, regardless of site.

Table 4.1

Respondents Marital Status, Income, Education and Age Regardless of Site

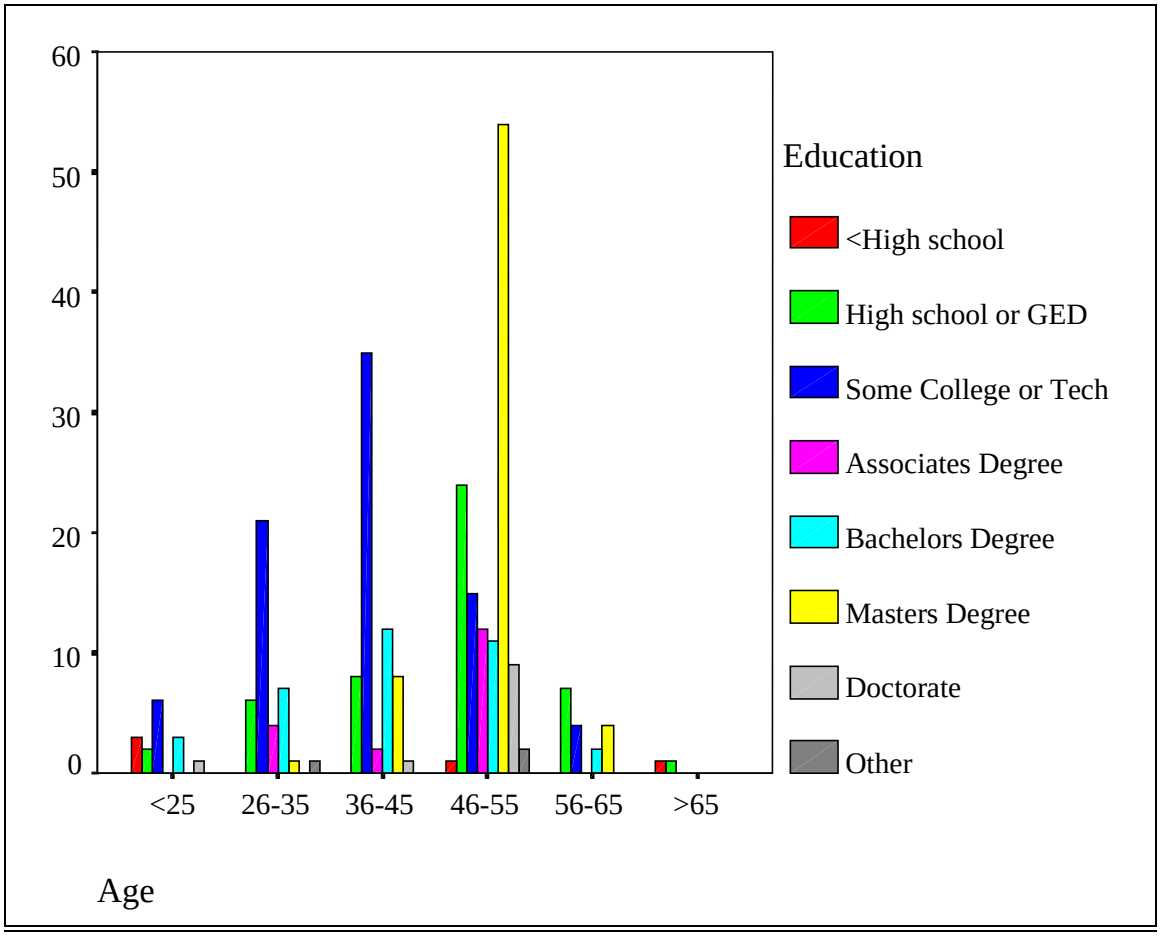
Characteristic	N	% = 100
Marital Status: N = 273		
Never Married	47	17
Married	176	64
Divorced, Separated, Widowed	50	18
Income: N = 273		
< 5,000	05	2
5,000 – 9,999	48	18
10,000 – 14,999	81	30
15,000 – 19,999	18	07
20,000 – 24,999	35	13
25,000 – 39,999	67	25
40,000 – 49,999	11	04
>50,000	03	01
Not Reporting	05	02
Education: N = 273		
<High school	13	05
High school Graduate or GED	14	05
Some College or		
Technical School	57	21
Associate's Degree	27	10
Bachelor's Degree	28	10
Master's Degree	84	31
Doctorate	08	03
Other	24	09
Not Reporting	18	07
Age: N = 273		
Group 1 (Under 25)	15	06
Group 2 (26-29)	42	15
Group 3 (30-39)	66	24
Group 4 (40-49)	130	48
Group 5 (50-59)	17	6
Group 6 (Over 60)	03	1

As seen in Table 4.1, most of the respondents were married (n = 176) and between 40-49 years of age (n = 130). In the income and education categories, most of

the respondents reported having an annual income between 10,000 to 14,999 (n = 81), and had a Master's degree (n = 84).

After the respondents' profile was determined, comparisons were made between their income, age, and education. The following comparisons were made: (1) age and educational attainment; (2) age and income; (3) education and income. Figure 4.1 shows the educational attainment according to the age of the respondents, regardless of site.

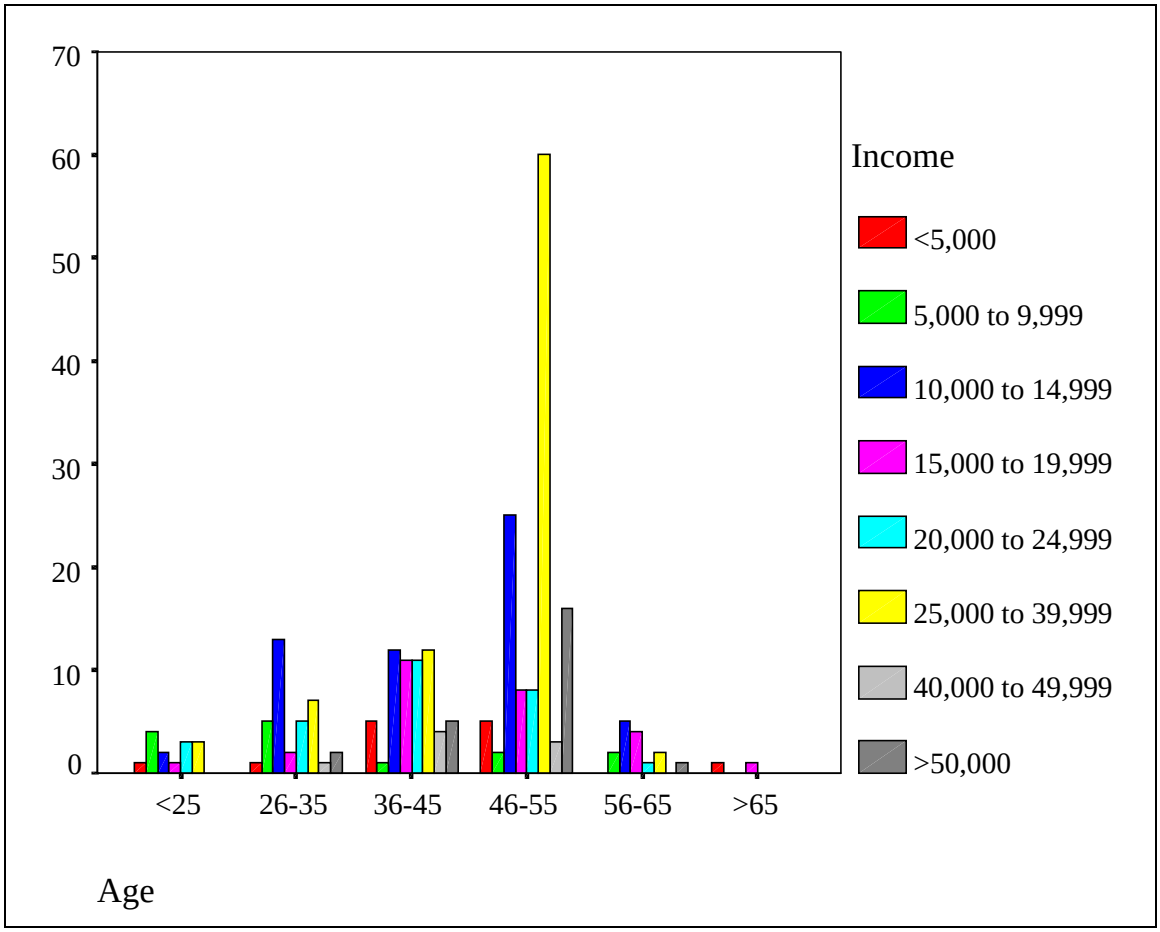
Figure 4.1. Respondents' educational attainment according to their age regardless of site.



As illustrated in Figure 4.1, most of the respondents less than twenty-five years of age (n = 6), twenty-six to thirty-five years of age (n = 21), and thirty-six to forty-five years of age (n = 35) reported having some college or technical college. Most of the respondents forty-six to fifty-five years of age (n = 54) reported attaining a Master's degree. Most of the respondents fifty-six to sixty-five years of age (n = 7) reported having a high school education or GED. There were two respondents who were older than sixty-five years of age (n = 2), one with less than a high school education, and one with high school education/GED.

Figure 4.2, shows the respondents' income according to their age.

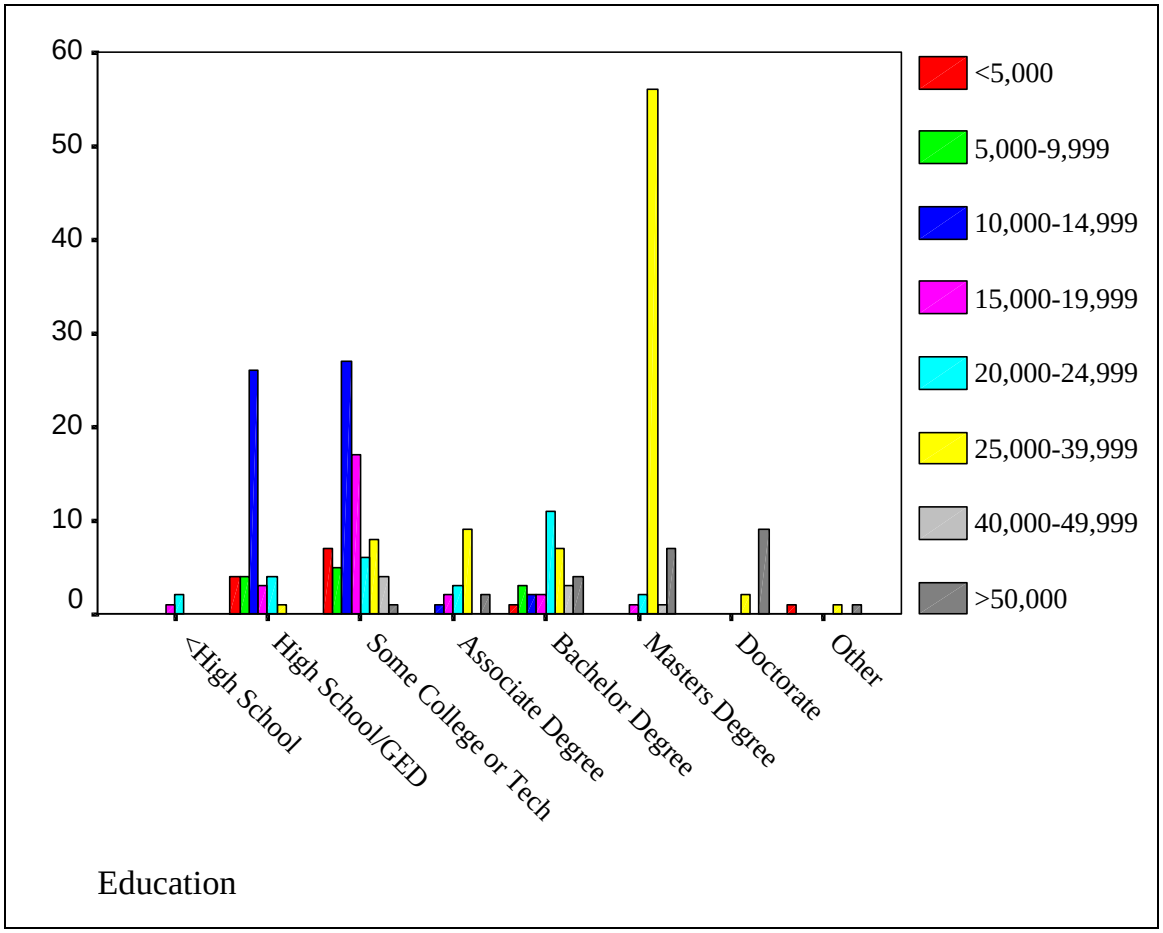
Figure 4.2. Respondents' annual income according to their age regardless of site.



As illustrated in Figure 4.2, most of the respondents less then twenty-five years of age (n = 4) had an annual income of 5,000 to 9,999. Most of the respondents twenty-six to thirty-six years of age (n = 13) had an annual income of 10,000 to 14,999. Most of the respondents thirty-six to forty-five years of age (n = 24) had annual incomes of either 10,000 to 14,999 (n = 12) or 25,000 to 39,999 (n = 12). Most of the respondents forty-six to fifty-five years of age (n = 60) had an annual income of 25,000 to 39,999. Most of the respondents fifty-six to sixty-five years of age (n = 5) had an annual income of 10,000 to 14,999. The respondents over sixty-five years of age (n = 2) either had an annual income

less than 5,000 (n = 1) or 15,000 to 19,999 (n = 1). Figure 4.3 shows the respondents' annual income according to their education.

Figure 4.3. Respondents' annual income according to their education regardless of site.



As illustrated in Figure 4.3, most of the respondents with less than a high school education (n = 7) reported having an annual income of 20,000 to 24,999. Most of the respondents with a high school education or GED (n = 5) reported having an annual income of 10,000 to 14,999. Most of the respondents with some college or technical school experience (n = 27) reported having an annual income of 10,000 to 14,999. Most of the respondents with an Associate's degree (n = 17) reported having an annual income

of 25,000 to 39,999. Most of the respondents with a Bachelor's degree (n = 11) reported having an annul income of 20,000 to 24,999. Most of the respondents with a Master's degree (n = 56) reported having an annual income of 25,000 to 39,999. Most of the respondents with a Doctorate (n = 4) reported having an annual income of more than 50,000. Most of the respondents who reported their educational attainment as other (n = 9) had an annual income of more than 50,000.

After the comparisons were made, the respondents' employment was determined according to site. Table 4.2 shows the respondents' employment information according to site.

Table 4.2

Respondents Employment Information According to Site.

	N = 273	Site	% = 100
Employment:			
Unemployed	16	WKNC	05
Public School Teachers	74	WKNC	27
Service Worker	48	WKNC	18
Staff	82	GSU	30
Faculty	17	GSU	06
Head Start Worker	28	GSU	10
Other	8	WKNC	03

GSU represents Grambling State University
WKNC represents Willis-Knighton Neighborhood Clinic

As shown in table 4.2, all of the respondents who were unemployed, teachers, service workers, or other sought care at the Willis-Knighton Neighborhood Clinic. All of the respondents who were staff, faculty, or head start teachers were affiliated with Grambling State University.

After the respondents' employment information was determined, their race marital status, income, education and age were determined according to site. Table 4.3 shows the race, marital status, income, education and age of the respondents according to the site.

Table 4.3

Respondents Marital Status, Income, Education and Age According to Site

Characteristic	GSU (n = 127); %		WKNC (n = 146); %	
Marital Status:				
Never Married	27	21	20	14
Married	82	65	93	64
Divorced, Separated, Widowed	17	13	32	22
Income:				
< 5,000	00	00	05	03
5,000 – 9,999	15	12	33	23
10,000 – 14,999	32	25	49	34
15,000 – 19,999	08	06	10	07
20,000 – 24,999	13	10	22	15
25,000 – 39,999	45	35	22	15
40,000 – 49,999	11	09	00	00
>50,000	01	01	02	14
Not Reporting	02	02	03	02
Education:				
<High school	00	00	13	09
High school Graduate or GED	02	02	12	08
Some College or				
Technical School	05	04	52	36
Associate's Degree	20	16	07	05
Bachelor's Degree	23	18	05	03
Master's Degree	64	50	20	14
Doctorate	08	06	00	00
Other	02	02	22	15
Not Reporting	02	02	16	11
Age:				
Group 1 (Under 25)	05	04	10	07
Group 2 (26-29)	19	15	23	16
Group 3 (30-39)	20	16	46	32
Group 4 (40-49)	69	54	61	42

Group 5 (50-59)	12	09	05	03
Group 6 (Over 60)	02	02	01	01
GSU represents Grambling State University; WKNC represents Willis-Knighton Neighborhood Clinic				

The majority of the respondents (n = 146) sought health care at the Willis-Knighton Neighborhood Clinic. The remaining (n = 127) were affiliated with Grambling State University. As illustrated in Table 4.3, the majority of the respondents were married (n = 179): Grambling State University n = 82 and Willis-Knighton Neighborhood Clinic n = 93. Most of the respondents affiliated with Grambling State University (n = 50) reported an income of 25,000-39,999. Most of the respondents from the Willis-Knighton Neighborhood Clinic (n = 37) reported having an income of 10,000-14,999. The majority of the respondents affiliated with Grambling State University (n = 67) reported having a master's degree and most from the Willis-Knighton Neighborhood Clinic (n = 52) reported having some college or technical school experience. Most respondents from Grambling State University (n = 69) and the Willis-Knighton Neighborhood Clinic (n = 61) reported being between 40-49 years of age.

Breast Cancer Screening Practices

After the profile was determined, the second step of the analysis process was to determine which respondents were compliers and which were non-compliers. The respondents were dichotomized according to their compliance with recommended breast cancer screening practices. Each respondent's compliance was determined by her reported practice of the recommended breast cancer screening for her age group. There were six age groups: (Group 1) under 25; (Group 2) 26-29; (Group 3) 30-39; (Group 4) 40-49; (Group 5) 50-59; and (Group 6) over 60. Respondents in Groups 1 and 2 were considered compliant if they practiced breast self-examination (BSE) monthly. Respondents in Group 3 were considered compliant if they practiced BSE monthly, and

had a clinical breast examination (CBE) every two years. Respondents in Group 4 were considered compliant if they practiced BSE monthly, had an annual CBE, a mammogram every two years. Respondents in Groups 5 and 6 were considered compliant if they practiced BSE monthly, had an annual CBE, and a received mammogram annually. Respondents were considered non-compliant if they did not report doing all of the recommended breast cancer screening methods for their age group.

Table 4.4 shows how compliance was determined according to groups. An "x" is placed in each box that corresponds to the breast cancer screening that should be practiced for each age group. For instance, Group 1 has an x next to the box, which corresponds to BSE monthly. This means that in order to be compliant, the respondents in Group 1 must practice BSE monthly.

