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Factors That Influence Mammography Use of Community Health Workers

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FACTORS THAT INFLUENCE MAMMOGRAPHY USE

OF COMMUNITY HEALTH WORKERS

by

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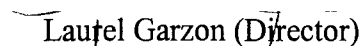M.S. December 1994, Old Dominion University

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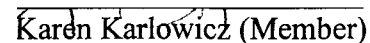Requirement for the Degree of
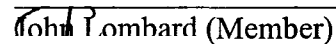
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ABSTRACT

FACTORS THAT INFLUENCE MAMMOGRAPHY USE
OF COMMUNITY HEALTH WORKERS

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Old Dominion University, 2005
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Community health worker (CHW) interventions promote early detection of breast cancer and mammography use to help eliminate health disparities for minority and low-income women. Data trends show lower mammography use among this population although CHW interventions have been shown to promote mammography use. However, CHW interventions have not been tested sufficiently to examine the factors that influence mammography use of CHWs.

This cross-sectional study examined the factors that influence mammography use of CHWs and the relationship of self-efficacy, social norms, and mammography use of CHWs. The PRECEDE model served as the framework combining social factors, beliefs, attitudes, behaviors, and accessibility of resources for this mixed methods study.

Self-reported data from mailed surveys were obtained from a convenience sample of volunteer CHWs (n = 109) from two urban areas in Virginia. Perceived susceptibility, barriers, benefits, and health motivation were measured using Champion's Health Belief Model Scale (1999). Perceived self-efficacy and social norms were measured using Egbert and Parrott's Social Cognitive Scale for Female Cancer Screening (2001). Qualitative data from two in-depth CHW interviews and a CHW focus group were

examined to explore how the factors influence mammography use of CHWs and social settings that define health behaviors.

The logistic regression analysis revealed barriers to be predictive of mammography use of CHWs controlling for self-efficacy, social norms, health motivation, and age. Qualitative results showed additional barriers of cost, insurance, and transportation as factors that hindered mammography use and family support as a factor that facilitated mammography use.

Findings from this study provide a clear direction for planning effective CHW interventions using a needs assessment based on PRECEDE. Results suggest identifying and addressing specific barriers to increase the likelihood of mammography use and teaching strategies to increase self-efficacy of CHWs. Further research is needed to confirm the findings of this study and identify cultural differences for the factors that influence mammography use of CHWs.

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Other important people helped me during the data collection and writing of this dissertation. I embraced the encouragement of my family through some very long months and years. My parents provided more love, encouragement, and kind words to keep me focused on my goal. I could not have completed this dissertation without them. They knew this major accomplishment would take a commitment to excellence, direction to overcome obstacles or delays, and sheer determination. These were valuable lessons I learned from them years ago.

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CHAPTER I

INTRODUCTION

Breast cancer is the second leading cause of cancer deaths for women exceeded by lung cancer (American Cancer Society [ACS], 2002). A woman's chance of being diagnosed with breast cancer increases with age and most breast cancer occurs in women over 50 years of age (National Cancer Institute [NCI], 2002). The American Cancer Society (2002) estimates approximately 203,500 new breast cancer cases and 40,000 breast cancer deaths in 2002. The estimated breast cancer treatment costs are nearly $7 billion in 2002 (CDC, 2003).

Screening mammography is a secondary intervention for early detection of breast cancer (ACS, 2002). A secondary intervention is a prevention effort during the earliest stages of a disease to help reduce the progress of the disease (Friis & Sellers, 1999). A screening mammogram is an x-ray of the breast to detect any changes in the breast (NCI, 2002). Mammograms can identify breast cancer at the earliest signs several years before physical signs and symptoms develop (ACS, 2002; NCI, 2002). Early detection with mammography use may reduce the risk of breast cancer mortality by 30% for women ages 50 to 69 and 17% for women ages 40 to 49 (NCI, 2001).

ACS (2002) and NCI (2001) recommend that women ages 40 and older have mammograms every one to two years. Women that may be at higher risks for breast cancer should consult their health care providers for advice for frequency of mammography use. Factors that place women at higher risks may include family history if mother or sisters had breast cancer, personal history of breast cancer, or breast density (NCI, 2002).

From 1990 to 2000, data trends from the 2000 Behavioral Risk Factor Surveillance System (BRFSS) show an increase in mammography use (58.3% to 72.8%) for women ages 40 and older who received a mammogram within the past two years. Similarly, data trends in Virginia from 1990 to 2000 show an increase in mammography use (69.4% to 77.1%) for women ages 40 and older who received a mammogram within the past two years. The BRFSS is an ongoing nationwide database of annual telephone surveys of the state health departments, National Center for Chronic Disease Prevention and Health Promotion, and the Centers of Disease Control and Prevention (BRFSS, 2000).

The national breast cancer incidence rates show an increase of approximately 4% annually between 1980 and 1987 and a slight increase between 1988 and 1998 (ACS, 2002; NCI, 2001). White women have higher breast cancer incidence rates than African Americans and Hispanics from 1992 to 1998 (101.5, 115.5, & 68.5 per 100,000 respectively) (ACS, 2002). However, African Americans have higher breast cancer age-adjusted mortality rates than White women and Hispanics (31.0, 24.3, & 14.8 per 100,000 respectively) (ACS, 2002). In Virginia, 1996 to 2000 data trends from the CDC National Center for Health Statistics show higher breast cancer age-adjusted mortality rates for African Americans than White women and Hispanics (38.2, 27.1 & 14.6 per 100,000 respectively) (CDC, 2003). One of the objectives of Healthy People 2010 is to reduce breast cancer mortality rates to 22.3 per 100,000 (U.S. Department of Health and Human Services, 2000). Healthy People 2010, the nation's health initiative, established health objectives designed to be measured over time (U.S. Department of Health and Human Services, 2000).

Community Health Workers and Mammography Use

On the community level, programs such as community health worker (CHW) interventions increase the awareness for early detection of breast cancer and promotion of mammography use (ACS, 2002; Merzel & D'Afflitti, 2003). These programs train community health workers to promote mammography use for mostly low-income and minority women (Bishop, Earp, Eng, & Lynch, 2002; Earp, et al., 1997; Eng, 1993; Sung, Blumenthal, Coates, Williams, Alema-Mensah, & Liff, 1997). This is important since estimates indicate an increase of minorities from 25% in 2000 to 40% in 2030 of the US population (Allen, 2001). CHW interventions are used for other health issues such as adult asthma (Butz, et al., 1994), pediatric asthma (Krieger, Takaro, Allen, Sung, Weaver, Chai, & Dickey, 2002; Krieger, Takaro, Song, & Weaver, 2005), arthritis (Brady, Kruger, Helmick, Callahan, & Boutaugh, 2003), cardiovascular health program (Kim, Koniak-Griffin, Flaskerud, & Guarnero, 2004), diabetes (Fedder, Chang, Curry, & Nichols, 2003; Teufel-Shone, Drummond, & Rawiel, 2005), dietary programs (Williams, Belle, Houston, Haire-Joshu, & Auslander, 2001), hypertension (Morisky, Lees, Sharif, Liu, & Ward, 2002), HIV (Kelly, 1999), immunizations (Szilagyi, Schaffer, Shone, Barth, Humiston, Sandler, & Rodewald, 2002), routine chronic disease prevention (Hunter, de Zapien, Papenfuss, Fernandez, Meister, & Giuliano, 2004), and STD prevention (Crosby, et al., 2002; McDonald, Thomas, & Eng, 2001; McQuiston & Flaskerud, 2003; Thomas, Eng, Earp, & Ellis, 2001).

CHW interventions are based on the premise that behavior is influenced by the social environment (Merzel & D'Afflitti, 2003). Planning community interventions involves working with community members to meet the needs of the community

(Farquhar, Michael, & Wiggins, 2005; Levy, et al., 2004). Health promotion strategies may include identifying factors that influence mammography use for African Americans or Latinas. Research findings suggest members of minority groups, especially African Americans, have a preference to receive mammography messages from their own social support networks (Baldwin, 1996; Sung, et al., 1997). African Americans use their sister circles as community health workers in churches for health promotion and support (Baldwin, 1996). Low-income Latinas may seek health care services in their neighborhoods from community health workers or trained bilingual providers (Baker, et al., 1997; McElmurry, Park, & Buseh, 2003).

Community Health Workers.

CHWs are trained lay helpers who serve as health advocates and role models in their communities (Earp, et al., 2002). In the literature, the term *community health worker* is used interchangeably with other titles including *Lay Health Promoter, Lay Health Advisor, Outreach Educator, Patient Navigator, Promotora,* or *Community Health Advisor* (Annie E. Casey Foundation, 1998). CHWs are part of their social networks with common ethnic, language, or religious beliefs. They promote a collaborative effort between the health system and the community by building support links (Earp, et al., 1997; Eng & Young, 1992). A level of trust is already established within the targeted neighborhoods so that CHWs may be accepted more readily than other health professionals (Love, Gardner, & Legion, 1997).

CHW recruitment.

CHW interventions depend on recruitment of persons with caring values and commitment to their community's health care needs (Earp, et al., 1997; Eng, Parker, &

Harlan, 1997; Jackson & Parks, 1997; Zuvekas, Nolan, Tumaylle, & Griffin, 1999).

Program coordinators identify persons with the combination of social, cultural, and ethnic

values of the target population. Advisory groups, community pastors, community

agencies, other trained CHWs, or CHW program coordinators may provide

recommendations. Program coordinators choose to recruit CHWs as salaried employees

or volunteers in their programs (Earp, et al., 1997; Jackson & Parks, 1997).

Findings from focus groups suggest CHWs have personal and community

motives to become involved such as helping, getting out, serving, reward, learning,

empowerment, and women's betterment (Gochenour & Hopper, 2002; Ramirez-Valles,

2001). CHWs are natural helpers who want to give back to their communities. They

recognize that other families need their advice, support, and counseling. Simultaneously

CHWs learn new health information to benefit themselves.

CHW training.

CHWs are trained to educate others about one specific disease such as breast

cancer or multiple diseases such as breast cancer, heart disease, and asthma (Quinn &

McNabb, 2001). Jackson and Parks (1997) suggest there is a lack of standardized

training plans used by CHW interventions after an examination of 87 CHW African

American training programs. In addition, limited training is offered for communication

skills that would enhance CHWs' counseling, communication, and social support skills

needed for working in the community.

CHW program evaluation.

Glanz and Rimer (1995) report that intervention programs are effective if training

influences health behavior factors such as beliefs, attitudes, and self-efficacy. However,

in a national study of 281 CHW interventions, only 132 interventions (47%) report outcome measures for attitudes and knowledge, 95 interventions (34%) report outcome measures for self-esteem, and no intervention reports outcome measures for self-efficacy (Annie E. Casey Foundation, 1998). There is limited research on CHW program evaluation or training using quantitative or qualitative measures because programs have different CHW training requirements, are small in number, and measure different outcomes (Nemcek & Sabatier, 2003; Zuvekas, et al., 1999). Thus, CHW interventions have not been tested sufficiently for CHW knowledge, beliefs, and attitudes that affect mammography use (Annie E. Casey Foundation, 1998).

Statement of Problem

Despite the sharp increase of mammography use by women ages 40 and older, there is underutilization of mammograms by women who are members of minority groups, lower socioeconomic status, and without health insurance (Buelow, Zimmer, Mellor, & Sax, 1998; Katz, Zemecuk, & Hofer, 2000; Lannin, et al., 1998; Rawl, Champion, Menon, & Foster, 2000). Breast cancer survival rates for low-income women are lower than high-income women (ACS, 2002). Low-income African American women are three times more likely to be diagnosed with advanced stages of breast cancer than high-income African Americans (ACS, 2002). Therefore, it is important to understand population specific behaviors for mammography use.

The mammography rates of low-income and minority CHWs and the women served by CHWs are lower than national mammography rates (ACS, 2002; Bird, McPhee, Ha, Le, Davis, & Jenkins, 1998; Earp, et al., 2002; Eng, 1993; Sung, et al., 1997). In one minority CHW intervention, the baseline mammography rates are 54% for

low-income Vietnamese Americans served by CHWs (Bird, et al., 1998). The baseline

mammography rates of CHWs in training classes are 36% for low-income inner-city

African Americans (Sung, et al., 1997) and range from 47% to 80% for rural African

Americans (Eng, 1993). Thus, CHWs may not be necessarily compliant with

mammography screening guidelines even though they are role models for healthy

behaviors in their communities.

<div align="center">Purpose of the Study</div>

The purpose of this study is to examine the factors that influence mammography

use of CHWs and the relationship between self-efficacy, social norms, and

mammography use of CHWs. There is a need to understand the socioeconomic factors

and cultural factors that influence mammography use of CHWs since these factors may

affect health behavior decisions of mammography use.

<div align="center">Background</div>

Factors that Influence Mammography Use

Lower mammography rates still exist for low-income and minority women (ACS,

2002). Williams (2002) reports that socioeconomic status is a central determinant of

racial/ethnic disparities yet there are other important factors such as acculturation,

geographic location, and medical care. Furthermore, understanding factors that influence

mammography use may include the cultural influence of the social networks (Glanz,

Croyle, Chollette, & Pinn, 2003; Williams, 2002).

The beliefs, attitudes, and cultural factors that influence mammography use are

important for targeting health promotion and disease prevention programs in

communities (Merzel & D'Afflitti, 2003). Program planning in a sociocultural context

may address the targeted needs of a population. For example, there may be differences in

barriers, attitudes, and beliefs about breast cancer (Barroso, McMillan, Casey, Gibson,

Kaminski, & Meyer, 2000; Laws & Mayo, 1998). African Americans may believe that

breast cancer is a White women's disease and feel less at risk for breast cancer than

White women (Guidry, Matthews-Juarez, & Copeland, 2003; McCarthy, Ulcickas,

Boohaker, Ward, Rebner, & Johnson, 1996; Pearlman, Rakowski, Ehrich, & Clark, 1996;

Phillips, Cohen, & Tarzian, 2001). Latinas are more likely to use alternative healing with

consultations of faith healers (Laws & Mayo, 1998). African Americans and Latinas may

have a fatalistic view of cancer as a barrier compared to White women (Laws & Mayo,

1998; Mayo, Ureda, & Parker, 2001; Otero-Sabogal, Stewart, Sabogal, Brown, & Perez-

Stable, 2003; Phillips, Cohen, & Moses, 1999; Powe, 1996).

Direct advice from within the close social network is a source of influence for

health behavior change (Allen, Sorensen, Stoddard, Colditz, & Peterson, 1998; Gochman,

1988). If there are positive social norms such as the knowledge of the normative

mammography screening behavior of family or peers, women may be influenced to get a

mammogram with increased self-efficacy (Egbert & Parrott, 2001; Green & Rodgers,

2001). Individuals with close and ethnically based social relationships such as African

American sister circles may seek health care with the help of their lay advisors despite a

general distrust or skepticism in the healthcare system (Eng & Smith, 1995; Gochman,

1988).