Table 4.4

Determination of Compliance According to Age Group

Screening Practice	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
BSE monthly	x	x	x	x	x	x
CBE annually				x	x	X
CBE 2/years			x			
Mammogram annually					x	X
Mammogram 2/years				x		
(Group 1) <25; (Group 2) 26-29; (Group 3) 30-39; (Group 4) 40-49; (Group 5) 50-59; (Group 6) >60						

Compliance

There were fifty-two compliers from Grambling State University and seventy-two compliers from the Willis-Knighton Neighborhood Clinic. Table 4.5 shows the income, education and age of the respondents according to compliance. As illustrated in the Table 4.5, most of compliers (n = 61) were between the ages of 40-49, had an annual income of 10,000-14,999 (n = 37) and had some college/technical school (n = 40). Most of the non-compliers (n = 68) were between the ages of 40-49, had an annual income between 25,000-39,999 (n = 64), and reported completing a master's Degree (n = 50).

Table 4.5

Profile of Compliers and Non-compliers

Characteristic	C (n = 124);	%	NC (n = 149);	%
Site:				
Grambling State University	52	42	75	50
Willis-Knighton Neighborhood Clinic	72	58	74	50
Income:				
> 5,000	08	06	05	03
5,000 – 9,999	06	05	08	05
10,000 – 14,999	37	30	20	13
15,000 – 19,999	11	09	16	11
20,000 – 24,999	15	12	13	09
25,000 – 39,999	19	15	64	43
40,000 – 49,999	07	06	01	01
< 50,000	15	12	09	06
Not Reporting	06	05	13	09
Education:				
> High school	00	00	05	03
High school/GED	33	27	15	10
Some College or Technical School	40	32	41	28
Associate's Degree	11	09	07	05
Bachelor Degree	21	17	14	09
Master Degree	07	06	59	40
Doctorate	07	06	04	03
Other	02	02	01	01
Not Reporting	03	02	03	02
Age:				
Group 1 (Under 25)	05	04	10	07
Group 2 (26-29)	22	18	20	13
Group 3 (30-39)	34	27	32	21
Group 4 (40-49)	61	49	68	46
Group 5 (50-59)	01	01	16	11
Group 6 (Over 60)	01	01	02	01

GSU represents Grambling State University; WKNC represents Willis-Knighton Neighborhood Clinic

Figure 4.4 illustrates income and compliance. As seen in Figure 4.4, most of the respondents (n = 67) had an annual household income between 25,000 – 39,999, which is above the poverty level (>10,000/annually). There were more compliers than non-compliers for each income category except 5,000 – 9,999 and 25,000 – 39,999. Most of

the respondents with an income between 5,000 – 9,999 (n = 8) and 25,000 – 39,999 (n = 64) were non-compliers. The majority of respondents who had an income less than 5,000 (n = 8), between 10,000 –14,999 (n = 37), between 40,000-49,999 (n = 7) and more than 50,000 (n = 15) were compliers.

Figure 4.4. Income and compliance.

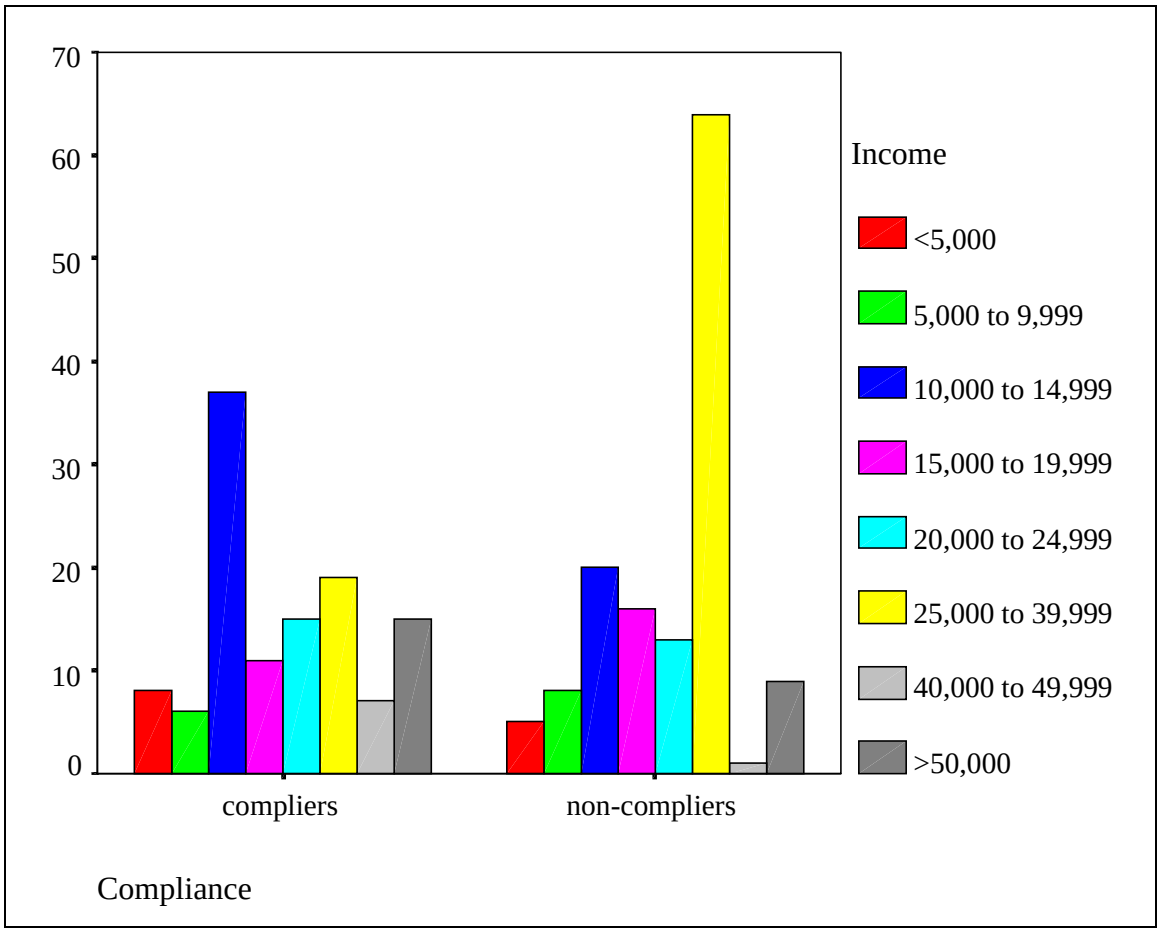


Figure 4.5 illustrates education and compliance. As detailed in Figure 4.5, all of the respondents with less than a high school education (n = 5) were non-compliers. Most of the respondents with a high school education (n = 33) or GED were compliers. Most of the respondents with some college or technical experience (n = 41) were non-compliers. Most of the respondents with an Associate's degree (n = 11) were compliers.

Most of the respondents with a Bachelor's degree (n = 21) were compliers. Most of the respondents with a Master's degree (n = 59) were compliers. Most of the respondents with a Doctorate (n = 7) compliers and most of the respondents who reported their education as other (n = 2) were non-compliers.

Figure 4.5. Education and compliance.

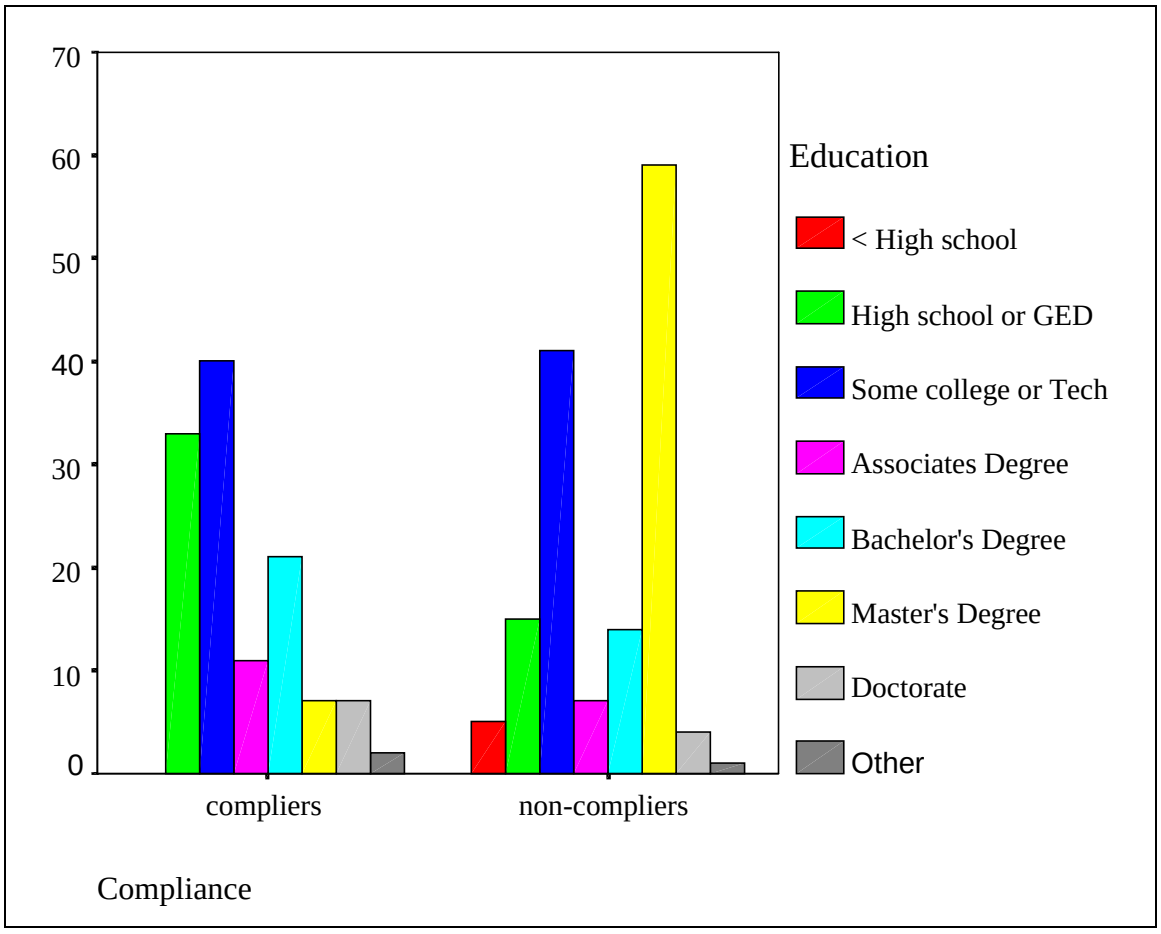
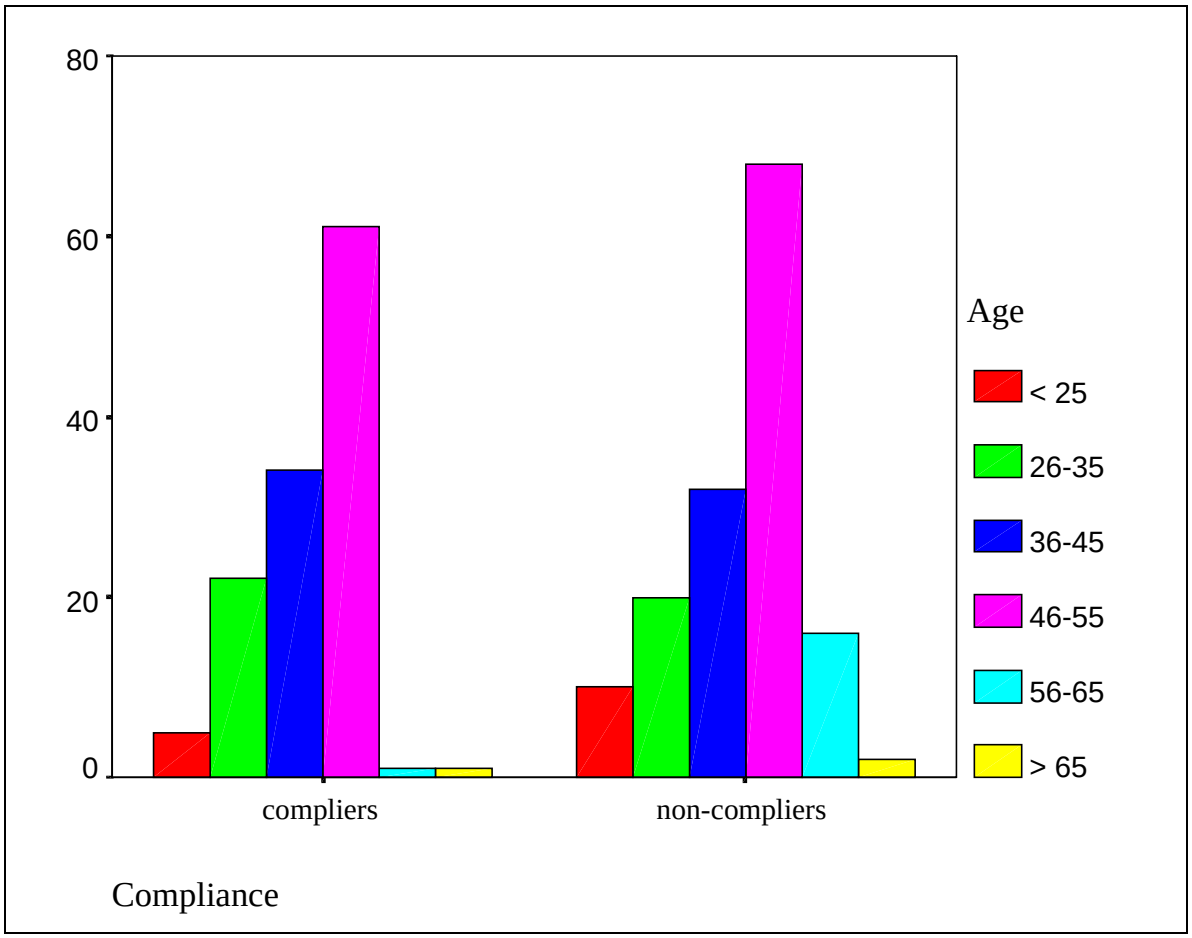


Figure 4.6 illustrates age and compliance. As is seen Figure 4.6, the majority (n = 129) of the respondents were between the ages of 40-49. The number of compliers and non-compliers between the ages of 40-49 was almost equal. There were sixty-eight non-compliers and sixty-one compliers. It is also noted in Figure 4.6, that respondents who

were under 25 years of age (n = 10), between 50-59 years of age (n = 16) and over 60 years of age (n = 2) were mostly non-compliers.

Figure 4.6. Age and compliance.



Breast Cancer Knowledge

The third step of the analysis process was to calculate each respondent's breast cancer knowledge score. Breast cancer knowledge scores were calculated based on the respondents' responses to questions (numbers 1-34) in the breast cancer knowledge section of the questionnaire. Each respondent received twelve knowledge scores -- an overall score and eleven sub-scores. The sub-scores were for each topic covered in the knowledge section: (1) general cancer information; (2) knowledge about African-American women and cancer; (3) lifestyle cause; (4) environmental cause; (5) risk; (6) detection; (7) symptoms; (8) mammography; (9) clinical breast examination; (10) breast self-examination; and (11) treatment. Any score below 70 on either the overall section or subsection was considered failing. Seventy was chosen as the passing cut-off point based on research regarding this matter by Sutton (1991), Crane (1996), and Champion (1997).

Calculation of the Breast Cancer Knowledge Scores

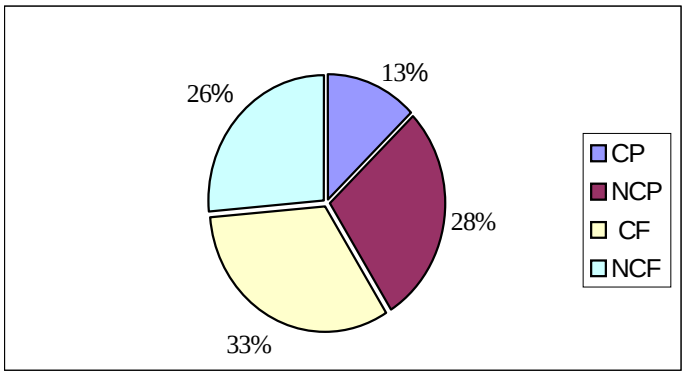
The breast cancer knowledge section had a reliability coefficient of 0.821 and a standard error of measurement of 2.25. This means that this section was adequate to assess the respondents' breast cancer knowledge. The breast cancer knowledge section from all questionnaires completed by African-American respondents was used for analysis.

Results of the Overall Breast Cancer Knowledge Section

In order to pass the overall breast cancer knowledge section, respondents needed to answer at least 24 of the 34 questions correctly. Figure 4.4 illustrates the pass/fail

percentage breakdown according to compliance. This pass/fail percentage breakdown is for the entire breast cancer knowledge section, including all sub-sections.

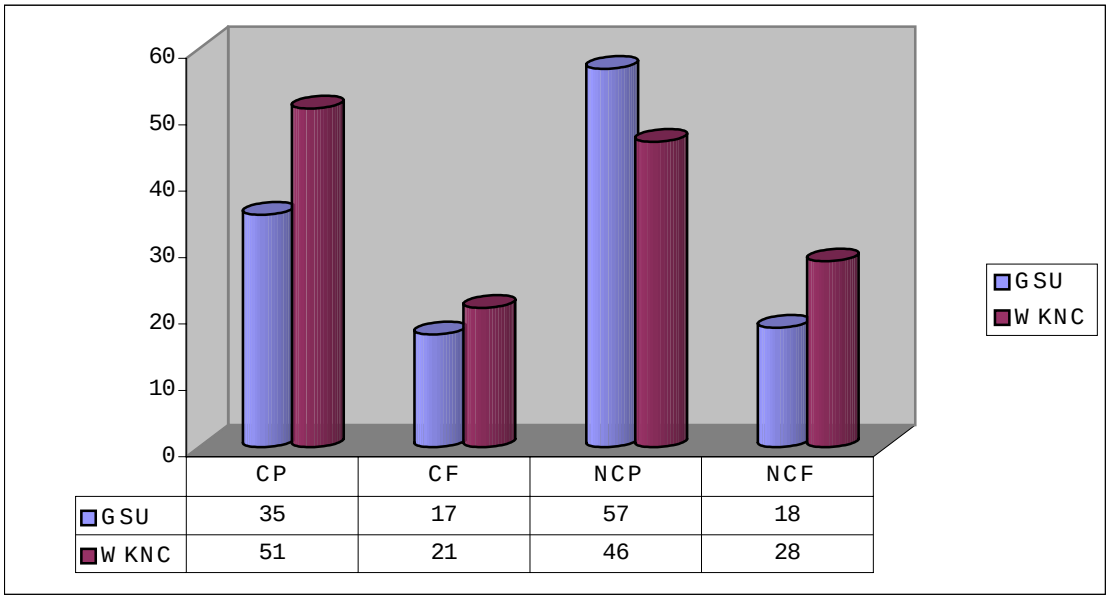
Figure 4.7. Breast cancer knowledge pass/fail percentage breakdown among compliers and non-compliers regardless of site.