Roles and Responsibilities of CHWs

CHWs as role models and change agents may influence healthy behaviors in their

community due to an understanding of the community dynamics (Eng & Young, 1992;

Merzel & D'Afflitti, 2003). Leviton, Snell, & McGinnis (2000) suggest that CHW

interventions provide a strengthening of social support in a unique community based

system. Social support is defined as the exchange of resources between at least two

people with the intention of improving the well-being of the recipient (Komproe, Rijken,

Ros, Winnubst, & Hart, 1997). CHWs provide different types of social support in their

neighborhoods depending on the needs of the community members. Three functional

areas of social support are emotional support, informational support, and appraisal

support (Komproe, et al., 1997). CHWs may listen to concerns about mammograms

(emotional support), refer community members to a screening center (informational

support), or provide praise for receiving a mammogram (appraisal support) (Katapodi,

Facione, Miaskowski, Dodd, & Waters, 2002).

The 1998 National Community Health Advisor Report outlines seven core roles

and responsibilities of CHWs to encourage empowerment and support community

participation (Annie E. Casey Foundation, 1998). The CHW roles are to:

1. *Bridge cultural mediation between communities and the health and social service
   system.* CHWs may be instrumental in teaching community members how and where
   to seek services.

2. *Provide culturally appropriate health education.* CHWs become health advocates for
   disease prevention and health promotion. In addition, CHWs may help community
   members manage chronic illnesses such as diabetes.

3. *Assure people get the services they need.* CHWs may be able to refer clients and
   provide follow-up for community members who may be at higher risk.

4. *Provide informal counseling and social support.* CHWs may become supportive in helping with communication, coping skills, and leadership for support groups.

5. *Advocate for individual and community needs.* CHWs may assist with medical translation for individuals or groups.

6. *Provide direct services.* CHWs may be trained to provide basic clinical services such as blood pressure screenings.

7. *Build individual and community capacity.* CHWs may help with empowering others to take better care of their health, diet, or medication compliance.

Theoretical Model

PRECEDE Model

The theoretical model for this study was based on the PRECEDE model developed by Green, Kreuter, Deeds, and Partridge (1980) for health education and health promotion programs. PRECEDE was widely used in community health programs and rigorously evaluated in randomized field trials (Green & Kreuter, 1991). The model was used in other breast cancer screening studies (Black, Stein, & Loveland-Cherry, 2001; Taylor, Taplin, Urban, Mahloch, & Majer, 1994), a CHW study (Eng, 1993), and a cervical cancer program (Hislop, et al., 2003). It has been field tested by the American Lung Association as a Program Planning and Evaluation Guide for Lung Associations (Green & Kreuter, 1999).

The PRECEDE model was chosen since the model was versatile combining social factors and constructs from the Health Belief Model (Rosenstock, Strecher, & Becker, 1988) and self-efficacy from the Social Learning Theory (Bandura, 1986). CHW intervention training strategies may be planned with the proper diagnosed problem and

behavior changes using the PRECEDE model (Green & Kreuter, 1991). PRECEDE posits that health behavior is directly related to the degree of voluntary client participation. Behavior change is a function of three sets of factors: predisposing factors, enabling factors, and reinforcing factors.

Predisposing Factors

Predisposing factors provide a rationale or motivation for a behavior (Green & Kreuter, 1991). These factors may either help or hinder the likelihood of a person adhering to mammography screening guidelines. Predisposing behaviors may include the constructs of the Health Belief Model for perceived susceptibility, barriers, benefits, health motivation, and self-efficacy (Rosenstock, et al., 1988). Studies suggest the predisposing factors of susceptibility, barriers, benefits, health motivation, and self-efficacy are predictors of breast cancer screening (Champion & Menon, 1997; Egbert & Parrott, 2001; Maxwell, Bastani, & Warda, 1998; Miller & Champion, 1997; Phillips & Wilbur, 1995).

Women may take no action to get mammograms based on their beliefs and personal control. Women may have perceptions of their chances or risks of developing breast cancer (susceptibility), view barriers to getting mammograms such as time, fear, or embarrassment, have little incentive for health motivation, and find few benefits for mammography use (Maxwell, et al., 1998).

Self-efficacy, defined as a person's confidence in the ability to perform an activity for behavior change, is a significant factor to influence health behavior change (Bandura, 1986). The advantages of greater self-efficacy include a higher level of motivation and sustained health behavior change over time (Glanz & Rimer, 1995). For example, CHWs

may be more confident in their ability to get a mammogram with higher self-efficacy (Black, et al., 2003). This construct is associated with positive health behaviors such as exercise for older adults (Resnick, 2002), group interventions for low-income women recovering from chemical dependency (Washington & Moxley, 2003), self-care for patients with heart failure (Ni, Nauman, Burgess, Wise, Crispell, & Hershberger, 1999), disease management (Clark & Dodge, 1999), and asthma dosing contraindications for pediatricians (Cabana, Ebel, Cooper-Patrick, Powe, Rubin, & Rand, 2000).

Enabling Factors

Enabling factors facilitate the motivation that acting on predispositions is possible (Green & Kreuter, 1991). Enabling factors may include available resources such as having health insurance, income, and a regular source of health care or the actual skills or competencies used in the practice of health promotion (Lee, 2003). Research findings suggest low-income women with private health insurance are two times more likely to have a recent mammogram within the last two years than low-income women without insurance (Makuc, Breen, & Freid, 1999). In underserved populations, women may not know how to access free mammography screening resources or free clinics in their communities.

Reinforcing Factors

Reinforcing factors are utilized after the initiation of the behavior so that there is persistence in maintaining behaviors (Green & Kreuter, 1991). Reinforcing factors may include social norms (Egbert & Parrott, 2001), knowing family members or friends who have breast cancer (Barroso, et al., 2000), and a physician recommendation to get a mammogram (Allen, et al., 1998; Black, et al., 2001; Maxwell, et al., 1998). Social

norms refers to how individuals perceive their social networks as sources of health-related information and how they view health behaviors of their family and peers (Egbert & Parrott, 2001; Gochman, 1988). CHWs provide the needed support to community members for promotion of mammography use in their social networks (Bird, et al., 1998). In previous studies, there is a correlation between self-efficacy and perceived family norms or peer norms for mammography use (Allen, et al., 1998; Egbert & Parrott, 2001). Findings suggest knowing family members or friends with breast cancer may influence women to get a mammogram (Barroso, et al., 2000). A physician recommendation to get a mammogram is one of the strongest reinforcing factors to influence mammography use of women (Allen, et al., 1998; Black, et al., 2001; Champion & Menon, 1997; Maxwell, et al., 1998; Phillips & Wilbur, 1995).

<center>Significance of Study</center>

No previous studies in the literature examined the factors that influence mammography use of CHWs. Previous studies in literature examined in general the recruitment of CHWs (Farquhar, et al., 2005), CHW training implementation (Hale, Bennett, Oslos, Cochran, & Burton, 1997; Hardy, Wynn, Huckaby, Lisovicz, & White-Johnson, 2005), CHW curriculum (Kobetz, Vatalaro, Moore, & Earp, 2005), or types of social support used by CHWs (Eng, Parker, & Harlan, 1997). Effective program planning is centered on the understanding of health behavior change and the underpinnings of health behavior change as knowledge, beliefs, attitudes, self-efficacy, and social support (Bandura, 2004). The development of CHW training is important using a needs assessment and culturally appropriate training materials to identify the factors that influence mammography use. Otherwise, health educators using general

CHW training may not identify these underlying factors and effectively promote health behavior change. Training will not address these factors that influence mammography use and will not focus on how to overcome any cultural or personal barriers to get a mammogram.