CP = compliers who passed
NCP = compliers who passed
CF = compliers who failed
NCF = compliers who failed

As illustrated in Figure 4.7, forty-one percent of the respondents passed the entire breast cancer knowledge section: thirteen percent were compliers (n = 35) and twenty-eight percent were non-compliers (n = 77). The majority of the respondents did not pass (n = 161), and answered less than twenty-four questions correctly. Of the respondents who failed thirty-three percent were compliers (n = 90) and twenty-six percent were non-compliers (n = 71).

Figure 4.8. Breast cancer knowledge pass/fail breakdown among compliers and non-compliers according to site.



	CP	CF	NCP	NCF
GSU	35	17	57	18
W KNC	51	21	46	28

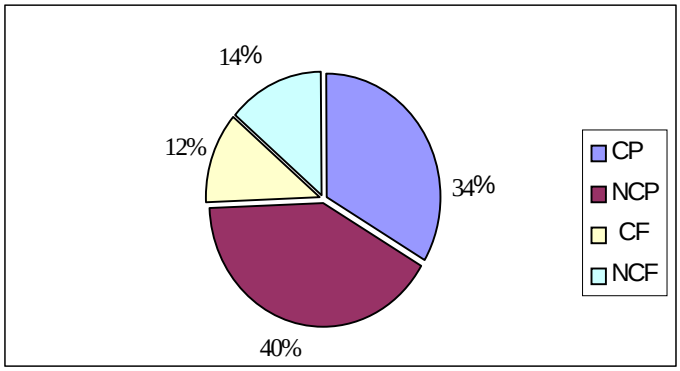
CP = compliers who passed
NCP = non-compliers who passed
CF = compliers who failed
NCF = non-compliers who failed
GSU = Grambling State University
WKNC = Willis Knighton Neighborhood Clinic

Figure 4.8 shows the pass/fail breakdown according to compliance and site. Most of the compliers who passed sought care at the Willis-Knighton Neighborhood Clinic (n = 35). Most of the non-compliers who passed were respondents affiliated with Grambling State University (n = 57). Most of the compliers (n = 21) and non-compliers (n = 28) who failed were respondents who sought care at the Willis-Knighton Neighborhood Clinic.

To completely access the relationship between breast cancer knowledge and breast cancer screening practice, the breast cancer knowledge section was divided into sub-sections. The first section was called the general cancer information section. In this

section, participants were asked general breast cancer questions such as, “What is cancer?”

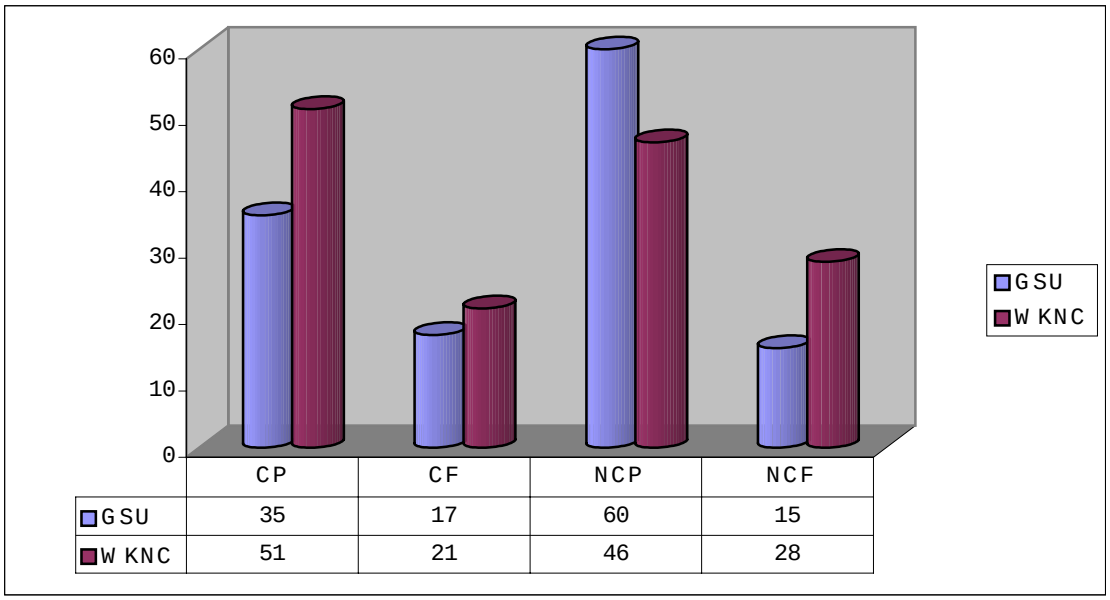
Figure 4.9. Pass/Fail percentage breakdown in the general knowledge section among compliers and non-compliers regardless of site.



CP = compliers who passed
NCP = non-compliers who passed
CF = compliers who failed
NCF = non-compliers who failed

Figure 4.9 shows the pass/fail percentage breakdown among compliers and non-compliers. More non-compliers (n = 109) passed the general cancer information section than did compliers (n = 91). In order to determine the difference in the pass/fail rate among sites, each site was analyzed.

Figure 4.10. Pass/Fail breakdown in the general knowledge section among compliers and non-compliers according to site.

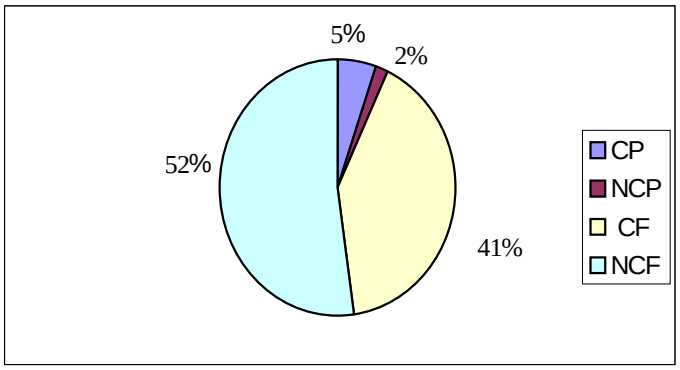


	CP	CF	NCP	NCF
GSU	35	17	60	15
W KNC	51	21	46	28

CP = compliers who passed
NCP = non-compliers who passed
CF = compliers who failed
NCF = non-compliers who failed
GSU = Grambling State University
WKNC = Willis-Knighton Neighborhood Clinic

Figure 4.10 shows the pass/fail breakdown in the general knowledge section according to compliance and site. Most of the compliers (n = 51) who passed the general knowledge section were respondents from the Willis-Knighton Neighborhood Clinic. Most of the non-compliers who passed the general knowledge section were affiliated with Grambling State University (n = 60). Breast cancer knowledge as it relates specifically to African-American women and cancer was the next area tested.

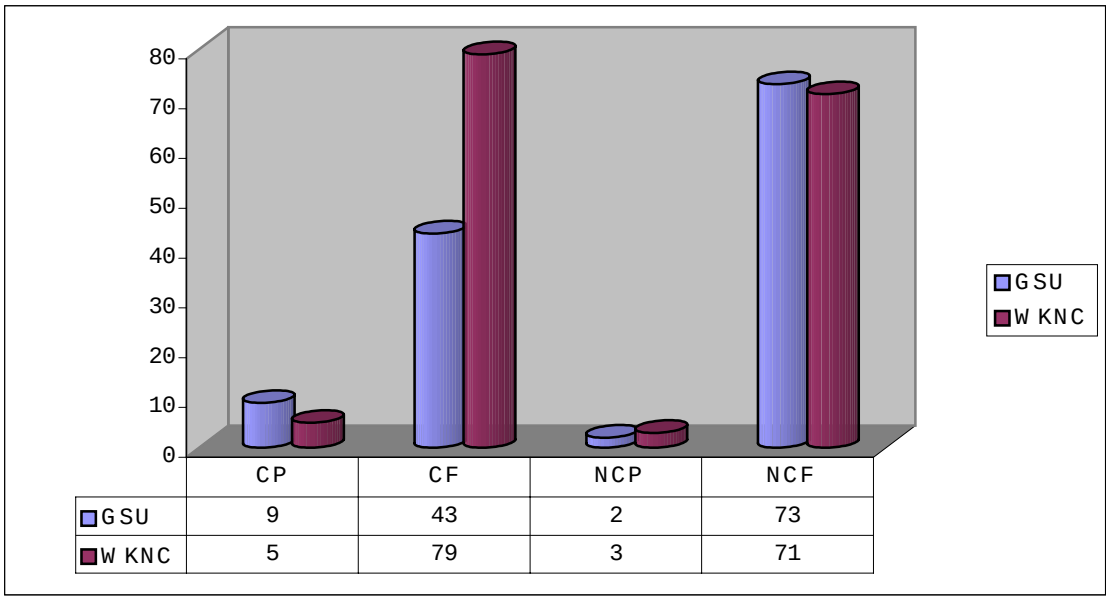
Figure 4.11. Pass/Fail percentage breakdown in the African-American women and cancer section among compliers and non-compliers regardless of site.



CP = compliers who passed
NCP = non-compliers who passed
CF = compliers who failed
NCF = non-compliers who failed

Figure 4.11 illustrates the pass/fail percentage breakdown for this section. The overall the pass rate was low (n = 19); however, more compliers (n = 14) passed the African-American women and cancer section than did non-compliers (n = 5). Ninety-three percent of the respondents failed this section. Of the ninety-three percent who failed, forty-one percent were compliers.

Figure 4.12. Pass/Fail breakdown in the African-American women and cancer section among compliers and non-compliers according to site.

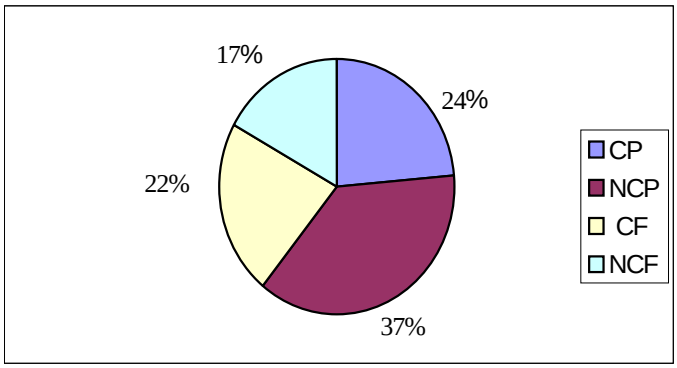


	CP	CF	NCP	NCF
GSU	9	43	2	73
W KNC	5	79	3	71

CP = compliers who passed
CF = compliers who failed
NCP = non-compliers who passed
NCF = non-compliers who failed
GSU = Grambling State University
WKNC = Willis-Knighton Neighborhood Clinic

Figure 4.12 illustrates the pass/fail breakdown in the African-American women and cancer section according to compliance and site. Most of the compliers (n = 9) who passed this section were affiliated with Grambling State University. Most of the non-compliers (n = 3) who passed sought medical care at the Willis-Knighton Neighborhood Clinic. Most of the compliers (n = 73) who failed sought medical care at the Willis-Knighton Neighborhood Clinic. Most of the non-compliers (n = 73) who failed were affiliated with Grambling State University.

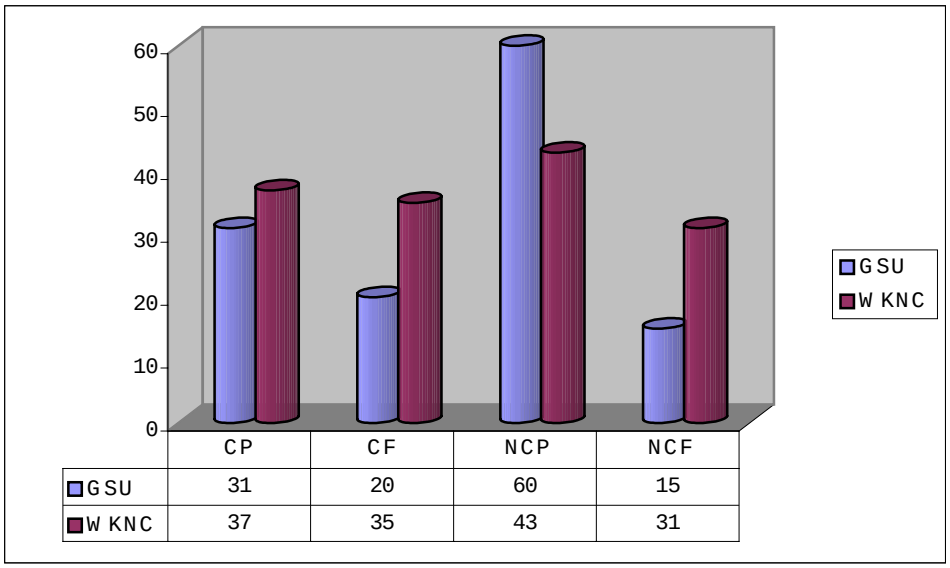
Figure 4.13. Pass/Fail percentage breakdown in the lifestyle cause of breast cancer section among to compliers and non-compliers regardless of site.



CP = compliers who passed
NCP = non-compliers who passed
CF = compliers who failed
NCF = non-compliers who failed

Breast cancer as it relates lifestyle was the next area tested. Figure 4.13 illustrates the pass/fail percentage breakdown for this section. Sixty-one percent of the respondents passed the lifestyle section. Thirty-seven percent were non-compliers and twenty-four percent were compliers.

Figure 4.14. Pass/Fail breakdown in the lifestyle cause of breast cancer section among compliers and non-compliers regardless of site.

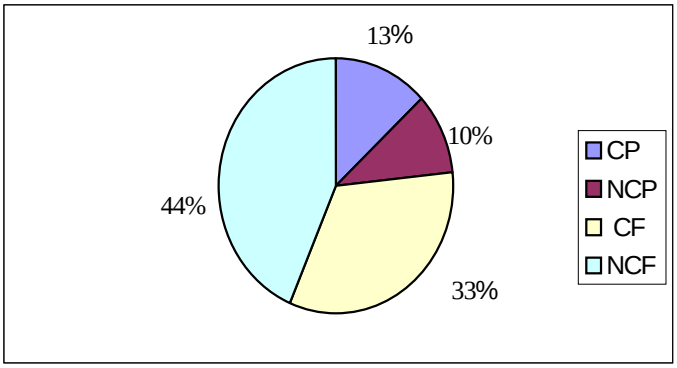


	CP	CF	NCP	NCF
GSU	31	20	60	15
W KNC	37	35	43	31

CP = compliers who passed
NCP = non-compliers who passed
CF = compliers who passed
NCF = non-compliers who passed
GSU = Grambling State University
WKNC = Willis-Knighton Neighborhood Clinic

Figure 4.14 shows the breakdown of lifestyle cause of the breast cancer section according to compliance and site. Most of the compliers who passed (n = 37) and failed (n = 35) were sought care at the Willis-Knighton Neighborhood Clinic. Most of the non-compliers who passed (n =60) were affiliated with Grambling State University. Most of the non-compliers who passed (n = 31) sought care at the Willis-Knighton Neighborhood Clinic.

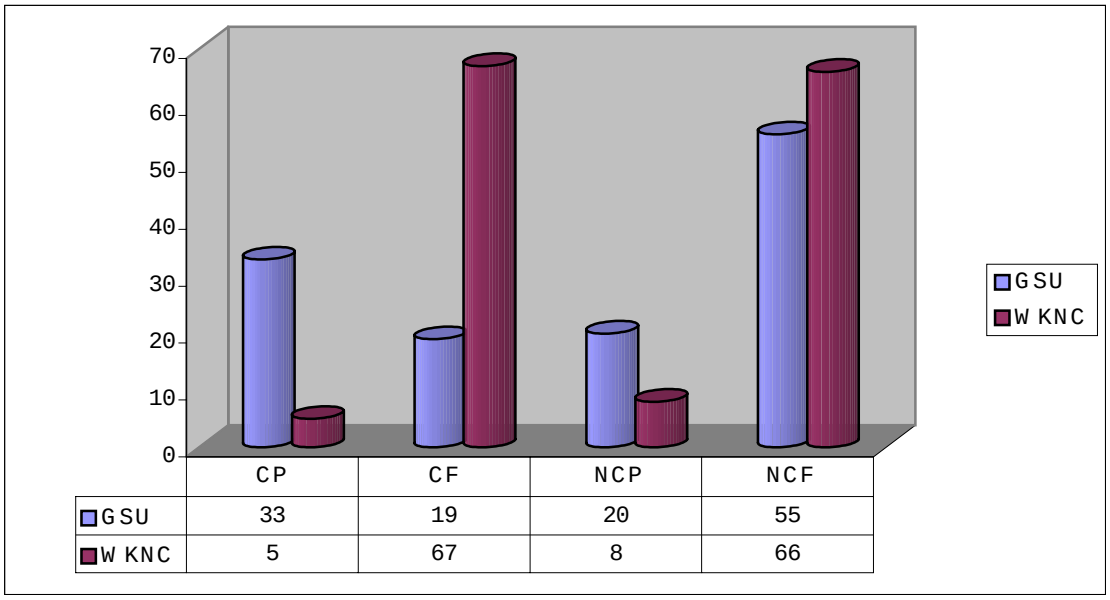
Figure 4.15. Pass/Fail percentage breakdown in the environmental cause of breast cancer section among compliers and non-compliers regardless of site.



CP = compliers who passed
NCP = non-compliers who passed
CF = compliers who failed
NCF = non-compliers who failed

The next section assessed the respondents' knowledge pertaining to breast cancer as it relates environment. Figure 4.15 illustrates the pass/fail percentage breakdown for this section. More compliers passed the environmental cause section (n = 35) than did non-compliers (n = 28). This finding suggests the compliers in this study were aware of the environmental factors that may cause breast cancer. However, it must be noted that the knowledge among both compliers and non-compliers was low. Forty-four percent non-compliers and thirty-three percent compliers failed this section. Thus, overall the majority (n = 132) of the respondents failed this section.

Figure 4.16. Pass/Fail breakdown in the environmental cause of breast cancer section among compliers and non-compliers according to site.

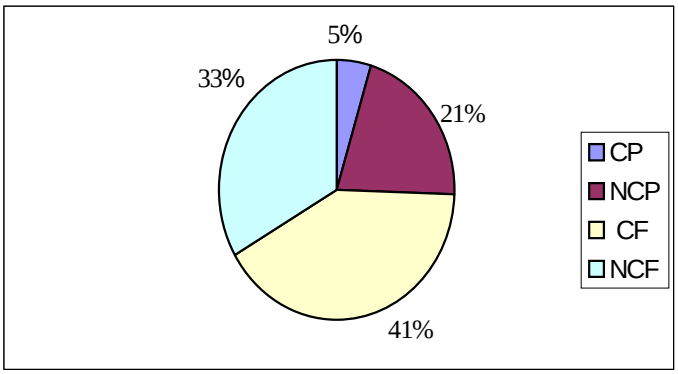


	CP	CF	NCP	NCF
GSU	33	19	20	55
WKNC	5	67	8	66

CP = compliers who passed
NCP = non-compliers who passed
CF = compliers who failed
NCF = non-compliers who failed
GSU = Grambling State University
WKNC = Willis-Knighton Neighborhood Clinic

Figure 4.16 shows the breakdown in the environmental cause of breast cancer section according to compliance and site. Most of the compliers who passed (n = 33) and non-compliers who passed (n =20) were affiliated with Grambling State University. Most of the compliers (n = 67) and non-compliers (n = 66) who failed sought care at the Willis-Knighton Neighborhood Clinic.

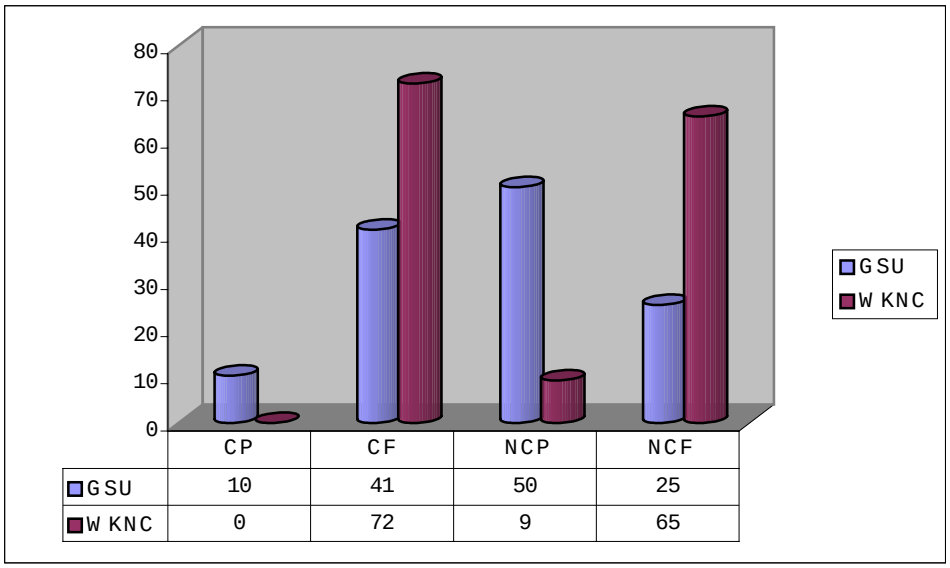
Figure 4.17. Pass/Fail percentage breakdown in the breast cancer risk section among compliers and non-compliers regardless of site.



CP = compliers who passed
NCP = non-compliers who passed
CF = compliers who failed
NCF = non-compliers who failed

The next section assessed the respondents' knowledge about breast cancer risk factors. Figure 4.17 illustrates the pass/fail percentage breakdown for this section. More non-compliers (n = 69) passed the risk section than did compliers (n =13). However, the majority of the respondents (n = 191), both compliers and non-compliers, failed this section.

Figure 4.18. Pass/Fail breakdown in the risk of breast cancer section among compliers and non-compliers according to site.

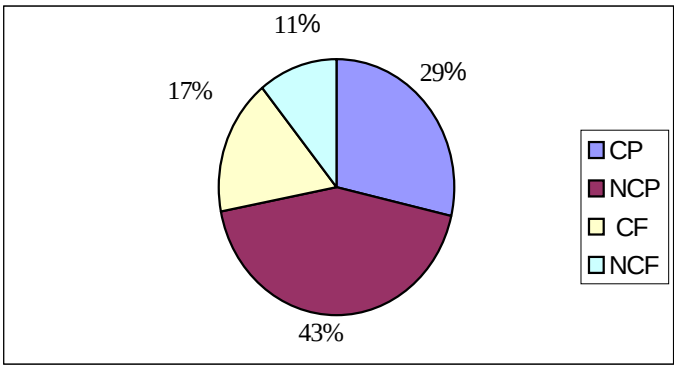


	CP	CF	NCP	NCF
GSU	10	41	50	25
W KNC	0	72	9	65

CP = compliers who passed
NCP = non-compliers who passed
CF = compliers who failed
NCF = non-compliers who failed
GSU = Grambling State University
WKNC = Willis-Knighton Neighborhood Clinic

Figure 4.18 shows the breakdown in the risk of breast cancer section according to compliance and site. Most of the compliers who passed (n = 10) and non-complies who passed (n = 50) were affiliated with Grambling State University. Most of the compliers who failed (n = 72) and non-compliers who failed (n = 65) sought care at the Willis-Knighton Neighborhood Clinic.

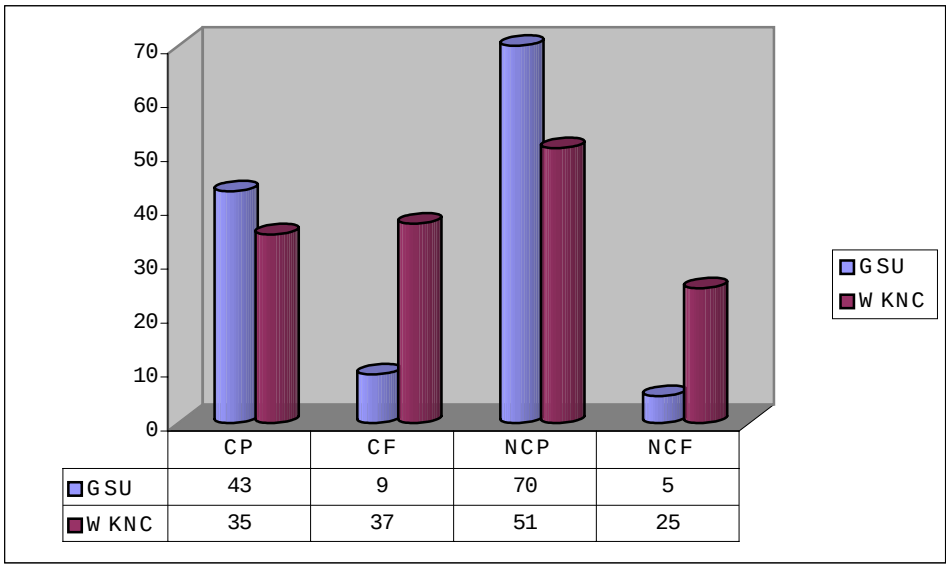
Figure 4.19. Pass/Fail percentage breakdown in the detection of breast cancer section among compliers and non-compliers regardless of site.



CP = compliers who passed
NCP = non-compliers who passed
CF = compliers who failed
NCF = non-compliers who failed

The next section assessed knowledge of breast cancer detection methods. Figure 4.19 illustrates the pass/fail percentage breakdown for this section. More non-compliers (n = 117) passed the detection of breast cancer section than did compliers (n = 77).

Figure 4.20. Pass/Fail breakdown in the detection of breast cancer section among compliers and non-compliers according to site.

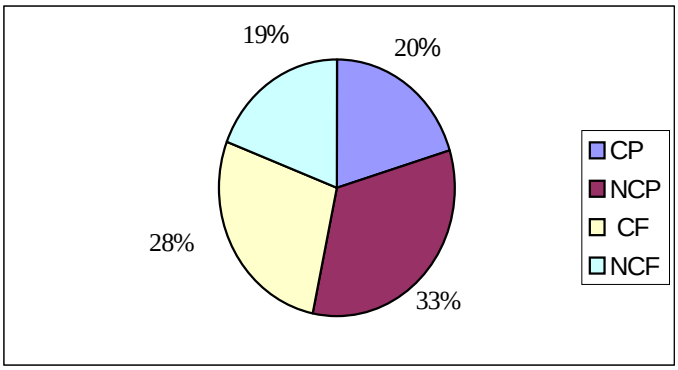


	CP	CF	NCP	NCF
GSU	43	9	70	5
W KNC	35	37	51	25

CP = compliers who passed
NCP = non-compliers who passed
CF = compliers who failed
NCF = non-compliers who failed
GSU = Grambling State University
WKNC = Willis-Knighton Neighborhood Clinic

Figure 4.20 shows the breakdown in the detection of breast cancer section according to compliance and site. Most of the compliers (n = 43) and non-compliers (n = 70) who passed were affiliated with Grambling State University. Most of the compliers (n = 37) and non-compliers (n =25) who failed sought care at the Willis-Knighton Neighborhood Clinic.

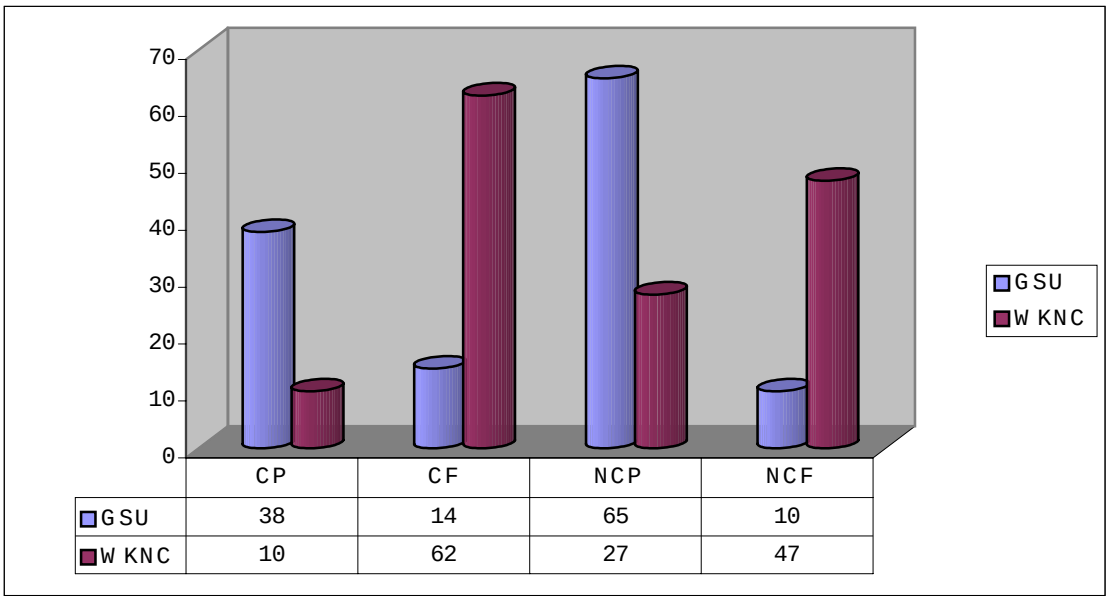
Figure 4.21. Pass/Fail percentage breakdown in the symptom section among compliers and non-compliers regardless of site.



CP = compliers who passed
NCP = non-compliers who passed
CF = compliers who failed
NCF = non-compliers who failed

The next section assessed knowledge of breast cancer symptoms. Figure 4.21 illustrates the pass/fail percentage breakdown for this section. More non-compliers (n = 92) passed the symptoms of breast cancer section than did compliers (n = 57).

Figure 4.22. Pass/Fail breakdown in the breast cancer symptoms section among compliers and non-compliers according to site.

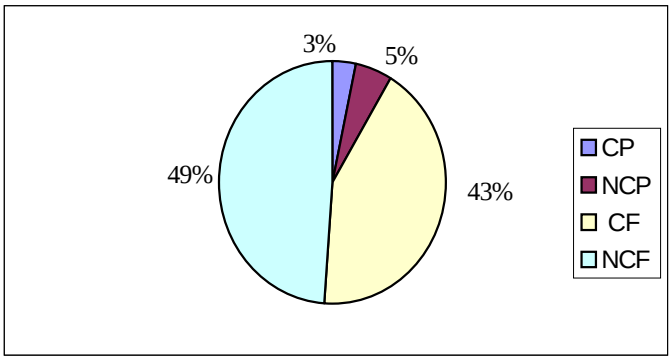


	CP	CF	NCP	NCF
GSU	38	14	65	10
W KNC	10	62	27	47

CP = compliers who passed
NCP = non-compliers who passed
CF = compliers who failed
NCF = non-compliers who failed
GSU = Grambling State University
WKNC = Willis-Knighton Neighborhood Clinic

Figure 4.22 shows the breakdown in the breast cancer screening symptoms section according to compliance and site. Most of the compliers (n = 38) and non-compliers (n = 65) who passed were affiliated with Grambling State University. Most of the compliers (n = 62) and non-compliers who failed (n = 47) sought care at the Willis-Knighton Neighborhood Clinic.

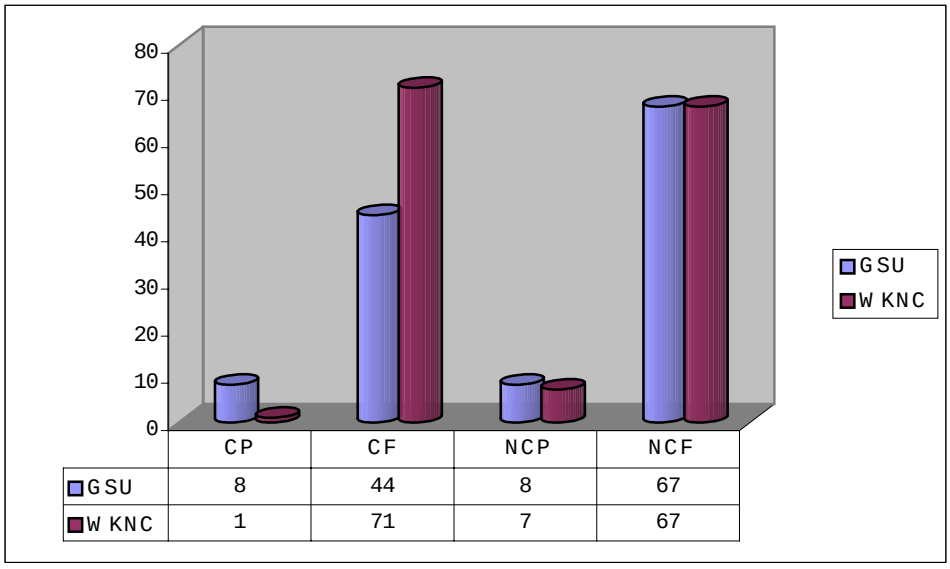
Figure 4.23. Pass/Fail percentage breakdown in the mammography section among compliers and non-compliers regardless of site.



CP = compliers who passed
NCP = non-compliers who passed
CF = compliers who failed
NCF = non-compliers who failed

The next section assessed knowledge mammograms. Figure 4.23 illustrates the pass/fail percentage breakdown for this section. More non-compliers (n = 14) passed the mammography section than compliers (n = 9). The majority of respondents (92%) failed this section.

Figure 4.24. Pass/Fail breakdown in the mammography section among compliers and non-compliers according to site.

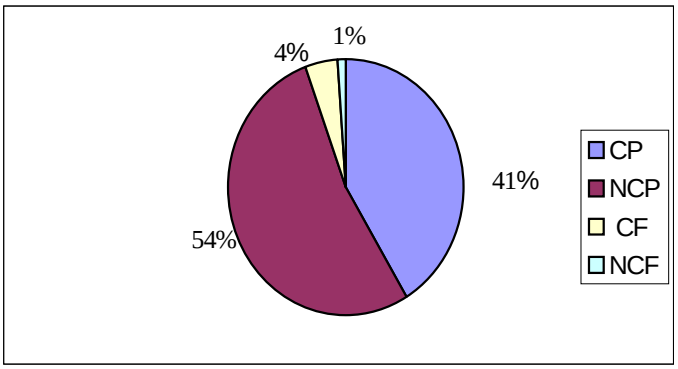


	CP	CF	NCP	NCF
GSU	8	44	8	67
W KNC	1	71	7	67

CP = compliers who passed
NCP = non-compliers who passed
CF = compliers who failed
NCF = non-compliers who failed
GSU = Grambling State University
WKN = Willis-Knighton Neighborhood Clinic

Figure 4.24 shows the breakdown in the mammography section according to compliance and site. Most of the compliers (n = 8) and non-compliers (n = 8) who passed were affiliated with Grambling State University. Most of the compliers (n = 71) and who failed sought care at the Willis-Knighton Neighborhood Clinic. The number of non-compliers (n = 67) who failed was equal among sites.

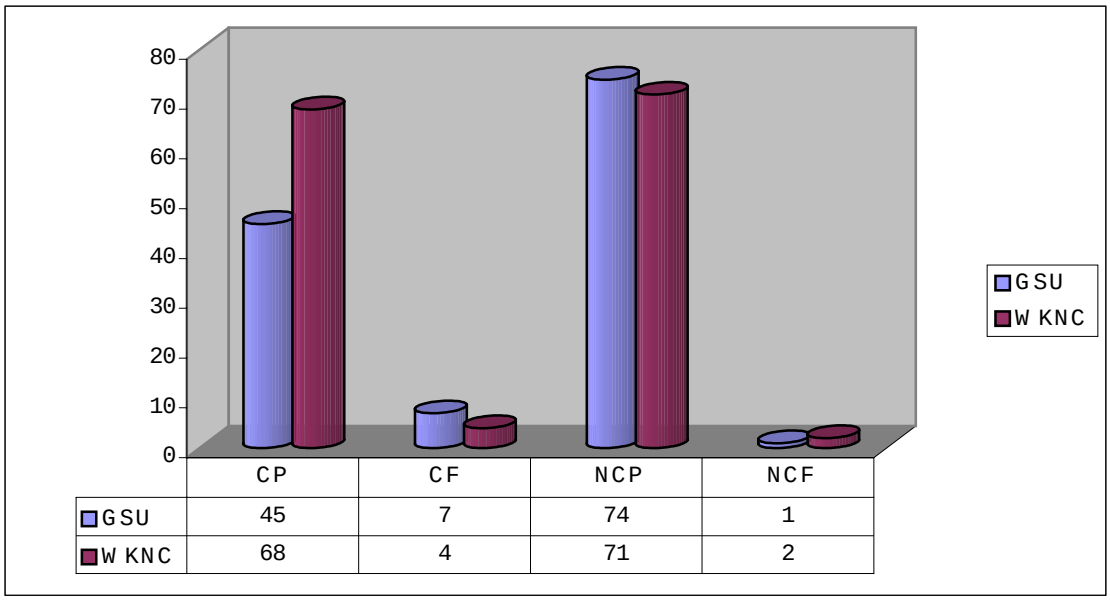
Figure 4.25. Pass/Fail percentage breakdown in the clinical breast examination section among compliers and non-compliers regardless of site.