Furthermore, understanding the cultural factors that influence mammography use for CHWs is important for effective provider-patient communication and improved cultural competencies of providers. Building a provider-patient relationship includes understanding health behavior change and the factors that hinder or facilitate mammography use (Lee, Lee, Stewart, & McPhee, 1999; Saha, et al., 2003). No previous studies in literature examined the attitudes of CHWs toward mammography use and the influence of a provider recommendation to get a mammogram.

Limited research is available to identify the beliefs, attitudes, and health behaviors of CHWs (Zuvekas, et al., 1999). Few studies in literature examined the relationship between self-efficacy and mammography use (Allen, et al., 1998; Black, et al., 2001). Self-efficacy is considered to be the single most important personal factor for changing behavior (Bandura, 1986; Glanz & Rimer, 1995). Self-efficacy is linked to more successful use of existing social support systems for disadvantaged populations and for mammography intent for women not in adherence with mammography screening guidelines (Allen, et al., 1998; Satterfield, Burd, Valdez, Hosey, & Shield, 2002). Effective CHW training with teaching strategies to increase self-efficacy beliefs of CHWs is important so that CHWs become more confident to follow through getting mammograms. CHW intervention models have not been tested sufficiently to identify

the relationship between self-efficacy and mammography use of CHWs (Annie E. Casey Foundation, 1998).

It is important to identify how CHWs perceive dimensions of their social environments. CHWs build positive social ties within their communities as influential, informal leaders and share the same language, culture, and values (Earp, et al., 2002). Few studies in literature examined the relationship between social norms and mammography use (Black, et al., 2001; Earp, et al., 2002; Egbert and Parrott, 2001; Maxwell, et al., 1998). The construct of social norms is an important conceptual framework for the CHW model. Many CHW programs train volunteer African Americans or low-income women in their social settings to promote mammography use (Earp, et al., 2002; Husaini et al., 2001; Sung, et al., 1997). While factors such as income, education, and insurance are important, these factors alone do not explain fully why mortality rates are higher for African Americans.

Urban Significance of the Study

This study is important since it is one of the first studies examining factors that influence mammography use of CHWs in minority and low-income urban settings. Few previous studies examined mammography use of minority groups served by CHWs in rural areas (Eng, 1993; Earp, et al., 2002) or urban areas (Sung, et al., 1997). The majority of high-poverty urban neighborhoods (80%) are minority neighborhoods where economic decline negatively affects health outcomes (Geronimus, 2000; Jargowsky, 1997). Thus, there may be some cultural differences for barriers to get a mammogram (Maxwell, et al., 1998; Powe, 1996). Increasing mammography use among low-income

and minority women will help eliminate the socioeconomic and racial health disparities (Jones & Chilton, 2002).

Assumptions

The assumptions of this study for mammography use of CHWs are:

1. Mammography screening histories as reported are accurate.

2. Women were open and honest in responses to the items for the susceptibility, benefits, barriers, self-efficacy, health motivation, and social norms subscales for mammography use.

Limitations

The limitations of this study are:

1. Self-report is used for information reporting.

2. The sample is a convenience sample.

3. Women in the sample are predominantly African Americans who live in urban areas. They may not represent the general population.

4. It is unclear whether a person's attitudes influence mammography behavior or whether receipt of mammogram influences a person's attitudes.

Delimitation

The delimination of this study is CHWs from an urban area.

CHAPTER II

LITERATURE REVIEW

The purpose of this chapter is to review the literature related to the theoretical

model and factors that influence mammography use for CHWs. First, the PRECEDE

model as the planning model is discussed identifying the predisposing, enabling, and

reinforcing factors that influence mammography use of CHWs. Second, the application

of the model using the predisposing, enabling, and reinforcing factors is discussed.

The CHW intervention is a community level strategy for promotion of

mammography use and early breast cancer detection (Bird, et al., 1998; Earp, et al., 2002;

Husaini, et al., 2001; Sung, et al., 1997). CHWs promote disease prevention and health

promotion as role models and teach community members about healthy lifestyles (Earp,

et al., 2002). CHWs are accepted in their communities, bring a level of trust and social

support, and serve as a link between community and health services (Love, et al., 1997).

Theoretical Framework

The theoretical framework for this study was based on the PRECEDE model

developed by Green, Kreuter, Deeds, and Partridge (1980). It is as a comprehensive

behavioral change planning model for health education interventions and health

promotion programs. The PRECEDE model was selected since the model was versatile

combining social factors, beliefs, attitudes, behaviors, and availability and accessibility of

resources. This included the constructs from the Health Belief Model (Rosenstock,

Strecher, & Becker, 1988) and self-efficacy from the Social Learning Theory (Bandura,

1986). PRECEDE was used in a previous CHW intervention study (Eng, 1993),

mammography screening study (Black, et al., 2001), and cervical cancer program

(Hislop, et al., 2003). The model was used for a school nutrition and cancer education curriculum by the American Cancer Society (Green & Kreuter, 1999), a nutrition study by a Head Start program (Reed, 1996), and a domestic violence intervention (Smith, Danis, & Helmick, 1998).

The underlying premise of this model posits that most enduring health behavior change is voluntary (Glanz & Rimer, 1995). Thus, behaviors preceding each health benefit and the degree of change in health practice are directly related to the degree of client participation. Appropriate health education is an intervention for the properly diagnosed problem and behaviors such as breast cancer and mammography use (Green & Kreuter, 1991). The systematic planning process for interventions seeks to empower persons with skills and motivation to improve their quality of life.

PRECEDE is an acronym for Predisposing, Reinforcing, and Enabling Causes in Educational Diagnosis and Evaluation (Green, et al., 1980). PRECEDE is founded in the areas of epidemiology, health and social sciences, administration, and education. The constructs in the model draw from Aday and Anderson's Behavioral Model for Health Services Utilization (Aday & Anderson, 1974; Green & Kreuter, 1991). The Aday and Anderson model explains health utilization by using predisposing factors that motivate persons to seek services, enabling factors that explain the use of services, and need factors to determine the need for those services (Mullen, Hersey, & Iverson, 1987). Green & Kreuter (1980) replaced need factors with reinforcing factors to address the maintenance of behavior over time, an important outcome in health programs. Predisposing factors may predispose or provide the motivation behind people having a specific behavior. Enabling factors may enable persons to take action on their

dispositions. Reinforcing factors may influence a behavior after the health behavior change such as family members or providers (Green & Kreuter, 1991).

PRECEDE Model

PRECEDE is organized into five phases to examine the diagnostic activities in health care program planning (Green & Kreuter, 1991). Each phase or diagnosis addresses identified objectives and priorities resulting in strategies for health promotion. Phase One and Phase Two are social diagnosis and epidemiological diagnosis. Planners determine factors adversely affecting the quality of life and health issues through social problems and identify the needs of the targeted population. By establishing a link between the social problems and health problems, planners develop a focus for health education. Some communities have incorporated different methods for diagnosis of the social problems. These methods include focus groups, surveys, in-depth interviews, or community forums (Glanz & Rimer, 1995). Social and epidemiological indicators may include crime, crowding, unemployment, vital statistics, disability, mortality, morbidity, incidences, and prevalence (Breckon, Harvey, & Lancaster, 1998).

Phase Three is the behavioral diagnosis identifying specific key behaviors that may be associated with the second phase. Non-behavioral causes (personal and environmental) may be included contributing to health problems but are not controlled by behavior. These diagnoses may include climate, workplace, utilization, genetics, and existing disease.

Phase Four and Five are incorporated in the educational diagnosis. In Phase Four, planners first identify the precursors to behaviors so that the programs can be developed to influence those behaviors (Glanz & Rimer, 1995). Planners assess health behavior

causes by looking at three groups of factors that may affect health behavior. The three groups are predisposing, enabling, and reinforcing factors related to health behavior and these groups are not necessarily mutually exclusive. Phase Five is the second part of the educational diagnosis. This phase identifies a diagnosis of effective strategies that are used by planners to incorporate into the interventions.

Application of Predisposing, Enabling, and Reinforcing Factors

In this study, the predisposing factors (susceptibility, barriers, benefits, health motivation, self-efficacy, age, and education levels), enabling factors (health insurance, regular source of care, income, and belief that CHW behavior influences others), and reinforcing factors (physician recommendation to get a mammogram, social norms, family history of breast cancer, knowing someone with breast cancer, and talking with family or friends about mammograms) are examined. The PRECEDE model as shown in Figure 1 is a comprehensive model to examine mammography use of CHWs. According to Bandura (2004), effective interventions include new information about the benefits of health behavior change and the risks, skill and self-management building using the information, increased efficacy beliefs to take action, and support for motivation after health behavior change.

Predisposing Factors.

Predisposing factors may predispose or provide the motivation or reason for people to have a specific behavior (Green & Kreuter, 1991). Depending on their perceptions, people may be more or less inclined to have a specific behavior. For example, the HBM constructs of perceived susceptibility, benefits, barriers, and health motivation may influence health behaviors (Becker, 1974). The HBM constructs have

PRECEDE MODEL
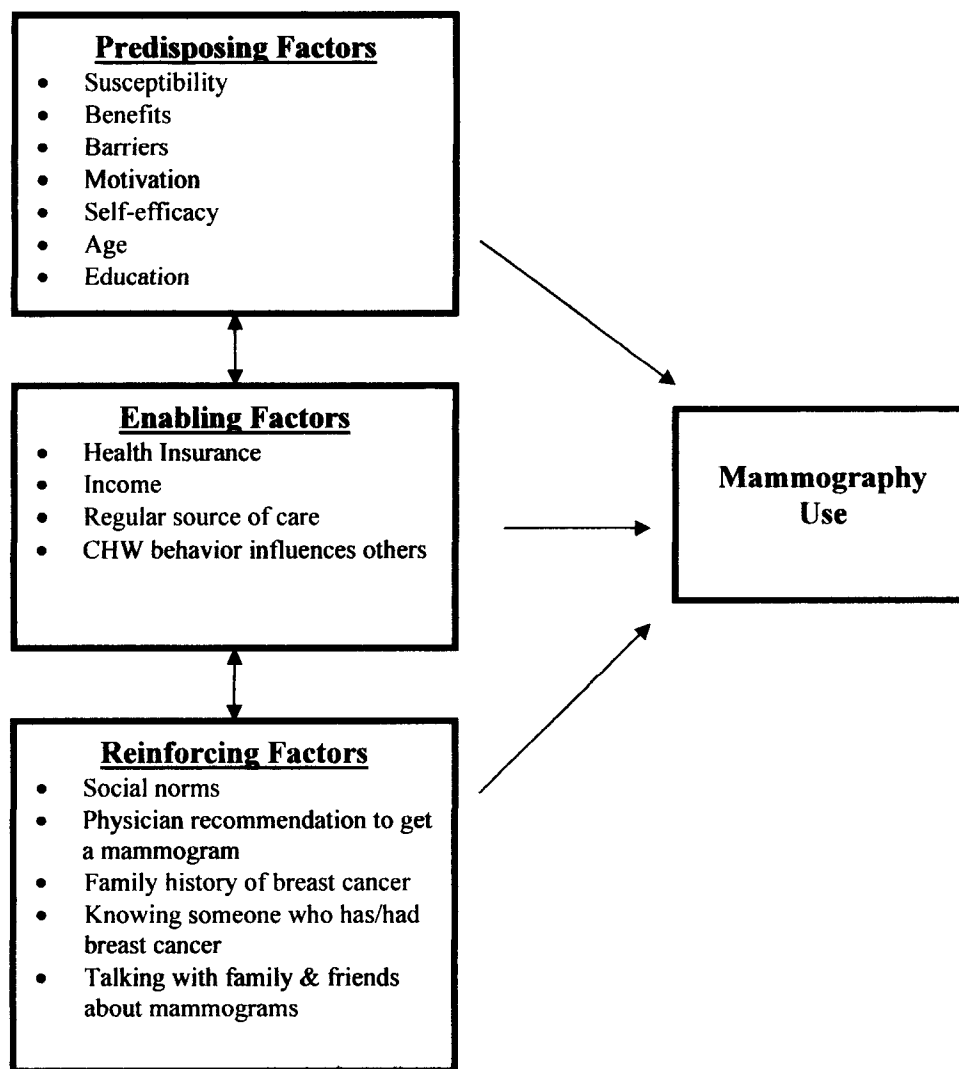
Figure 1. PRECEDE Model with Predisposing, Enabling, and Reinforcing Factors

been used extensively to examine breast cancer screening health behaviors (Black, et al., 2001; Champion & Menon, 1997; Graham, 2002; Lee, 2003; Miller & Champion, 1997), coronary health disease (Ali, 2002), and hypertension (Morisky, et al., 2002).

HBM focuses on the explanation of behavior related to prevention of disease (Glanz & Rimer, 1995). The original HBM constructs of perceived susceptibility, severity, benefits, and barriers explain a readiness to take action to prevent, control, or treat a health problem (Rosenstock, et al., 1988). Perceived susceptibility refers to the chance of getting a condition and perceived severity refers to beliefs of harm related to a condition (Glanz & Rimer, 1995). In this study, perceived susceptibility is used without perceived severity since breast cancer is perceived as both serious and a risk to women (Champion, 1993). Perceived benefits are the positive actions to reduce the risk and perceived barriers are the concerns of the possible action to be taken (Glanz & Rimer, 1995).

Becker added the constructs of health motivation and self-efficacy to the HBM at a later time (Glanz & Rimer, 1995). Health motivation refers to beliefs and behavior related to one's concern about the state of health to activate a readiness to make a decision (Glanz & Rimer, 1995). Self-efficacy is a person's self-confidence in the ability to perform an activity and self-efficacy explains the changes of unhealthy habitual behaviors (Bandura, 1986; Glanz & Rimer, 1995).

Predisposing factors may provide the motivation behind getting a mammogram for early detection of breast cancer (Glanz & Rimer, 1995). Women may not be compliant with mammography screening guidelines if they perceive there is not a risk of getting breast cancer (susceptibility), view a breast cancer diagnosis as serious or fatal

(severity), and see no reason to get a mammogram (benefit). They may have some embarrassment, a fatalistic view of breast cancer, or a fear of radiation (barriers) or may be unconcerned about health motivation. Thus, they may not follow through to get a mammogram.

Susceptibility.

Research findings suggested an association between susceptibility and mammography use or breast self-examination (BSE) (Barroso, et al., 2000; Lee, 2003; Maxwell, et al., 1998; Miller & Champion, 1997) but the findings were inconsistent in the literature (Black, et al., 2001). Lee (2003) reported a strong association between susceptibility and BSE in a study of 238 Korean nurses. Korean nurses with higher susceptibility were 2.4 times more likely to conduct BSEs than Korean nurses with lower susceptibility. This homogeneous group of health care professionals may be different than other groups of women with no health care background. Maxwell (et al., 1998) suggested there was an association between susceptibility and mammography use of low-income Korean Americans while controlling for age. In other studies, there was no significant association between susceptibility and mammography use for older White women with middle to high income levels (Black et al., 2001) or low-income urban African Americans between the ages of 45 and 64 (Champion & Menon, 1997).