CP = compliers who passed
NCP = non-compliers who passed
CF = compliers who failed
NCF = non-compliers who failed

The next section assessed knowledge of clinical breast examination. Figure 4.25 illustrates the pass/fail percentage breakdown for this section. More non-compliers (n = 143) passed the clinical breast examination section than did compliers (n = 112). Overall, the majority of respondents passed this section; however, only forty-one percent of those who passed were compliers fifty-four percent were non-compliers.

Figure 4.26. Pass/Fail breakdown in the clinical breast examination section among compliers and non-compliers according to site.

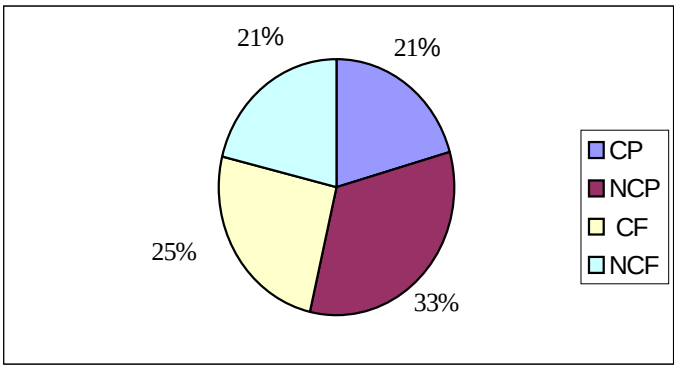


	CP	CF	NCP	NCF
GSU	45	7	74	1
W KNC	68	4	71	2

CP = compliers who passed
NCP = non-compliers who passed
CF = compliers who failed
NCF = non-compliers who failed
GSU = Grambling State University
WKN = Willis-Knighton Neighborhood Clinic

Figure 4.26 shows the breakdown according to compliance and site. As illustrated in Figure 4.26, most of the compliers who passed (n = 68) sought care at the Willis-Knighton Neighborhood Clinic. Most of the compliers who failed (n = 7) were affiliated with Grambling State University. Most of the non-compliers who passed (n = 74) were affiliated with Grambling State University. Most of the non-compliers who failed (n = 2) sought care at the Willis-Knighton Neighborhood Clinic.

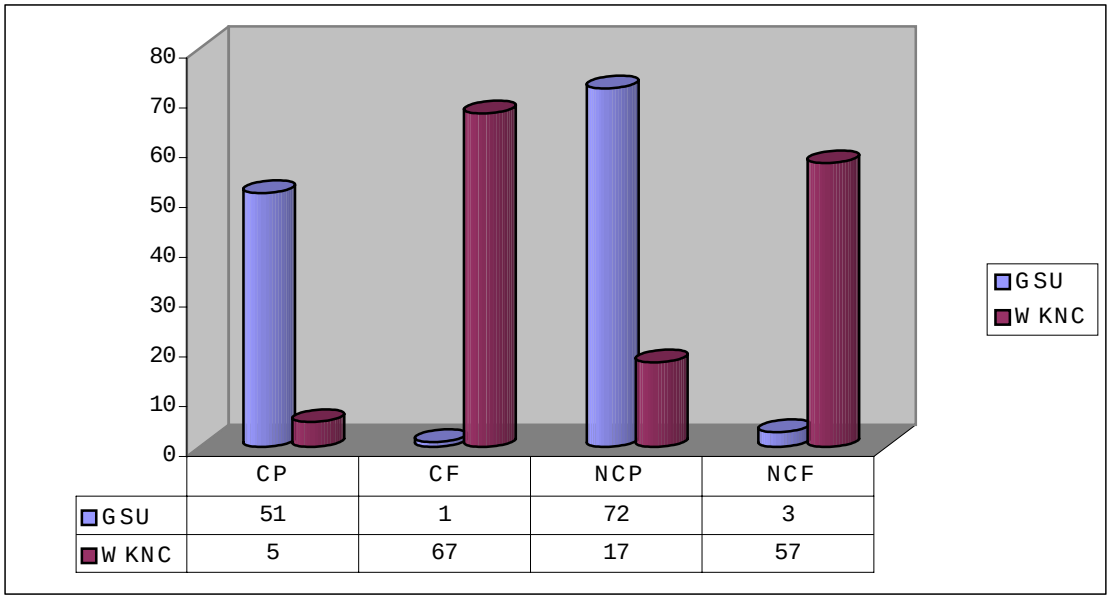
Figure 4.27. Pass/Fail percentage breakdown in the breast self-examination section among compliers and non-compliers regardless of site.



CP = compliers who passed
NCP = non-compliers who passed
CF = compliers who failed
NCF = non-compliers who failed

The next section assessed the respondents' knowledge of breast self-examination. Figure 4.27 illustrates the pass/fail percentage breakdown for this section. More non-compliers (n = 89) passed the breast self-examination section than did compliers (n = 56). Figure 4.28 shows the breakdown in the breast self-examination section according to compliance and site.

Figure 4.28. Pass/Fail breakdown in the breast self-examination section among compliers and non-compliers according to site.

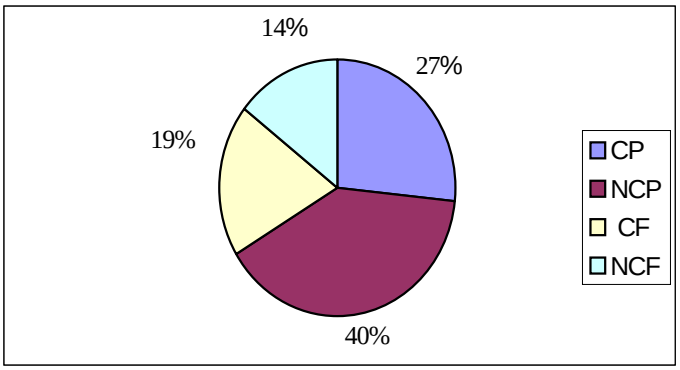


	CP	CF	NCP	NCF
GSU	51	1	72	3
W KNC	5	67	17	57

CP = compliers who passed
NCP = non-compliers who passed
CF = compliers who failed
NCF = non-compliers who failed
GSU = Grambling State University
WKN = Willis-Knighton Neighborhood Clinic

As illustrated in Figure 4.28, most of the compliers (n = 51) and non-compliers (n = 72) who passed were affiliated with Grambling State University. Most of the compliers (n = 67) and non-compliers (n = 57) who failed sought medical care at the Willis-Knighton Neighborhood Clinic.

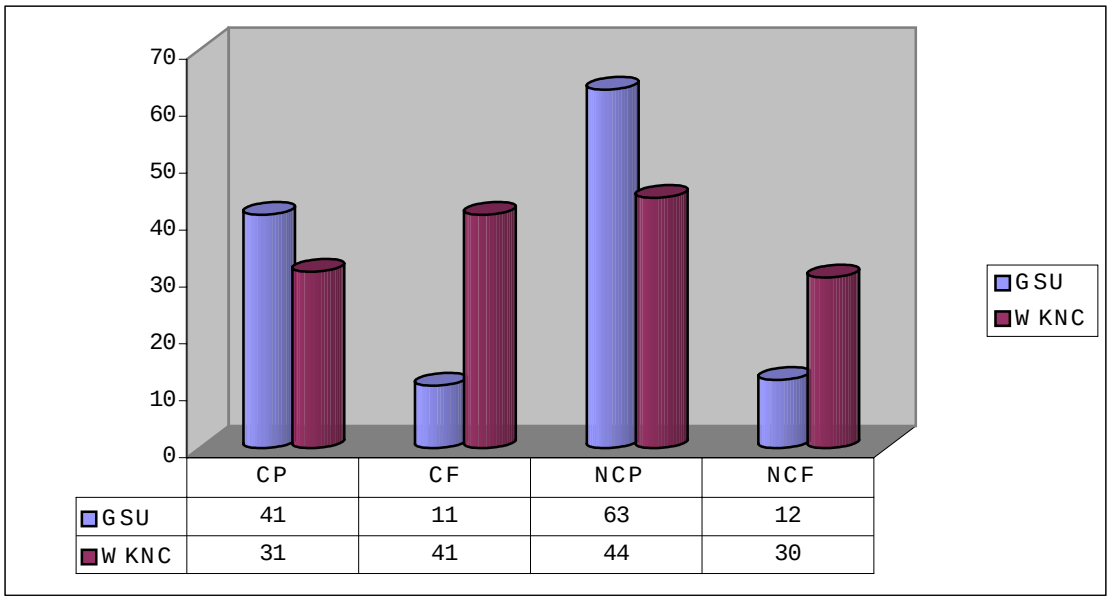
Figure 4.29. Pass/Fail percentage breakdown in the treatment section among compliers and non-compliers regardless of site.



CP = compliers who passed
NCP = non-compliers who passed
CF = compliers who failed
NCF = non-compliers who failed

The next section assessed the respondents' knowledge of breast cancer treatment. Figure 4.29 illustrates the pass/fail percentage breakdown for this section. More non-compliers (n = 107) passed the treatment section than did compliers (n = 72). This finding suggests that the non-compliers had more knowledge about breast cancer treatment than did compliers.

Figure 4.30. Pass/Fail breakdown in the treatment section among compliers and non-compliers according to site.



	CP	CF	NCP	NCF
GSU	41	11	63	12
W KNC	31	41	44	30

CP = compliers who passed
NCP = non-compliers who passed
CF = compliers who failed
NCF = non-compliers who failed
GSU = Grambling State University
WKN = Willis-Knighton Neighborhood Clinic

Figure 4.30 shows the breakdown in the treatment section according to compliance and site. Most of the compliers (n = 41) and non-compliers (n = 63) who passed this section were affiliated with Grambling State University. Most of the compliers (n = 41) and non-compliers (n = 26) who failed (n = 30) sought medical care at the Willis-Knighton Neighborhood Clinic.

Analysis of the Hypotheses

The final step of the analysis process was to analyze each hypothesis. There were five hypotheses analyzed in this study. Each hypothesis was analyzed using the chi-square test of independence. Due to small sample size in each group across age, income,

education and individual breast cancer risk levels the two sites were combined. Logistic regression was used to develop a probability model that would give an indication of enable one to predict which breast cancer screening practices could be expected from other samples. Logistic regression was done only when the chi-square test of independence produced significant results. The following are the hypotheses:

1. Breast cancer screening practice and breast cancer knowledge are dependent.
2. Breast cancer screening practice and income are dependent.
3. Breast cancer screening practice and age are dependent.
4. Breast cancer screening practice and education are dependent.
5. Breast cancer screening practice and individual breast cancer risk factors are dependent.

Chi-square and Logistic Regression

The chi-square test of independence determines if two variables are independent of one another. In this study, breast cancer knowledge, demographics (income, education and age), and individual breast cancer risk factors served as the independent variables. The dependent variable was breast cancer screening practice. Using contingency tables, the relationship between each independent variable to the dependent variable was evaluated. A *p*-value of 0.05 was chosen because according to the Fisher Experiment, setting a *p*-value of 0.05 will give an accurate report for ninety-five percent of the study population (Agresti, 1996).

Logistic regression was used as a post hoc analysis to show the likelihood of women practicing breast cancer screening and the strength and magnitude of the test variables relationship to breast cancer screening practice. Logistic regression was chosen because this study contained categorical variables and a clear dichotomized dependent variable. The categorical variables in the study that were analyzed by logistic regression were income, age, and education. The dichotomized dependent variable was breast cancer screening practice. Income, age and education were chosen because they were identified by the literature as being good predictors of breast cancer screening compliance (Eley, 1994; Lewis; 1999; Sung et al., 1997), the chi-square test of independence found them to be significant, and each contained an adequate sample size.

Hypothesis 1. Breast cancer screening and breast cancer knowledge are dependent. As shown in table 4.6, chi-square test of independence resulted in a *p*-value of 0.25. Since the *p*-value is greater than 0.05, the study data rejects the hypothesis. Breast cancer screening practices and breast cancer knowledge appear to be independent.

Table 4.6

Chi-Square Test of Independence Results for Breast Cancer Knowledge

	Value	df	Asymp.
Pearson Chi-	2.712	2	.258
Likelihood	2.706	2	.258
Linear-by-Associatio	.344	1	.558
N of Valid	273		

Hypothesis 2. Breast cancer screening practice and income are independent.

Table 4.7

Chi-square Test of Independence Results for Income

	Value	df	Asymp.
Pearson Chi-	36.42	7	.000
Likelihood	38.27	7	.000
Linear-by-Associatio	3.294	1	.070
N of Valid	273		

As shown in Table 4.7, chi-square test of independence between income and breast cancer screening practice produced a *p*-value of 0.001. The data supports the hypothesis; thereby, income and breast cancer screening practices are dependent.

Table 4.8

Logistic Regression Results for Income

								95.0% C.I.for	
Step 1	Income	B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
	<5,000	.041	.709	.003	1	.954	1.042	.260	4.181
	5,000 - 9,999	.799	.685	1.358	1	.244	2.222	.580	8.511
	10,000 - 14,999	-.104	.505	.043	1	.836	.901	.335	2.423
	15,000 - 19,999	.886	.575	2.368	1	.124	2.424	.785	7.489
	20,000 - 24,999	.368	.567	.421	1	.517	1.444	.476	4.388
	25,000 - 39,999	1.725	.496	12.098	1	.001	5.614	2.124	14.842
	40,000 - 49,999	-1.434	1.149	1.558	1	.212	.238	.025	2.265
	Constant	-.511	.422	1.468	1	.226	.600		

As shown in table 4.8, logistic regression analysis found having an annual income of 25,000 to 39,999 as the strongest predictor of non-compliance (EXP $\beta = 5.6$, *p*-value = 0.001). According to logistic regression, significant (*p*-value = 0.001) results were found for the annual income level of 25,000 – 39,999. In this study, the women with an annual income of 25,000-39,999 are 5.6 times less likely to practice breast cancer screening.

Hypothesis 3. Breast cancer screening practice and age are dependent. The sample was collapsed due to small sample size in the 50-59 and over 60 years of age categories.

Table 4.9

Chi-square Test of Independence Results for Age

	Value	df	Asymp.
Pearson Chi-	13.76	5	.017
Likelihood	16.41	5	.006
Linear-by-Associatio	1.865	1	.172
N of Valid	273		

As shown in Table 4.9, chi-square test of independence between age and breast cancer screening practice produced a p-value of 0.017. The data supports the hypothesis; thereby, age and breast cancer screening practices are dependent. Logistic regression was done as a post hoc analysis, however, no significance was found.

Hypothesis 4. Breast cancer screening practices and education are independent.

Table 4.10

Chi-square Test of Independence Results for Education

	Value	df	Asymp.
Pearson Chi-	54.30	7	.000
Likelihood	61.84	7	.000
Linear-by-Associatio	13.74	1	.000
N of Valid	273		

As shown in Table 4.10, chi-square test of independence between education and breast cancer screening practice produced a p-value of 0.001. The data supports the hypothesis; thereby, education and breast cancer screening practice are dependent.

Table 4.11

Logistic Regression Results for Education

								95.0% C.I.for	
Step 1	Educatio	B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
	<High school	7.895	16.439	.231	1	.631	2683.463	.000	2.641E+17
	High school/GE	-.095	1.264	.006	1	.940	.909	.076	10.821
	Some or Tech	.718	1.245	.333	1	.564	2.050	.179	23.512
	Associat Degree	.241	1.317	.034	1	.855	1.273	.096	16.809
	Bachelor Degree	.288	1.272	.051	1	.821	1.333	.110	16.144
	Masters Degree	2.825	1.288	4.807	1	.028	16.857	1.349	210.580
	Doctorate	.134	1.376	.009	1	.923	1.143	.077	16.947
	Constant	-.693	1.225	.320	1	.571	.500		

As shown in table 4.11, logistic regression analysis found having Master's degree as the strongest predictor of non-compliance (EXP β = 16.8, *p*-value = 0.028). According to logistic regression, significant (*p*-value = 0.028 results were found for the educational attainment level of a Master's degree. Women with a Master's degree were 16.8 times less likely to practice breast cancer screening than the other women in this study.

Hypothesis 5. Breast cancer screening practice and individual breast cancer risk factors are dependent. The relationship between breast cancer screening practice and each breast cancer risk factor was tested individually: age at menarche, full term pregnancy, age when birth was given to first child, menopause, age menopause began, breast condition, type of breast condition, and family history of breast cancer.

AGE OF MENARCHE

Table 4.12

Chi-square Test of Independence Results for Age of Menarche

	Value	df	Asymp.
Pearson Chi-	2.712	2	.258
Likelihood	2.706	2	.258
Linear-by-Associatio	.344	1	.558
N of Valid	269		

As shown in Table 4.12 chi-square test of independence between age at menarche onset and breast cancer screening practice produced a *p*-value of 0.258. The data does not support the hypothesis. According to the chi-square, ages at menarche and breast cancer screening practice appear to be independent.

FULL TERM PREGNANCY

Table 4.13

Chi-square Test of Independence Results for Full Term Pregnancy

	Value	df	Asymp.	Exact	Exact
Pearson Chi-	.728	1	.393		
Continuity	.459	1	.498		
Likelihood	.726	1	.394		
Fisher's Exact				.483	.249
Linear-by-Associatio	.726	1	.394		
N of Valid	266				

As shown in Table 4.13 chi-square test of independence between a respondent having children and breast cancer screening practice produced a *p*-value of 0.39. The data does not support the hypothesis. Giving birth to a child and breast cancer screening practice appears to be independent. Thereby, whether or not a woman has given birth to a child may not affect her breast cancer screening practice.

AGE WHEN GAVE BIRTH TO FIRST CHILD

Table 4.14

Chi-square Test of Independence Results for Age When Gave Birth to First Child

	Value	df	Asymp.
Pearson Chi-	36.57	2	.000
Likelihood	40.27	2	.000
Linear-by-Associatio	11.00	1	.001
N of Valid	238		

As shown in Table 4.14, chi-square test of independence between age of individual when first child was born and breast cancer screening practice produced a *p*-value of 0.001. The data supports the hypothesis. The age when having had first child and breast cancer screening practice are dependent.

MENOPAUSE

Table 4.15

Chi-square Test of Independence Results for Menopause

	Value	df	Asymp.	Exact	Exact
Pearson Chi-	16.80	1	.000		
Continuity	15.07	1	.000		
Likelihood	17.58	1	.000		
Fisher's Exact				.000	.000
Linear-by-Associatio	16.61	1	.000		
N of Valid	87				

As shown in Table 4.15, chi-square test of independence between experience with menopause and breast cancer screening practice produced a p-value of 0.005. The data supports the hypothesis. Menopause and breast cancer screening practice are dependent.

AGE MENOPAUSE BEGAN

Table 4.16

Chi-square Test of Independence Results for Age Menopause Began

	Value	df	Asymp.
Pearson Chi-	10.48	2	.005
Likelihood	10.88	2	.004
Linear-by-Associatio	7.892	1	.005
N of Valid	263		

As shown in Table 4.16, chi-square test of independence between age of menopause onset and breast cancer screening practice produced a *p*-value of 0.005. The data supports the hypothesis. Age of menopause onset and breast cancer screening practice is dependent.