In two comparison studies of African Americans and White women, susceptibility was significantly associated with mammography use of African Americans only (Barroso, et al., 2000; Miller & Champion, 1997). Both studies compared women with different educational and income levels.

Barriers.

Barriers such as time, cost, embarrassment, worry, pain, and fear of radiation have been related to mammography use for White women, African Americans, and Korean Americans (Black, et al., 2001; Buelow, et al., 1998; Egbert & Parrott, 2003; Maxwell, et al., 1998; Miller & Champion, 1997; Partin & Slater, 2003; Phillips & Wilbur, 1995). Interpretation of the findings was complicated due to the different selection and measurement of various barriers in the previous studies. Time, cost, and worry were the most significant barriers for repeat mammography use of low income White women in one study (Partin & Slater, 2003). In another study, there were relationships between self-efficacy and the factors of time and embarrassment for White women (Egbert & Parott, 2001). Embarrassment, fear of finding cancer, time, and difficulty getting to the facility were significant barriers to get a mammogram for low income Korean Americans (Maxwell, et al., 1998). Pain was one of the most significant barriers for White women ages 50 and older of different educational and income levels (Black, et al., 2001) but not a significant barrier for low-income Korean Americans (Maxwell, et al., 1998). In a comparison study of African Americans and White women, African Americans were twice as likely to report barriers of worry and fear of radiation compared to White women (Miller & Champion, 1997).

Cancer fatalism was identified as another barrier affecting mammography use (Griffin, 1998; Mayo, et al., 2001; Otero-Sabogal, et al., 2003; Phillips, et al., 1999; Powe, 1996). Powe (1996) defined cancer fatalism as a person's perception that death is inevitable if cancer is present with attributing forces of poverty, the perceptions of hopelessness, and social isolation. Cultural factors may affect health behaviors such as

mammography use because women may have perceptions that screening will not prevent cancer. The fatalistic attitude that a cancer diagnosis is God's punishment may be a personal barrier for some groups of women (Powe & Weinrich, 1999). For instance, Barroso et al. (2000) reported an association between educational levels and cancer fatalistic beliefs for White women but not for African Americans. Age and educational levels were associated with cancer fatalistic beliefs for rural African Americans in another study (Mayo, et al., 2001). Otero-Sabogal et al. (2003) reported educational levels, acculturation, and income were also associated with cancer fatalistic beliefs for Latinas in another study.

Benefits.

Although previous findings suggested benefits as a significant factor influencing mammography use and BSE, there were inconsistent findings in literature (Black, et al., 2001; Lee, 2003; Graham, 2002; Miller & Champion, 1997; Phillips & Wilbur, 1995). Benefits were not associated with mammography use in a study of African American women with different income levels (Phillips & Wilbur, 1995). Also, benefits were not associated with BSE in a study of Korean nurses (Lee, 2003). In contrast, benefits were associated with mammography use in a study of White women ages 50 and older with middle to high incomes (Black, et al., 2001). Benefits were associated with BSE in a study of African American women between 20 and 49 years of age (Graham, 2002). In a comparison study of African American and White women, benefits were associated with mammography use for White women of different ages only (Miller & Champion, 1997).

Health motivation.

Few studies in the literature have focused on the relationship between health motivation and mammography use or BSE (Champion, 1993; Graham, 2002; Lee, 2003; Rutledge, Barsevick, Knopf, & Bookbinder, 2001). Lee (2003) examined health motivation, susceptibility, barriers, and benefits associated with BSE in a study of 238 Korean nurses. Benefits and health motivation were not significantly associated with BSE. In contrast, findings in previous studies showed an association between health motivation and BSE for African Americans (Graham, 2002). Previous studies suggested a significant association between health motivation and health issues such as coronary heart disease preventive behaviors (Ali, 2002) and the management of Systemic Lupus Erythematosus, a chronic disease (Mirontznik, Ginzler, Zagon, & Baptiste, 1998). In addition, qualitative studies explored the perceptions of increased health motivation as an incentive for behavior changes, health maintenance, and healthy lifestyles of older adults (Miller & Iris, 2002). The adults explained that their health motivation included a personal growth to exercise continuously and a general improvement in health (Miller & Iris, 2002).

Self-efficacy.

Self-efficacy, defined as one's ability to take action for behavior change, was added to the HBM in 1988 since self-efficacy played an important role in health behavior change (Bandura, 2004; Glanz & Rimer, 1995). Measures of self-efficacy are specific to a task or situation (Bandura, 1997). For example, a person may have low self-efficacy to take action and get a mammogram and may have high self-efficacy to exercise daily.

According to Bandura (1997), self-efficacy is developed through practicing

(personal mastery), observing others as role models (role modeling), getting positive

verbal support (verbal persuasion), and using emotional experiences such as sharing

personal experiences (emotional arousal). Health educators have a key role in

supporting others to increase self-efficacy (Bandura, 2004). The association between

self-efficacy and health behavior change for health professionals has been examined

extensively in literature. Numerous studies showed increased self-efficacy after health

education for student physician assistants in clinical training (Opacic, 2003), providers

working with smoking cessation program participants (Cabana, Rand, Slish, Nan, Davis,

& Clark, 2004), and health professionals working with cancer patients (Parle, Maguire, &

Heaven, 1997).

Other studies examined the association between self-efficacy and health behaviors

for patients receiving education for diabetes (Caravalho & Saylor, 2004), stroke

(Robinson-Smith, 2002), asthma (Schott-Baer & Christensen, 1999), and breast cancer

(Lev, 2000). For example, findings suggested there was a significant association between

higher preoperative self-efficacy and ambulation for hysterectomy patients (Oetker-

Black, et al., 2003). Nurses were trained to teach patients using self-efficacy enhancing

skills of verbal persuasion, observation, emotional arousal, and role modeling. Prior to

surgery, nurses demonstrated how to get out of bed, asked patients to practice, gave them

positive feedback such as "I know you will be able to ambulate on the first day after

surgery," and addressed any anxiety during practice. Patients who received the self-

efficacy enhancing skills teaching method were ambulated in fewer days compared to

other patients who did not receive the self-efficacy enhancing skills teaching method.

Previous studies examined the association between self-efficacy and mammography use (Allen, et al., 1998; Egbert & Parrott, 2001). Allen et al. (1998) conducted a study of 194 nonadherent women ages 52 and older to examine intentions to have a mammogram in the future. Nonadherent women with higher self-efficacy and talked with their providers about mammograms were 2.5 times more likely to get a mammogram than nonadherent women with lower self-efficacy. Ebert and Parrott (2001) suggested barriers of time and embarrassment were associated with self-efficacy beliefs of rural White farm women to get a mammogram.

Enabling Factors

Enabling factors are factors that enable individuals to take action on their predispositions (Green & Kreuter, 1991). These factors may be services, skills, or resources to enable people to be motivated. For motivation to be realized, having a regular source of care or insurance was associated with mammography use (Maxwell, et al., 1997; O'Malley, Mandelblatt, Gold, Cagney, & Kerner, 1997) and recent clinical breast exams (Black, et al., 2001). Behaviors and skills of peer educators influencing mammography use of others were also motivators (Bandura, 2004; King, et al., 1999).

Health insurance and regular source of care.

O'Malley et al. (1997) reported there is a linear trend in increasing breast cancer screening rates for minority women in an urban area with no usual source of care, a usual source of care, and a regular clinician at that usual source of care. While controlling for insurance, age, race, education, marital status, employment, acculturation, and health status, women with a usual site but no regular clinician were 1.8 times more likely to have mammography use compared to women without a usual site of care. Women with

a regular clinician at that usual site of care were 2.6 times more likely to have mammography use compared to women without a regular source of care. Emphasis on continuity of care and usual source of care for access to care may begin to improve the health care for minority women and low-income women.