HISTORY OF BREAST CONDITION OR DISEASE

Table 4.17

Chi-square Test of Independence Results for History of Breast Condition or Disease

	Value	df	Asymp.
Pearson Chi-	1.094	2	.579
Likelihood	1.474	2	.478
Linear-by-Associatio	.767	1	.381
N of Valid	267		

As shown in Table 4.17, chi-square test of independence between previous breast conditions and breast cancer screening practice produced a p-value of 0.579. The data does not support the hypothesis. Previous breast conditions and breast cancer screening practice appears to be independent.

TYPE OF BREAST CONDITION OR DISEASE

Table 4.18

Chi-square Test of Independence Results for Type of Breast Condition or Disease

	Value	df	Asymp.
Pearson Chi-	2.022	3	.568
Likelihood	2.784	3	.426
Linear-by-Associatio	.715	1	.398
N of Valid	41		

As shown in Table 4.18, chi-square test of independence between type of breast conditions experienced and breast cancer screening practice produced a *p*-value of 0.568. The data does not support the hypothesis. Type of breast conditions experienced and breast cancer screening practice appears to be independent.

Table 4.19

Chi-square Test of Independence Results for Family History of Breast Cancer

	Value	df	Asymp.	Exact	Exact
Pearson Chi-	.164	1	.685		
Continuity	.036	1	.849		
Likelihood	.164	1	.686		
Fisher's Exact				.831	.423
Linear-by-Associatio	.164	1	.686		
N of Valid	267				

As shown in Table 4.19, chi-square test of independence between family history and breast cancer screening practice produced a *p*-value of 0.685. The data does not support the hypothesis. Family history and breast cancer screening practices appear to be independent.

CHAPTER V

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

This study explored the relationship between select variables and breast cancer screening practices by examining five hypotheses. This chapter includes a discussion of the findings, summary, conclusions and recommendations.

Discussion

The purpose of this study was to explore how income, age, education, breast cancer knowledge, and individual breast cancer risk factors affect the breast cancer screening practices among African-American women affiliated with Grambling State University and the Willis-Knighton Neighborhood Clinic. The hypotheses were as follows:

1. Breast cancer screening practice and breast cancer knowledge are dependent.
2. Breast cancer screening practice and income are dependent.
3. Breast cancer screening practice and age are dependent.
4. Breast cancer screening practice and education are dependent.
5. Breast cancer screening practice and individual breast cancer risk factors are dependent.

As stated earlier in this chapter, the survey instrument provided data on profiles of respondents, compliance of breast cancer screening practices and breast cancer

knowledge. Five hypotheses were tested. Specific findings were discussed under each hypothesis.

Hypothesis One - Breast cancer screening practice and breast cancer knowledge are dependent.

The data did not support the hypothesis. The majority of the participants did not pass the overall breast cancer knowledge section. These data show that they answered less than twenty-four of the thirty-four questions correctly. The participants who failed consisted of both compliers and non-compliers. However, most of the women who passed the breast cancer knowledge section were non-compliers. This finding is supported by the chi-square test of independence, which suggest breast cancer screening practice and breast cancer knowledge are independent.

This finding also supports the Chavez et al., (1995) and Danigelis et al., (1995) theory that knowledge does not always translate into practice. However, this finding conflicts with Ashing-Giwa (1999), Bloom et al. (1991), Champion & Menon (1997), Paskett et al., (1997) and Phillips, et al. (1999) who reported women are more likely to comply with breast cancer screening when they are knowledgeable about breast cancer.

Based on this finding, breast cancer knowledge does not appear to influence the breast cancer screening practices of African-American women. Yet in order for them to practice breast cancer screening, they must have some knowledge of the recommended screening guidelines and techniques. Consequently, the researcher cannot conclude that breast cancer knowledge has no influence upon the breast cancer screening practices of African-American women. Instead the researcher suggests that other variables may have

a greater influence. Other variables that were examined in this study include income, age, education and individual breast cancer risk factors.

According to the Andersen's theory, knowledge is a predisposing factor that inclines women to practice breast cancer screening; however, in this study, breast cancer knowledge and breast cancer screening practice appeared independent. Thereby, the findings do not support Andersen's theory.

Hypothesis Two - Breast cancer screening practice and income are dependent.

The data support the hypothesis. Breast cancer screening practice and income were found to be dependent. Income influences a woman's breast screening practices according to this study. Most of the respondents who had an annual income between 25,000 – 39,999 were non-compliers, which suggests that they are less inclined to practice breast cancer screening. The finding correlates with logistic regression analysis, which found having an annual income of 25,000 to 39,999 was the strongest predictor of non-compliance. The finding that women with an annual income of 25,000-39,999 were more likely to be non-compliers conflicts with the literature which reported women with an income above 25,000 were more likely to practice breast cancer screening (Sung et al., 1997).

Respondents whose annual income was less than 5,000, between 15,000 – 19,999, between 20,000 – 24,999, and 40,000 or above were compliers, which suggests that they are more, inclined to practice breast cancer screening. The finding that respondents whose annual income was 40,000 or above were compliers supports the literature reported by Sung et al. (1997) who reported women with an income above 25,000 were more likely to practice breast cancer screening.

Results from the chi-square test of independence showed breast cancer screening practice was dependent upon income. Other researchers reported this finding (Davis et al., 1996; Miller & Champion, 1997; Paskett et al., 1997; Plotkin, 1996; Sung et al., 1997; Underwood, 1994; Woods, 1996). The majority of compliers reported having an annual income of 9,999 or less. The findings of this study suggest that low-income women may practice breast cancer screening more than other women. It supports Underwood's (1994) and Woods' (1996) finding, which suggested that low-income women were as likely as other women to practice breast cancer screening. However, it conflicts with the literature, which reported low-income women to be less likely to practice breast cancer screening (Davis, 1996; Jackson & Davis, 1996; Miller & Champion, 1997; Plotkin, 1996; Rajaram & Rashidi, 1998; Sung et al., 1997).

Logistic regression was done as a post hoc analysis to determine the strength and magnitude of the influence of income upon the breast cancer screening practice of the study population. It showed that women in the 25,000-39,999-income level were 5.6 times less likely to not practice breast cancer screening. This correlates with the descriptive statistics, which showed that most of the non-compliers had this income level.

This study shows that low-income African-American women are just as likely to practice breast cancer screening practice as other women and that African-American women with middle incomes are less likely to practice breast cancer screening. This may be explained by the fact that most breast cancer education outreach programs are targeted toward women with incomes below the poverty level (<10,000 per year) (Lannin et al., 1998.) The existing disparity may be reduced if more breast cancer education outreach programs were targeted toward women of all income levels.

According to Andersen's theory, income is an enabling factor that enables women to practice breast cancer screening. It may be inferred that low-income women would be less likely to practice breast cancer screening. However, the findings of this study do not support that inference, which leads the researcher to assume factors other than income enable women to practice breast cancer screening. It may be possible that income combined with education enables a woman to practice breast cancer screening.

Hypothesis Three – Breast cancer screening practice and age are dependent.

The data support the hypothesis. Age and breast cancer screening practices are dependent. In this study, age was treated as a categorical value, because for the purpose of this study, only the age of the respondents when they completed the questionnaire was the focused upon. Respondents who were under 25 years of age and over 50 years of age were mostly non-compliers. According to Aziz et al, (1999), Trock (1996), the age groups mentioned above have the greatest breast cancer risk. Findings of this study suggest that they are less inclined to practice breast cancer screening.

The chi-square test of independence showed breast cancer screening practice was dependent upon age. This study's findings conflict with researchers who reported breast cancer screening practice and age are not dependent (Champion & Menon, 1997; Falik & Collins, 1996).

The literature reports regarding age are conflicting. There is a body of literature that reported younger women do not practice breast cancer screening appropriately (Lewis, 1999; Rimer, 1993). There is a second body of literature that reported older women do not practice breast cancer screening appropriately (Crane, 1996). The findings from this study support both reports. The younger (<25 years of age) and older (>50

years of age) respondents were less likely to comply with breast cancer screening practice. This study found middle-aged (36-49) respondents were more likely to practice Breast Self Examination and utilize Clinical Breast Examination and screening mammography. This finding supports Sung et al. (1997) who reported that individuals within the high-risk age groups usually do not practice breast cancer screening appropriately.

This study shows that African-American women who, because of their age, have the greatest breast cancer risk may not practice breast cancer screening. The finding that the women who were under 25 years of age were mostly non-compliers suggests that breast cancer education outreach programs should be targeted toward women of all ages, because these women may be unaware of their breast cancer risk. However, most breast cancer outreach programs are targeted toward women age forty and above (Aziz et al., 1999). Consequently, the researcher suggests that breast cancer education outreach programs target all women who experienced menarche. Since most breast cancer educational outreach programs are targeted toward women aged forty and above, the researcher does not have an explanation for the women over aged 50 not practicing breast cancer screening.

According to Andersen's theory, age is a predisposing factor that inclines women to practice breast cancer screening. It may be inferred that African-American women with the greatest breast cancer risk (based on their age) would be more likely to practice breast cancer screening. This study found breast cancer screening to be dependent upon age, yet, the respondents who had the greatest breast cancer risk (based on their age) were less likely to comply with breast cancer screening. Thereby, the findings of this study do

not completely support Andersen's model, which leads the researcher to infer that factors other than age predispose women to practice breast cancer screening. It may be possible that age combined with other predisposing factors incline women to practice breast cancer screening.

Hypothesis Four – Breast cancer screening practices and education are dependent.

The data supports the hypothesis. This study found breast cancer screening practice to be dependent upon education. The findings also, correlate with Eley et al. (1994) who reported a significant relationship to exist between education and breast cancer screening practices. However, the findings disagree with the report by Champion & Menon (1997) who suggested that there is not a relationship between breast cancer screening and education.

The majority of the respondents who reported having less than a high school education, receiving either a high school diploma/GED or completing an Associate's, Bachelor's, or Doctorate degree were compliers. This finding conflicts with Davis et al., (1996) who reported that women who have less than a high school education or only have a high school education/GED are not likely to practice breast cancer screening appropriately.

The majority of respondents who reported having a master's degree were non-compliers. The finding suggest that women with all levels of educational attainment should be targeted by breast cancer education outreach programs that encourage women to practice breast cancer screening. However, most breast cancer outreach programs are targeted toward women with low educational attainment levels such as those who do not

have a high school education/GED or who only have a high school education/GED (Aziz et al., 1999).

This finding supports Chavez et al. (1995) who suggested that formal education may not translate into breast cancer practice. It also supports Champion's & Menon's (1997) suggestion that there is not a relationship between breast cancer screening and education. This finding conflicts with Davis et al. (1996) who reported women with an advanced education were most likely to practice breast cancer screening. This finding may be explained by the fact that formal education is geared toward training individuals for specific jobs, it does not always include training individuals about the importance of breast cancer screening or how to practice breast cancer screening.

It is important to note that most of the reported literature is based on research that contained African-American women who did not have a high school education/GED. Therefore, it may not be appropriate to compare the findings of this study regarding women who have obtained more than a high school diploma/GED to the literature.

Logistic regression was done as a post hoc analysis. It showed having a Master's degree as the strongest predictor of non-compliance. Women in this study who have master degrees are 16.8 times less likely to practice breast cancer screening; therefore, they are more likely to be non-compliers. This finding correlates with the descriptive statistics, which showed that most of the women with a Master's degree were non-compliers. It also supports research conducted by Chavez et al. (1995) who reported that education does not always translate into practice. This finding also suggests that variables other than education may contribute to breast cancer screening practices.

According to the Andersen's theory, education is an enabling factor that makes it possible for women to practice breast cancer screening. It may be inferred that women with less that a high school education/GED or only a high school education/GED would be less likely to practice breast cancer screening. However, the findings of this study do not support that inference, which leads the researcher to infer that factors other than education enable women to practice breast cancer screening. It may be possible that education combined with age and income predispose and enable women to practice breast cancer screening.

Hypothesis Five - Breast cancer screening practice and individual breast cancer risk factors are dependent.

The relationship of eight individual breast cancer risk factors to breast cancer screening were analyzed in this study: (1) age menarche; (2) number of full term pregnancies; (3) age when delivered first child; (4) menopause; (5) age experienced menopause; (6) history of breast condition or disease; (7) type of breast condition; (8) and family history of breast cancer. Breast cancer screening practice was dependent upon three individual breast cancer risk factors analyzed: (1) age when gave birth to first child; (2) menopause; (3) and age-experienced menopause. Breast cancer screening appeared to be independent of the five individual breast cancer risk factors: (1) age menarche; (2) number of full term pregnancies; (3) type of breast condition; (4) history of breast condition or disease; (5) and family history of breast cancer. The reports about the relationship between individual breast cancer risk factors and breast cancer screening are not clearly defined in the literature. There were no studies found in the literature that analyzed the relationship each risk factor has with breast cancer screening.

Age of Menarche. The literature identified early menarche as increasing breast cancer risk in pre-menopausal women (Davis et al., 1997; Johnson-Thompson & Guthrie, 1999; Jatoi, 1999). However, this study found breast cancer screening practices and age of menarche appear to be independent. This means that the age a woman begins her period does not effect her breast cancer screening practice.

Full Term Pregnancy. Breast cancer screening practices and full term pregnancy appear to be independent. This means that the number of full term pregnancies the respondents experienced had no affect upon their breast cancer screening practice.

Age When Gave Birth to First Child. Breast cancer screening practices were found to be dependent upon age when birth was given to the first child. The respondents who gave birth to their first child before eighteen were equally distributed according to compliance. Most of the respondents who gave birth to their first child after age thirty were compliers; whereas, most of the respondents who gave birth to their first child between age eighteen and thirty were non-compliers.

Menopause. The literature identified menopause as increasing breast cancer risk in women (Davis et al., 1997; Johnson-Thompson & Guthrie, 1999; Jatoi, 1999). This study found breast cancer screening practices and menopause dependent. This means beginning menopause affects the respondents' breast cancer screening. The majority of respondents who reported beginning menopause were compliers.

Age Menopause Began. Breast cancer screening practices were found to be dependent upon the age menopause began. The majority of respondents who began

menopause before age fifty were compliers. A total of thirty-three compliers and eight non-compliers reported beginning menopause.

History of Breast Condition or Disease. Breast cancer screening practices appeared to be independent of history of breast condition or disease. The respondents who reported having a history, of breast condition or disease were equally distributed among compliers and non-compliers.

Type of Breast Condition or Disease. Breast cancer screening practices appear to be independent of type of breast condition or disease. Benign breast disease and previous breast cancer are risk factors for breast cancer (Cook, et al. 1996; Gail et al., 1989; Kelsey & Gammon, 1991; Singletary, Taylor, Guinee & Whitworth, 1994). The type of breast condition or disease experienced by the respondents did not affect their breast cancer screening practice.

Family History of Breast Cancer. Family history of breast cancer increases breast cancer risk (American Cancer Society, 1999; Pharoah et al., 1997). This study found breast cancer screening practices and family history of breast cancer appear to be independent, which conflicts with the reported literature. The literature reported that not having a family history of breast cancer may discourage women from practicing breast cancer screening even if they have other breast cancer risk factors (Yood et al., 1999). Miller & Champion (1997) reported that women were more likely to practice breast cancer screening when they were familiar with their family history of breast cancer.

Conclusion

Based on the findings of this study, several are conclusions can be drawn. Most of the women with breast cancer knowledge in this study, were non-compliers. The breast cancer screening practices of the women in this study did not appear to be dependent upon their breast cancer knowledge. The income of the women in this study appeared to influence their breast cancer screening practices. Women with incomes below the poverty line and 30,000 above the poverty line were mostly compliers. Income and breast cancer screening practices were found to be dependent. The age of the women in the study appeared to influence their breast cancer screening practices. Most of the women 31-49 years of age were compliers. Age and breast cancer screening practices were found to be dependent. The educational attainment of the women in the study appeared to influence their breast cancer screening practices. Education and breast cancer screening practice were found to be dependent. The age when women in this study began to menstruate did not influence their breast cancer screening practices. Ages of menarche and breast cancer screening practice appeared to be independent. Full term pregnancy and breast cancer screening practice appeared to be independent. Whether or not a woman had carried a pregnancy to term successfully did not seem to influence their breast cancer screening practice. Age when gave birth to first child and breast cancer screening practice were found to be dependent. Menopause and breast cancer screening practices were found to be dependent. Age menopause began and breast cancer screening practices were found to be dependent. History of breast condition or disease and breast cancer screening practice appeared to be independent. Type of breast condition or disease

and breast cancer screening practice appeared to be independent. Family history of breast cancer and breast cancer screening practice appeared to be independent.

This study found the participants' compliance with the American Cancer Society and National Cancer Institute recommended breast cancer screening practices depended upon income, age, education, age gave birth to first child, menopause and age experienced menopause. The findings also show that regardless of breast cancer knowledge, income, education, age, or individual breast cancer risk factors, women in the sample did not consistently perform breast cancer screening.

It may be concluded that women of all income levels, ages, and educational backgrounds should be targeted for breast cancer education outreach programs. Specifically, breast cancer education outreach programs should target African-American women age 20-30 as well as age 50 and above, those with incomes above the poverty line (specifically 25,000-39,999), and those who have a Master's degree. Most of the women in study who fit into the previously mentioned profiles were non-compliers.

Generalizing these findings to the population at large is limited in that the study sample was recruited from convenient sources. In addition, the study used self-reported data, which could contain erroneous reports or over estimations. Despite these limitations, this study provided a unique opportunity to examine the breast cancer screening practices of for the sample population. To more clearly identify and understand breast cancer screening practice, future studies can build on the data presented here. The following is recommended.

Recommendations

This study could be enhanced if it were replicated using qualitative analysis, specifically one-on-one interviews. Qualitative interviews may illicit in-depth information about personal and cultural beliefs. This information may assist researchers in developing a clearer understanding of the variables that influence breast cancer screening practices and the relationship between those variables and breast cancer screening practices. Once the breast cancer screening practices of African-American women are understood, health professionals may be able to develop outreach programs that get the message about breast cancer screening to them in a context that has meaning and significance to their lives.

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Appendix A

Questionnaire

QUESTIONNAIRE

Please tell me about yourself. Please remember your responses will remain confidential.
Directions: Please place an **X** next to the appropriate response, unless specified to do otherwise.

Demographics

1) What is your race?
   ___Black or African-American
   ___Native American
   ___White or Caucasian
   ___Asian
   ___Other: _____
   (Please specify)

2) What is your age?
   ___Under 25
   ___26-35
   ___36-45
   ___46-55
   ___56-65
   ___Over 65

3) What is your present marital status?
   ___Never Married
   ___Married
   ___Divorced, Separated, Widowed
   ___Other: _____
   (Please specify)

4) What is your religious affiliation?
   ___Catholic
   ___Protestant (For example, Presbyterian, Baptist, Methodist)
   ___Jewish
   ___Non-Affiliated
   ___Other:_____
   (Please specify)

5) What parish do you live in?_____
   (Write the name of your parish)

6) How far do you drive to work each day (one way)?
___0-10 miles
___11-20 miles
___21-30
___31-40
___41-50
___51-60
___Other:_____
(Please specify)

7) What is the highest level of education that you have?
___ Less than high school
___ High School or GED
___ Some college or Technical School
___ Associate's Degree
___ Bachelor's Degree
___ Master's Degree
___ Doctorate
___Other:_____
(Please specify)

8) How many people other than yourself are you responsible for (including all adults, and all children)? _____
(Please specify)

9) What is your current employment classification?
___Unemployed
___Faculty
___Staff
___Teacher
___Service worker
___Other:_____
(Please specify)

10) What is your total annual income?
___Less than 5,000 per year
___5,000 to 9,999 per year
___10,000 to 14,999 per year
___15,000 to 19,999 per year
___20,000 to 24,999 per year
___25,000 to 39,999 per year
___40,000 to 49,999 per year
___50,000+

Breast Cancer Risk

1) How old were you when you started having your menstrual periods?
   ___Under 12
   ___12-14
   ___Over 14

2) Have you ever bore any children?
   ___Yes (answer question 2 a)
   ___No (continue to question 3)

   a) How old were you when you had your **FIRST** child?
      ___Under 18
      ___18-30
      ___Over 30

2) Have you gone through, or are you going through menopause, or have you had a hysterectomy?
   ___Yes (answer question 3 a)
   ___No (continue to question 4)

   a) Approximately how old were you when menopause began, or when you had your hysterectomy?
      ___Under 50
      ___50-55
      ___Over 50

3) What kind of health insurance coverage do you have? (Check all the apply)
   ___None
   ___Private
   ___Medicare/Medicaid
   ___Veteran's
   ___Other: _____
   (Please specify)

4) Do you have a family physician?
   ___Yes (answer question 5 a)
   ___No (continue to question 6)

a) How often do you visit your physician?
___Never
___Once a month
___Once a year
___Once every two years
___Only when I have a problem
___Other: _____
(Please specify)

5) Have you ever received breast health information?
___Yes (answer question 6 a)
___No (continue to question 7)

a) Where have you received breast health information? (Check all that apply)
___Print
___TV/Radio
___Internet
___Hospital
___Physician
___Church
___Friend/Family
___American Cancer Society
___Other: _____
(Please specify)

6) Have you ever had any type of breast condition or disease?
___Yes (answer question 7 a)
___No (Continue to question 8)

a) What type of breast condition or disease?
___ Fibrocystic "Lumpy Breasts"
___Cysts
___Cancer in one breast
___Cancer in both breasts
___Other: _____
(Please specify)

7) Has your natural mother, sister, or daughter ever been diagnosed with breast cancer?
___Yes
___ No

Breast Cancer Screening Practices

1. Have you ever heard of breast self-examination?
   ___Yes (answer question 1 a)
   ___No (continue to question 2)

   1.1. Have you ever practiced breast self-examination?
      1. ___Yes (answer question 1 b)
      2. ___No (continue to question 2)

   1.2. How often do you examine your own breasts?
      1. ___Never
      2. ___Once a month
      3. ___Once a year
      4. ___Once every two years
      5. ___Only when I have a problem
      6. ___Other: _____
         (Please specify)

2. Have you ever had your breasts examined by a doctor or a nurse (clinical breast exam)?
   1. ___Yes (answer question 3)
   2. ___ No (continue to question 4)

3. How often do you have a breast exam by a doctor or a nurse (clinical breast exam)?
   1. ___Every year
   2. ___Every two years
   3. ___Only when I have a problem
   4. ___Other: _____
      (Please specify)

4. Have you ever heard of a mammogram? (It is an x-ray of the breast.)
   1. ___Yes (answer question 5)
   2. ___ No (continue to question 8)

5. Have you ever had a mammogram?
   1. ___Yes (answer questions 6 and 7)
   2. ___ No (answer question 8)

6. If "YES," when did you have your last mammogram? _____
   (Write date)

7. How often do you have a mammogram?
    1. ___Only when I have a problem
    2. ___Once a year
    3. ___Every 2 years
    4. ___Other: _____
        (Please specify)

8. If you have **NEVER** had a mammogram or have not had one in the past 2 years, why? (Check all that apply)
    8.1. ___Too young to have one
    8.2. ___Nothing wrong with me
    8.3. ___Never had breast cancer in our family
    8.4. ___Afraid of finding a problem
    8.5. ___Don't think it would find breast cancer
    8.6. ___Did not know I should
    8.7. ___My doctor had not recommended one
    8.8. ___Too embarrassing
    8.9. ___No transportation
    8.10. ___Too painful
    8.11. ___Too expensive
    8.12. ___Other: _____
        (Please specify)

9. Are you currently being treated for a chronic disease?
    9.1. ___Yes
    9.2. ___No

10. If you do not currently practice breast self-examination, or have your breasts examined by a physician, nurse, or other health provider, or have received a mammogram, do you think that you might do so:
    1.1. ___With in the next 30 days
    1.2. ___With in the next 6 months but not as early as the next 30 days
    1.3. ___Do not know

11. Overall, how healthy are you?
    11.1. ___Not healthy
    11.2. ___Somewhat healthy
    11.3. ___Healthy
    11.4. ___Very healthy

Directions: The next set of questions relates to your knowledge of breast cancer, breast self-examination, clinical breast examination, and mammography. Please read each question carefully and place a circle the letter next to the answer that best represents your response. **Please choose only one answer**. Remember there are no right or wrong answers and again, confidentiality will be kept.

1) What is cancer?
   a) an abnormal growth of cells, which are malignant
   b) untreatable disease
   c) a growth of cells, which are benign
   d) a virus

2) Cancer cells
   a) can spread throughout the body
   b) usually stay in one area of the body
   c) are normal cells
   d) are the same thing as tumors

3) Cancer cells
   a) divide only to replace worn-out or dying cells
   b) divide only to repair injuries
   c) can suppress or destroy normal tissue
   d) are harmless

4) What is the second leading cause of cancer death for African-American women?
   a) lung
   b) colorectal
   c) breast
   d) cancer

5) Overall, an African-American woman's chances of surviving at least 5 years after the diagnosis of breast cancer are:
   a) Not as good as a Caucasian woman's
   b) About the same as a Caucasian woman's
   c) A little better than a Caucasian woman's
   d) Considerably better than a Caucasian woman's
   e) Do not know

6) Breast cancer is most likely to develop in African-American women:
   a) In their 20's
   b) In their 30's
   c) In their 40's
   d) In their 50's
   e) Do not know

7) Nothing causes breast cancer; it just happens.
   a) Yes
   b) No

8) Injury causes breast cancer.
   a) Yes
   b) No

9) Sexual Intercourse causes breast cancer.
   a) Yes
   b) No

10) Stress causes breast cancer.
   a) Yes
   b) No

11) Environment causes breast cancer.
   a) Yes
   b) No

12) Smoking causes breast cancer.
   a) Yes
   b) No

13) Heredity causes breast cancer.
   a) Yes
   b) No

14) Bad Nutrition causes breast cancer.
   a) Yes
   b) No

15) What is the main risk factor for breast cancer?
   a) Age
   b) Race
   c) Never bearing children
   d) Bearing <u>first</u> child after age 30
   e) Age during first period
   f) Having family members with breast cancer

16) Most women who get breast cancer:
    a) Have a mother or sister who had breast cancer
    b) Have no family history
    c) Have no risk factors
    d) Have never had any children
    e) Had their first child after age 30
    f) Have been around someone who has cancer of the breast
    g) Do not know

17) What is your best defense against breast cancer?
    a) Nothing
    b) Early detection
    c) Annual mammogram
    d) Monthly breast self exam
    e) Annual clinical breast exam
    f) Nutrition
    g) Exercise
    h) Do not know

18) Changes in breast size are a symptom of breast cancer.
    a) Yes
    b) No

19) A lump or thickening of the breast is a symptom of breast cancer.
    a) Yes
    b) No

20) Nipple discharge is a symptom of breast cancer.
    a) Yes
    b) No

21) Breast skin changes are a symptom of breast cancer.
    a) Yes
    b) No

22) Aching breasts are a symptom of breast cancer.
    a) Yes
    b) No

23) At what age should a woman begin having mammograms?
    a) Never
    b) 35
    c) 40
    d) 50
    e) Over 50

24) How often should a woman aged 40-49 have a mammogram?
    a) Never
    b) Once a year
    c) Once every two years
    d) Only when she experiences a problem
    e) Only when recommended by a physician

25) How often should a woman aged 50 and over have a mammogram?
    a) Never
    b) Once a year
    c) Once every two years
    d) Only when she experiences a problem
    e) Only when recommended by a physician

26) How often should women aged 40 and over have their breasts examined by a doctor or a nurse?
    a) Never
    b) Annually
    c) Every two years
    d) Only when she is sick
    e) Only when she sees changes her breast

27) How often should women aged 40 and over conduct breast self-examination?
    a) Once a week
    b) Once a month
    c) Three or four times a year
    d) Once a year
    e) Do not know

28) If a woman is still having her menstrual periods, when should breast self-examination be done?
    a) 2-3 days before her period starts
    b) During her period
    c) 2-3 days after her period
    d) About mid-cycle (2 week before the next period)
    e) Do not know

29) Mastectomy (removal of the breast) is a treatment for breast cancer.
    a) Yes
    b) No

.

30) Lumpectomy (removal of a lump) is a treatment for breast cancer.
    a) Yes
    b) No

31) Chemotherapy is a treatment for breast cancer.
    a) Yes
    b) No

32) Hormonal therapy is a treatment for breast cancer.
    a) Yes
    b) No

33) Radiation is a treatment for breast cancer.
    a) Yes
    b) No

34) There is no treatment for breast cancer.
    a) Yes
    b) No

Thank you for you assistance. I appreciate your help in providing information that will be useful in understanding the breast cancer screening practices of African-American women.

Appendix B

Questionnaire Code Sheet and Key

QUESTIONNAIRE CODE SHEET AND KEY

Please tell me about yourself. Please remember your responses will remain confidential. Directions: Please place an **X** next to the appropriate response, unless specified to do otherwise.

Demographics

1) What is your race?

1 = Black or African-American
2 = Native American
3 = White or Caucasian
4 = Asian
5 = Other

2) What is your age?

1 = Under 25
2 = 26-35
3 = 36-45
4 = 46-55
5 = 56-65
6 = Over 65

3) What is your present marital status?

1 = Never Married
2 = Married
3 = Divorced, Separated, Widowed
4 = Other:

4) What is your religious affiliation?

1 = Catholic
2 = Protestant (For example, Presbyterian, Baptist, Methodist)
3 = Jewish
4 = Non-Affiliated
5 = Other

5) What parish do you live in?_____

1 = Bienville	6 = Lincoln
2 = Bossier	7 = Morehouse
3 = Caddo	8 = Ouachita
4 = Desoto	9 = Rapides
5 = East Carroll	10 = West Carroll

6) How far do you drive to work each day (one way)?

1 = 0-10 miles
2 = 11-20 miles
3 = 21-30
4 = 31-40
5 = 41-50
6 = 51-60
7 = Other

7) What is the highest level of education that you have?

1 = Less than high school
2 = High School or GED
3 = Some college or Technical School
4 = Associate's Degree
5 = Bachelor's Degree
6 = Master's Degree
7 = Doctorate
8 = Other

8) How many people other than yourself are you responsible for (including all adults, and all children)?

No Answer = 0
1 = 1
2 = 2
3 = 3
4 = 4
5 = 5
6 = 6
7 = 7
8 = 8
9 = 9
10 = 10

9) What is your current employment classification?

1 = Unemployed
2 = Faculty
3 = Staff
4 = Teacher
5 = Service worker
6 = Other

10) What is your total annual household income?

1 = Less than 5,000 per year
2 = 5,000 to 9,999 per year
3 = 10,000 to 14,999 per year
4 = 15,000 to 19,999 per year

5 = 20,000 to 24,999 per year
6 = 25,000 to 39,999 per year
7 = 40,000 to 49,999 per year
8 = 50,000+

Breast Cancer Risk

11) How old were you when you started having your menstrual periods?
1 = Under 12
2 = 12-14
3 = Over 14

12) Have you ever bore any children?
1 = Yes (answer question 2 a)
2 = No (continue to question 3)

13) How old were you when you had your FIRST child?
1 = Under 18
2 = 18-30
3 = Over 30

14) Have you gone through, or are you going through menopause, or have you had a hysterectomy?
1 = Yes (answer question 3 a)
2 = No (continue to question 4)

15) Approximately how old were you when menopause began, or when you had your hysterectomy?
1 = Under 50
2 = 50-55
3 = Over 50

16) What kind of health insurance coverage do you have? (Check all the apply)
1 = None
2 = Private
3 = Medicare/Medicaid
4 = Veteran's
5 = Other

17) Do you have a family physician?
1 = Yes (answer question 5 a)
2 = No (continue to question 6)

18) How often do you visit your physician?
1 = Never
2 = Once a month
3 = Once a year
4 = Once every two years
5 = Only when I have a problem
6 = Other

19) Have you ever received breast health information?
1 = Yes (answer question 6 a)
2 = No (continue to question 7)

20) Where have you received breast health information? (Check all that apply)
1 = Print
2 = TV/Radio
3 = Internet
4 = Hospital
5 = Physician
6 = Church
7 = Friend/Family
8 = American Cancer Society
9 = Other

21) Have you ever had any type of breast condition or disease?
1 = Yes (answer question 7 a)
2 = No (Continue to question 8)

22) What type of breast condition or disease?
1 = Fibrocystic "Lumpy Breasts"
2 = Cysts
3 = Cancer in one breast
4 = Cancer in both breasts
5 = Other

23) Has your natural mother, sister, or daughter ever been diagnosed with breast cancer?
1 = Yes
2 = No

Breast Cancer Screening Practices

24) Have you ever heard of breast self-examination?
1 = Yes (answer question 1 a)
2 = No (continue to question 2)

25) Have you ever practiced breast self-examination?
1 = Yes (answer question 1 b)
2 = No (continue to question 2)

26) How often do you examine your own breasts?
1 = Never
2 = Once a month
3 = Once a year
4 = Once every two years
5 = Only when I have a problem
6 = Other

27) Have you ever had your breasts examined by a doctor or a nurse (clinical breast exam)?
1 = Yes (answer question 3)
2 = No (continue to question 4)

28) How often do you have a breast exam by a doctor or a nurse (clinical breast exam)?
1 = Every year
2 = Every two years
3 = Only when I have a problem
4 = Other

29) Have you ever heard of a mammogram? (It is an x-ray of the breast.)
1 = Yes (answer question 5)
2 = No (continue to question 8)

30) Have you ever had a mammogram?
1 = Yes (answer questions 6 and 7)
2 = No (answer question 8)

31) If "YES," when did you have your last mammogram? _____
1 = 2000
2 = 1999
3 = 1998
4 = 1997
5 = 1996
6 = 1995
5 = Beyond 5 years

32) How often do you have a mammogram?
1 = Only when I have a problem
2 = Once a year
3 = Every 2 years
4 = Other

33) If you have NEVER had a mammogram or have not had one in the past 2 years, why? (Check all that apply)
1 = Too young to have one
2 = Nothing wrong with me
3 = Never had breast cancer in our family
4 = Afraid of finding a problem
5 = Don't think it would find breast cancer
6 = Did not know I should
7 = My doctor had not recommended one
8 = Too embarrassing
9 = No transportation
10 = Too painful

34) Are you currently being treated for a chronic disease?
1 = Yes
2 = No

35) If you do not currently practice breast self-examination, or have your breasts examined by a physician, nurse, or other health provider, or have received a mammogram, do you think that you might do so:
1 = With in the next 30 days
2 = With in the next 6 months but not as early as the next 30 days
3 = Do not know

36) Overall, how healthy are you?
1 = Not healthy
2 = Somewhat healthy
3 = Healthy
4 = Very healthy

Knowledge Section Key

Correct answers are highlighted in bold.

1) What is cancer?
   a) an abnormal growth of cells, which are malignant
   b) untreatable disease
   c) a growth of cells, which are benign
   d) a virus

2) Cancer cells
   a) can spread throughout the body
   b) usually stay in one area of the body
   c) are normal cells
   d) are the same thing as tumors

3) Cancer cells
   a) divide only to replace worn-out or dying cells
   b) divide only to repair injuries
   c) can suppress or destroy normal tissue
   d) are harmless

4) What is the second leading cause of cancer death for African-American women?
   a) lung
   b) colorectal
   c) breast
   d) cancer

5) Overall, an African-American woman's chances of surviving at least 5 years after the diagnosis of breast cancer are:
   a) Not as good as a Caucasian woman's
   b) About the same as a Caucasian woman's
   c) A little better than a Caucasian woman's
   d) Considerably better than a Caucasian woman's
   e) Do not know

6) Breast cancer is most likely to develop in African-American women:
   a) In their 20's
   b) In their 30's
   c) In their 40's
   d) In their 50's
   e) Do not know

7) Nothing causes breast cancer; it just happens.
   a) Yes
   b) No

8) Injury causes breast cancer.
   a) Yes
   b) No

9) Sexual Intercourse causes breast cancer.
   a) Yes
   b) No

10) Stress causes breast cancer.
   a) Yes
   b) No

11) Environment causes breast cancer.
   a) Yes
   b) No

12) Smoking causes breast cancer.
   a) Yes
   b) No

13) Heredity causes breast cancer.
   a) Yes
   b) No

14) Bad Nutrition causes breast cancer.
   a) Yes
   b) No

15) What is the main risk factor for breast cancer?
   a) Age
   b) Race
   c) Never bearing children
   d) Bearing <u>first</u> child after age 30
   e) Age during first period
   f) Having family members with breast cancer

16) Most women who get breast cancer:
   a) Have a mother or sister who had breast cancer
   b) Have no family history
   c) Have no risk factors
   d) Have never had any children
   e) Had their first child after age 30
   f) Have been around someone who has cancer of the breast
   g) Do not know

17) What is your best defense against breast cancer?
   a) Nothing
   b) Early detection
   c) Annual mammogram
   d) Monthly breast self exam
   e) Annual clinical breast exam
   f) Nutrition
   g) Exercise
   h) Do not know

18) Changes in breast size are a symptom of breast cancer.
   a) Yes
   b) No

19) A lump or thickening of the breast is a symptom of breast cancer.
   a) Yes
   b) No

20) Nipple discharge is a symptom of breast cancer.
   a) Yes
   b) No

21) Breast skin changes are a symptom of breast cancer.
   a) Yes
   b) No

22) Aching breasts are a symptom of breast cancer.
   a) Yes
   b) No

23) At what age should a woman begin having mammograms?
   a) Never
   b) 35
   c) 40
   d) 50
   e) Over 50

24) How often should a woman aged 40-49 have a mammogram?
   a) Never
   b) Once a year
   c) Once every two years
   d) Only when she experiences a problem
   e) Only when recommended by a physician

25) How often should a woman aged 50 and over have a mammogram?
   a) Never
   b) Once a year
   c) Once every two years
   d) Only when she experiences a problem
   e) Only when recommended by a physician

26) How often should women aged 40 and over have their breasts examined by a doctor or a nurse?
   a) Never
   b) Annually
   c) Every two years
   d) Only when she is sick
   e) Only when she sees changes her breast

27) How often should women aged 40 and over conduct breast self-examination?
   a) Once a week
   b) Once a month
   c) Three or four times a year
   d) Once a year
   e) Do not know

28) If a woman is still having her menstrual periods, when should breast self-examination be done?
   a) 2-3 days before her period starts
   b) During her period
   c) 2-3 days after her period
   d) About mid-cycle (2 week before the next period)
   e) Do not know

29) Mastectomy (removal of the breast) is a treatment for breast cancer.
   a) Yes
   b) No

.