Makuc et al. (1999) examined mammography use, health insurance coverage, and regular source of care using 1987-1994 National Health Interview Survey trend data. African Americans were 1.7 times more likely to have higher mammography use than White women after controlling for health insurance, place of care, inner city residence, education, age, and region. There were significant differences in mammography use for low-income women having health insurance and a regular source of care. Low-income women with private health insurance were 2.6 times more likely to have a mammogram than low-income women without health insurance. Low-income women with a regular source of care such as public or hospital clinic were 3.6 times more likely to have a mammogram than low-income women with no regular source of care.

CHW behavior influencing others.

Flax and Earp (1999) interviewed community members counseled by CHWs to understand how CHWs influenced their attitudes about mammography use and mammography screening behavior. Findings suggested there was an acceptance of CHWs as lay health leaders and a perception that CHWs were very knowledgeable. The women also explained a trust and comfort level to talk about mammograms with CHWs. The encouragement helped them overcome their difficulties to get a mammogram. In another study, senior citizens were influenced by trained peer volunteers to attend a breast cancer workshop (King, et al., 1999). Women who were persuaded by peer

volunteers were 1.4 times more likely to attend a presentation compared to women who only received an invitation to attend a workshop (King, et al., 1999). Furthermore, previous studies showed higher mammography rates for community members served by CHWs as compared to a control group (Bird, et al., 1998; Earp, et al., 2002; Sung, et al., 1997).

Reinforcing Factors

Reinforcing factors are positive factors that are anticipated from persons who may influence the behavior (Gochman, 1988; Green & Kreuter, 1991). These factors are important after the behavior has begun and serve as encouragement or support so that positive behavior change is repeated. Reinforcing factors may include the influence of family and peers as social norms, a physician recommendation to get a mammogram, talking to family or friends about mammograms, or family history of breast cancer (Allen, et al., 1998; Duan, Fox, Derose, & Carson, 2000; Husaini, et al., 2001; Maxwell, et al., 1998; O'Malley, Earp, Hawley, Schell, Mathews, & Mitchell, 2001).

Social norms.

Few previous studies examined the relationship between social norms and mammography use (Duan, et al., 2002; Egbert & Parrott, 2001; Husaini, et al., 2001; Maxwell, et al., 1998). Social norms refers to the knowledge of the health behaviors of family or peers such as normative mammography screening behaviors of family members or peers (Egbert & Parrott, 2001). There was also empirical evidence that social support had a direct and positive relationship with physical health related to longevity and mortality (Glass, Dym, Greenberg, Rintell, Roesch, & Berkman, 2000; Ransdell, 1995). Maxwell et al. (1998) reported that low-income Korean Americans who knew their

friends or family members get mammograms were 4.5 times more likely to have a

mammogram than Korean Americans who did not know if their friends or family

members get mammograms. Green & Rodgers (2001) suggested close social support for

low-income women contributed to their sense of self-efficacy and increased self-efficacy

may lead to greater use of social support systems.

Egbert and Parrott (2001) hypothesized that social norms were positively

correlated with self-efficacy for rural White women. The findings revealed an

association between family norms and self-efficacy. However, there was no association

between peer norms and mammography use in this study. The family in the role as a

support network may influence the decision of other family members to get a

mammogram more than peers.

Duan et al. (2002) examined the association between social norms and

mammography use using a peer telephone counseling intervention at a church-based

mammography program. Trained peer counselors contacted women in the church

community to discuss mammography use. The intervention group with peer counselors

reported a higher increase in mammography use after Year 1 (63% to 84%) compared to

the control group (65% to 77%). CHW intervention models using partnerships with

churches may be effective to promote early detection of breast cancer and mammography

use (Duan, et al., 2002).

Physician recommendation to get a mammogram.

O'Malley et al. (2001) examined the association between mammography use and

physician recommendation to get a mammogram for low-income African Americans and

White women. White women receiving a physician recommendation to get a

mammogram were more likely to get a mammogram than African Americans receiving a physician recommendation (55% vs. 45%). Furthermore, women receiving a physician recommendation were 12 times more likely to get a mammogram than women not receiving a physician recommendation (O'Malley, et al., 2001). In another study, Korean Americans receiving a physician recommendation were 6.8 times more likely to have mammogram than Korean Americans not receiving a physician recommendation to get a mammogram (Maxwell, 1998).

>*Talking with family or friends about a mammogram and family history of breast cancer.*

Husaini et al. (2001) examined the relationship between depression, beliefs, social norms, social networks, family history of breast cancer, and mammography use for African Americans in an urban area. While controlling for age, income, residence in low-income projects, insurance, and education, African Americans who talked with friends and family about mammograms were 1.5 times more likely to get a mammogram than African Americans who did not talk with friends or family about mammograms. In addition, findings suggested that having a family history of breast cancer did not influence mammography use as in previous studies (Allen, et al., 1998; Husaini, et al., 2001; Lee, 2003).

CHW Interventions

Previous CHW studies identified an increase in mammography use for minority women served by CHWs compared to a control group or telephone interventions (Bird, et al., 1998; Earp, et al., 2002; Weber & Reilly, 1997). Bird et al. (1998) reported a 14% increase in mammography use for low-income Vietnamese Americans served by CHWs (54% to 69%) compared to a 3% increase in mammography use for the control group

(43% to 46%). In other CHW studies, Earp et al. (2002) reported an increase in mammography use of rural low-income African Americans ages 50 and older served by CHWs. From 1993-94 to 1996-97, the intervention group had a 22% increase in mammography use (37% to 59%) compared to an 11% increase in mammography use for the control group (49% to 60%). Sung (et al., 1997) reported a 15% increase in mammography use for urban African Americans served by CHWs (35.5% to 50.4%) compared to a 5% increase in mammography use for the control group (34.3% to 39.4%).

Weber and Reilly (1997) compared mammography use of low-income urban women ages 52 to 77 who did not adhere to mammography screening guidelines. The CHW intervention group was 2.8 times more likely to receive a mammogram than the control group receiving physician reminders. CHWs reinforced the importance of the navigation through the local health system and empowering women to change health behaviors such as getting a mammogram.

<div align="center">Summary</div>

CHW interventions promote early detection of breast cancer and mammography use on the community level to help eliminate health disparities for minority and low-income women. This is important since national data trends during the last decade show lower mammography use for low-income and minority women despite only a slight increase of incidence rates (ACS, 2002). CHWs are health advocates and role models promoting health behaviors changes for mammography use and helping others navigate throughout the healthcare system (Love, et al., 1997).

CHW interventions have not been tested sufficiently to examine the attitudes and health behaviors of CHWs. Furthermore, no previous studies in the literature examined

factors that influence mammography use of CHWs. Effective CHW training is an

integral part of the success of CHW interventions (Johnson, Green, Anderson-Lewis, &

Wynn, 2005; Zuvekas, et al., 1999). Few studies in the literature showed an increase in

mammography use of the women served by CHWs (Bird, et al., 2002; Earp, et al., 2002).

Other studies identified recruitment of CHWs (Farquhar, et al., 2005) and CHW

curriculum (Kobetz, et al., 2005).

The purpose of this study was to examine the factors that influence

mammography use of CHWs and the relationship between mammography use of CHWs

and the individual factors of self-efficacy and social norms. Previous findings in the

literature examining factors that influence mammography use of White women and

African Americans (Allen, et al., 1998; Barroso, et al., 2000; Black, et al., 2001;

Champion & Menon, 1997; Graham, 2002; Husaini, et al., 2001; Makuc, et al., 1999).