30) Lumpectomy (removal of a lump) is a treatment for breast cancer.
   a) Yes
   b) No

31) Chemotherapy is a treatment for breast cancer.
   a) Yes
   b) No

32) Hormonal therapy is a treatment for breast cancer.
   a) Yes
   b) No

33) Radiation is a treatment for breast cancer.
   a) Yes
   b) No

34) There is no treatment for breast cancer.
   a) Yes
   b) No

Thank you for you assistance. I appreciate your help in providing information that will be useful in understanding the breast cancer screening practices of African-American women.

Appendix C

Virginia Polytechnic Institute and State University IRB Approval Letter

Virginia

Office of Sponsored Programs

VIRGINIA POLYTECHNIC INSTITUTE
AND STATE UNIVERSITY

301 Burruss Hall
Blacksburg, Virginia 24061-0249
(540)231-5281 Fax: (540)231-4384

MEMORANDUM

~th, Charles Baffi

Teaching and Learning 0313

FROM: H. T. Hur
Director

DATE: March 21, 2000

SUBJECT: IRB EXEMPTION APPROVAL - "Cancer Screening Practices of Middle-Age African American Women in Northwest Louisiana" - IRB #00-82

I have reviewed your request to the IRB for exemption for the above referenced project. I concur that the research falls within the exempt status.

Best

HTH/baj

cc: Jan Nespor

Appendix D

Letter of Introduction and Informed Consent

Dear Participant:

As part of my doctoral work at Virginia Polytechnic Institute and State University, I am conducting a survey on breast health practices among African American women. Specifically, I am interested in learning what factors influence African American women to practice breast self-examination and seek clinical breast exams and mammograms. This study has been approved by the IRB for Virginia Polytechnic Institute and State University and the Department of Home Economics at Grumbling State University has agreed to the distribution of this questionnaire.

Your participation in this study is entirely voluntary. There are no direct benefits to you but your participation in this research might help Health Professionals understand the breast screening practices of middle-age African American women in Northwest, Louisiana. Filling out the questionnaire will not effect your employment, raises, promotions, or grades.

It would help greatly if you would complete the enclosed questionnaire and return it to the Home Economics Department at Grambling State University. All responses will be kept confidential. The information you supply will not be shared with Grambling State University or Head Start Administrators. At no time will the researchers release the results of the study to anyone other than individuals working on this project without your written consent.

I am aware that your time is very limited, however, this questionnaire will only require approximately 15 minutes to complete. I hope you view this study as beneficial to yourself and to all women by advancing the understanding of breast health practices and contributing to the development of health promotion programs. If you have any questions or concerns regarding involvement in this study, please call me at 540-9510213, Dr. Charles Baffi at 540-231-8284, or Dr. Frankie Rabon at 318-274-2249.

Thank you for your time and assistance.

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

Informed Consent

Title of Project: Breast Cancer Screening Practices of Middle-age African American women (MAAAW) in Northwest, Louisiana

Investigators: Karma Rabon-Stith and Charles Baffi

I. Purpose:

The purpose of this study is to investigate the breast screening practices (breast self exam, clinical breast exam and mammography) of middle-age African American women in Northwest, Louisiana and the influencing factors.

II. **Procedures:** You will be asked to fill out a questionnaire, which will gather information regarding your breast health practices. The questionnaire will access two groups African American women: (1) those who are currently employed at Grambling State University and (2) Head Start teachers who are classified as non-traditional students seeking an Associate's of science degree in Child Development. Once you have completed the questionnaire it will be collected by, the Home Economics Department Head at Grambling State University, and then forward to the investigators of this research.

III. Risks: There should be no risks to you from participating in this study. You can refuse to answer any questions that make you uncomfortable. You can also withdraw from the study at any time.

IV. Benefits: There are no direct benefits to you but your participation in this research might help Health Professionals understand the breast screening practices of middle-age African American women in Northwest, Louisiana. Filling our the questionnaire will not effect your employment, raises, promotions, or grades.

V. Confidentiality:

Names will not be used on the questionnaire. Confidentiality will be maintained. The information you supply will not be shared with Grambling State University or Headstart Administrators. The information you supply will only be shared with the research investigators. At no time will the researchers release the results of the study to anyone other than individuals

You are free to withdraw from participation in this study at any time. Just inform the researcher or call one of the others listed at the bottom of this page.

VIII. Approval of Research

This research project has been approved, as required, the Instructional Review Board for Research Involving Human Subjects at Virginia Polytechnic Institute and State University, by the Department of Teaching and Learning.

IX. **Subject's Responsibilities** I voluntarily agree to participate in this study. I have the following responsibilities:

X. Subject's Permission

I have read and understand the Informed Consent and the conditions of this project. I have had all of my questions answered. I hereby acknowledge the above and give my voluntary consent for participation in this project.

By signing below, you indicate that you have read and understood the informed consent and conditions of this project, that you have had all of you questions answered, and that you give your voluntary consent for participation in this project.

If you participate, you may withdraw at anytime without penalty.

Signature Date

Investigators:

Appendix E

Approval Letters from Grambling State University
and The Willis-Knighton Neighborhood Clinic

Grambling State University
Grambling, Louisiana 71245

HOME ECONOMICS DEPARTMENT (318)274-2311/2249

Fax (318)274-6049

March 1, 2000

Karma M. Rabon-Stith
12500 A Foxridge Lane
Blacksburg, Virginia 24060

Dear Karma M. Rabon-Stith and Colleagues:

I am writing you this letter to formally notify you that Grambling State University's Home Economics Department will support your research efforts. In doing so, I will serve as the contact person and informant here. I will administer the questionnaire to two groups of African-American women: (1) those who are currently employed at Grambling State University and (2) Head Start teachers who are classified as non-traditional students seeking an Associate's of science degree in Child Development. It is my understanding that the demographic questionnaire will gather information regarding their demographics and breast health practices. I will also collect the completed questionnaire, and then forward them to you and Dr. Baffi.

If you have any additional questions or need additional information, please do not hesitate to contact me at 318 274 - 2249 or via e-mail frabon1@bellsouth.net net.

Respectfully,

Frankie Rabon, Ph.D., Associate's Professor/Head - Department of Home Economics

1994 Virginia Tech Graduate - Dr. Daisy Stewart, Advisor

xc: Dr. Charles R. Baffi
Associate's Professor in the Department of Teaching and Learning

January 30, 2000

Karma M. Rabon-Stith

12500 A Foxridge Ln

Blacksburg, Virginia 24060

Dear Mrs. Rabon-Stith

I am writing to formally notify you that The Willis-Knighton Neighborhood Clinic Support your research efforts. I will administer the questionnaire on Tuesdays and Thursdays to African American women seeking treatment at The Willis-Knighton Neighborhood Clinic. It is my understanding that the questionnaire will gather information regarding the breast cancer screening practices of African American women in Northwest, Louisiana and the final results will be shared with me. I will collect the questionnaires and forward to the Head of the Home Economics Department at Grambling State University, such that they may then be forwarded to you.

If you have any additional questions or need additional information, please do no hesitate to contact me.

Sincerely,

Laverne Carley, Health Educator

Appendix F

Definitions

Definitions

For the purpose of this study, terms are defined to bring about a better understanding of what is written in this investigation.

1. Age: Age is a predisposing variable that determines the likelihood of breast cancer screening practices (National Cancer Institute, 1999).

2. Breast Cancer: Development of a malignant tumor that has developed from abnormal cells of the breast (American Cancer Society, 1999)

3. Breast Cancer Knowledge: Knowledge of the American Cancer Society's recommended use of breast cancer screenings: breast self-examination, clinical breast examination, and mammograms (American Cancer Society, 1999).

4. Breast Cancer Risk Factors: Variables that increase the probability of someone receiving breast cancer (National Cancer Institute, 1999).

5. Breast Cancer Screening Practices: Proper use of breast self-examination, clinical breast examination, and mammography (National Cancer Institute, 1999).

6. Breast Condition: non-cancerous form of cysts in the breast.

7. Breast Disease: Cancer in either one or both breasts.

8. Breast Self-Examination (BSE): Technique performed by a woman to provide monthly systematic examination of the breast and underarm area (National Cancer Institute, 1999).

9. Cancer: Uncontrollable growth of malignant cells.

10. Clinical Breast Examination (CBE): Visual and manual examination of a woman's breast and underarm area by a medical professional (National Cancer Institute, 1999).

11. Compliance: The process of adapting to a rule or set of standards.

12. Complier: An individual who adapts to a rule or set of standards.

13. Early Detection: The key to finding breast cancer through screening tools: breast self-examination, clinical breast examination, and mammography (National Cancer Institute, 1999).

14. Estrogen Replacement Therapy (ERT): The therapeutic replacement of estrogen lost during menopause.

15. Income: Is an enabling variable that determines whether or not women will be able to afford the cost of breast cancer screening.

16. Knowledge: Is the understanding of breast cancer and the American Cancer Society's recommended breast cancer screening guidelines.

17. Lobular Carcinoma In Situ (LCIS): Abnormal cancer cells grown within the lobules or milk producing glands of the breast (American Cancer Society, 1999)

18. Mammogram: A x-ray examination of the breast (National Cancer Institute, 1999).

19. Menopause: The period of natural cessation of menstruation occurring usually between the ages of 45 and 50.

20. Non-Compliance: The process of not adapting to a rule or set of standards.

21. Non-Complier: An individual who does not adapt to a rule or set of standards.

22. Relative Risk: The percent probability that a woman will develop breast cancer. The marker for relative risk is 1.7 percent, which is thought to increase with increasing age (National Cancer Institute, 2000).

23. Stage 0 Breast Cancer: The stage of breast cancer when cancer cells are located within a duct and have not escaped into the surrounding fatty breast tissue (American Cancer Society, 1999).

24. Stage I Breast Cancer: The stage of breast cancer when the breast tumor does not appear to have spread beyond the breast (American Cancer Society, 1999).

25. Stage II Breast Cancer: The stage of breast cancer when cancer cells have spread to the lymph nodes under the arm on the same side as the breast cancer (American Cancer Society, 1999).

26. Stage III Breast Cancer: The stage of breast cancer when cancer cells have spread to the skin, the chest well, or the lymph nodes that are not near the breast (American Cancer Society, 1999).

27. Stage IV Breast Cancer: The stage of breast cancer when cancer cells have spread to distant organs such as bones, lungs, or lymph nodes not near the breast. Stage

IV is the most untreatable stage because cancer has spread to other organs (American Cancer Society, 1999). It is during this stage that most African-American women are diagnosed with breast cancer (American Cancer Society, 1999).

VITA

Karma Melisa Rabon-Stith, PhD, CHES, Gerontology Specialist

Email: krabon@vt.edu or krabon-s@radford.edu

EDUCATION

Doctor of Philosophy, Educational Curriculum and Instruction
Emphasis: Health Promotion
Virginia Polytechnic Institute and State University (Virginia Tech); Blacksburg, VA
Dissertation Title: The Relationship Between Select Variables and The Breast Cancer Screening of a Convenient Sample of African-American Women from Grambling State University and The Willis-Knighton Neighborhood Clinic
Date of Graduation: May 2001
QCA: 3.4

Master's of Science, Human Nutrition Foods & Exercise
Emphasis: Exercise Physiology and Nutrition
Gerontology Certificate
Virginia Polytechnic Institute and State University (Virginia Tech); Blacksburg, VA
Thesis Title: The Effect of Aging on the Sarcoplasmic Reticulum of Adult and Aged Fisher 344 Rats.
Date of Graduation: May 1997
QCA: 3.3

Bachelor of Science, Health Education
Minor, Biology
Virginia Polytechnic Institute and State University (*Virginia Tech); Blacksburg, VA*
Date of Graduation: May 1995
QCA: 3.0

Biology Major
Alcorn State University; Lorman, MS
(Accumulated 30 hours)
August 1991-July 1992
GPA: 3.7

High School Education
Natchez-A dams High School, Natchez, MS
Date of Graduation: June 1991

PROFESSIONAL EXPERIENCE

August 2000 – Present
Assistant Professor and Director of Health 200 Course Program – Department of Physical and Health Education, Radford University; Radford, Virginia

Responsibilities and Accomplishments

- Lecture Wellness Lifestyles General Education Course
- Lecture Exercise Physiology
- Hire, train, and supervise adjunct faculty
- Teach stress management to Roanoke Headstart Employees
- Teach general health at Roanoke Higher Education Center
- Restructure and update Health 200 General Education Course
- Teach Exercise Physiology Lab
- Advise undergraduate students
- Develop classroom learning activities and presentations
- Develop Health Education Track with CHES Preparation and Emphasis
- Serve on University Committees
    - Athletic Trainer Faculty Search Committee
    - Education Technology Faculty Search Committee
    - General Education Committee

January 1999 – Present
Graduate Teacher Assistant - Department of Teaching and Learning; Virginia Tech; Blacksburg, VA

Responsibilities and Accomplishments

- Teach undergraduate Personal Health, Drug Education, and Consumer Health Courses
- Teach graduate Health Promotion Planning and Evaluation Class
- Advise undergraduate students
- Develop classroom learning activities and presentations
- Proposal writing
- Assist with the evaluation and development of school health programs

June 1999 — August 1999
Graduate Assistant — Center for Instructional Technology (Housecalls); Virginia Tech; Blacksburg, VA

Responsibilities and Accomplishments

- Troubleshoot computer problems for the CHRE faculty and staff at Virginia Tech
- Provide computer instruction for Virginia Tech faculty
- Develop web site material

June 1998 - August 1998
Summer Intern / 4-H Agent LSU Cooperative Extension (Caddo Parish); Shreveport, LA
Responsibilities and Accomplishments

- Develop presentations related to Health, Nutrition, and Food Preparation for 4-Her's participating in Short Course
- Adult leader for Short Course in Baton Rouge
- Critique 4-H Presentations: public speaking, body language, and visual aids
- Camp Counselor at 4-H Camp Grant Walker
- Sewing Class Instructor
- Helped Develop Record Books for State Competition
- Held a Baby-sitting Clinic
- Helped Other Agents with Food Preservation Workshop
- Helped Other Agents with Home Improvement Workshop

1995 - Present
Fitness and Nutrition Consultant (Self-employed); Blacksburg, VA
Responsibilities and Accomplishments

- Develop Personal Exercise Programs
- Personal Training: Resistance Training & Cardiovascular Training
- Dietary Counseling and Recommend Dietary Changes
- Eating Disorder Counseling
- Teach Breast Cancer Awareness

December 1996 - August 1997
Graduate Assistant, Minority Engineering Programs; Virginia Tech; Blacksburg, VA
Responsibilities and Accomplishments

- Develop Young Scholars Conference
- Conduct Student Focus Groups
- Analyze and Report Ethnographic Data
- Student Counseling

May 1995 - December 1996
Exercise Leader, Center for Cardiac Therapy and Intervention at Virginia Tech; Blacksburg, VA
Responsibilities and Accomplishments

- Teach Aquatic Aerobics to Group of 15-20 Cardiac and Arthritis Patients
- Monitor Patient Blood Pressure and Exercise Status
- Recommend Exercise Protocol
- Supervise Patient Activity and Offer Patient Counseling
- Supervise Undergraduate Progress and Participation

August 1995 - December 1996
Graduate Assistant, Valuing Diversity Project, College of Human Resources; Virginia Tech; Blacksburg, VA
Responsibilities and Accomplishments

- Implement Diversity Programs for Both Graduate & Undergraduate Students
- Analyze and Report Ethnographic Data
- Conduct Bi-monthly Meetings with Faculty Committee Members
- Arrange Plans for Visiting Faculty

1992 - 1995
Biology Tutor, Office Academic Enrichment; Virginia Tech; Blacksburg, VA
Responsibilities and Accomplishments

- Tutor Undergraduate Biology Courses
- Provide Academic Counseling

STATE CONFERENCE PRESENTER

- Mississippi Minority Leadership Development
  - Natchez, Mississippi 1992
  - Biloxi, Mississippi 1993

LICENSES & CERTIFICATES

- 1997 Gerontology Certificate
- 1998 Certified Health Education Specialist (CHES)

ACTIVITIES & MEMBERSHIPS

- Peer Group Leader (93-94)
- BOOM (Black Organization of Mentors) Big Sister (93-94)
- Wellness Peer Health Educator with Virginia Tech's Student Health Service (93-95)
- Tutor for High School Students (3 hours/week 93-95)
- Lifetime Member of Delta Sigma Theta Sorority, Inc.
- Delta Sigma Theta Sorority, Inc. (Vice-president Blacksburg 95-96: President Blacksburg 00-01)
- Develop Monthly Health Day (First Saturday Every Month, 96-97)
- Eating Disorder Task Force Women's Center at Virginia Tech (97-Present)
- National Wellness Association (98-Present)

HONORS

- Wrote and presented research paper at 1992 Minority Biomedical Research Symposium
- 1993-1995 Dean's List
- 1994 Distinguished African American
- 1995 Awarded Graduate Assistantship

- 1998 Received Virginia Tech Fellowship

CONSULTING

- Presenter, Grambling State University Parenting Conference (March ‘98)
- Develop Aging and Entertainment Course Grambling State University (July ‘98)
- Conducted Ethnographic Research Related to African Americans and Gaming in Northwest Louisiana (June-August ‘98)

OTHER ASSETS

- Excellent Computer Skills/Type 70-80 wpm
- Freelance Creative Writer/Storyteller/Photographer
- Musical Instrument - Flute
- Qualitative and Quantitative Researcher

References available upon request