However, few previous studies examined factors that influence mammography use of

minorities such as Hispanics (Duan, et al., 2000), Latinas (Otero-Sabogal, et al., 2003),

and Korean Americans (Maxwell, et al., 1998). Successful CHW training development is

centered on the underpinnings of health behavior change as knowledge, beliefs, self-

efficacy, and social support (Bandura, 2004).

Table 1

Factors that Influence Mammography Use

Study	Sample	Measures	Statistics
Barroso et al., 2000	n = 197 White n = 152 African American Ages: 19-93	Predisposing and Reinforcing Factors DV = mammography IV= susceptibility, health beliefs, locus of control, family/friend who has breast cancer	ANOVA
Champion & Menon, 1997	n = 328 African Americans in metropolitan area Ages: 45-64 Ever had mammogram: 69%	Predisposing, Enabling, and Reinforcing Factors DV = breast self-examination & mammography use IV = susceptibility, benefits, barriers, knowledge, physician recommendation, health care, and insurance	Linear regression for BSE frequency; Logistic regression for mammo-graphy use
Miller & Champion, 1997	n = 1083 church women 78% White 22% African American in metropolitan area Ages: ≥ 50 Mammograms ≤ 2 years: White: 22.1% African American: 17.4%	Predisposing and Enabling Factors DV= mammography IV= susceptibility, benefits, barriers, knowledge, education, income	Logistic regression
Graham, 2002	n = 179 African American in urban area Ages: 20-49 Breast self-examinations: 44.1%	Predisposing and Reinforcing Factors DV = breast self-examination (BSE) IV = susceptibility, barriers, benefits, health motivation, family history of breast cancer, age, religion	Linear regression
Husaini, et al., 2001	n = 364 African Americans in urban area Ages: ≥ 40 Mammogram ≤ 1 year: 67%	Predisposing, Enabling, and Reinforcing Factors DV = mammography use IV = age, income, residence in low-income projects, insurance, depression, and education, church participation	Logistic regression

Table 1 (Continued)

Study	Sample	Measures	Statistics
Allen, et al., 1998	n = 194 women Age: ≥ 52 Mammography use: noncompliant	Reinforcing Factors: family/friends who had mammograms and physician recommendation DV = mammography use IV = family history of breast cancer, self-efficacy, social influence, and satisfaction with mammography services, provider recommendation, usual source of care	Logistic regression
O'Malley, A., et al., 1997	n = 1,420 7 ethnic groups Blacks, English speaking Caribbean born blacks, Haitian Blacks, Puerto Rican, Dominican, Colombian, and Ecuadorian Hispanics in urban area Ages: ≥ 45	Predisposing, Enabling, and Reinforcing Factors DV = mammography use IV = usual site and usual physician – controlling for age, education, marital status, race, language, age at immigration, % of life spent in US, employment, health status, insurance, type of site care	Logistic regression
Makuc et al., 1999	n = 225,000 National Health Interview Survey, 1987-1994;1 cross-sectional national survey; household interviews Ages: 50-64	Enabling Factors: health insurance, usual place of care DV = mammography use IV = age, race, family income, education, health insurance, place of usual source of health care, and metropolitan residence	Logistic regression
Maxwell, et al., 1998	n = 229 Korean- Americans in urban area one-to-one interviews in Korean in homes Ages: ≥ 50 Mammograms ≤ 2 years: 36%	Predisposing, Enabling, and Reinforcing Factors DV = mammography use IV = family/friends who had mammograms, physician recommendation, concern about mammogram finding cancer, radiation concern, cost, taking time, embarrassment, health insurance, income, acculturation, and comfort	Logistic regression
Otero-Sabogal et al. 2003	n = 977 Latina women in urban area Ages: 40-74 Mammograms: 41% Screening maintenance (3 mammograms in 5 years)	Predisposing, Enabling, and Reinforcing Factors DV = screening maintenance IV = number of years in US, employed, marital status, income levels, health insurance, regular place of care, fatalistic attitudes about cancer, hysterectomy, church attendance, attitudes about MDs	Logistic regression

Table 1 (Continued)

Study	Sample	Measures	Statistics
O'Malley, et al., 2001	n = 1933 African American and White women with 67% rural areas Ages: ≥ 52 Mammography ≤ 2 years: White: 66% African American: 48%	Predisposing, Enabling, and Reinforcing Factors DV = physician recommendation for mammography IV = age, race, marital status, educational attainment, income, personal history of breast cancer, family history, no. of medications, ever requested mammogram, regular physician, insurance, no. of medical visits in past year.	Logistic regression
Duan, et al., 2000	n = 397 control group n = 416 counseling group 54.9% White 23.9% Black 16.9% Hispanic Telephone counseling by trained church participants Ages: ≥ 50-80	Reinforcing Factor: Family/friends as support Baseline mammography use - 65% control & 63% counseling group Year 1 mammogram use - 77% control and 81% counseling group	
Black, et al., 2001	n = 198 White women in urban and rural areas; questionnaire during group meeting Ages: ≥ 50 Mammogram ≤ 2 years: 50-69: 57.9% 70-75: 42.6%	Predisposing, Enabling, and Reinforcing Factors DV = mammography utilization IV = age, education, marital status, beliefs, relative/friend history, personal history, self-concept, regular MD, recent clinical breast exam, know breast self-exam, physician recommendation, know peers	Logistic regression
Lee, 2003	n = 238 Korean nurses Ages: 23-53 Breast self-exam: 40%	Predisposing, Enabling, and Reinforcing Factors DV = BSE IV = susceptibility, benefits, barriers, self-efficacy, health motivation, knowledge	Logistic regression
Flax & Earp, 1999	n = 29 African American rural women	Qualitative study to identify their perceptions of being helped by CHWs.	

Table 1 (Continued)

Study	Sample	Measures	Statistics
Egbert & Parrott, 2001	n = 206 White women in rural area Mailed survey Ages: ≥ 40	DV = self-efficacy IV = social norms (peer norms and family norms), barriers (time, discomfort, embarrassment, & cost), knowledge	Pearson product moment correlation
Phillips & Wilbur, 1995	n = 154 African American women Quota sampling for 3 employment status groups Ages: ≥ 40 Mammography ≤ 2 years: 20%	Predisposing, Enabling, & Reinforcing Factors DV = BSE, mammography use, & yearly professional breast exam IV = age, group, education, marital status, social influence, income, barriers, benefits, susceptibility, knowledge of BSE	Logistic regression
Rutledge, 2001	n = 538 White women in urban area Mailed survey Ages: ≥ 50	Predisposing, Enabling, and Reinforcing DV = BSE & mammography use IV = age, education, marital status, city, susceptibility, benefits, barriers, self-efficacy, social norms, social influence, health motivation, knowledge	Logistic regression

Table 2

Factors that Influence Mammography use for CHW Programs

Study	Sample	Measures	Statistics
Bird, et al., 1998	n = 372 control group n = 345 intervention group Low-income Vietnamese-Americans in urban area Ages: ≥ 40	Baseline mammogram use – 43% control & 54% intervention 3 year follow-up 47% control & 69% intervention Baseline maintenance – 32% control & 37% intervention 3 year follow-up 28% control & 55% intervention	
Earp, et al., 2002	n = 390 intervention group n = 411 control group African American in rural areas Ages: ≥ 50	Baseline mammography use - 37% intervention group & 49% control group Follow-up mammography use - 59% intervention group & 60% control group	
Sung, et al., 1997	n = 102 control group n = 93 intervention group low-income African Americans in urban area Ages: ≥ 35 Mammogram ≤ 2 years: 35%	Baseline mammography use - 35.5% intervention group & 34.3% control group Year 1 mammography use - 50.4% intervention group & 39.4% control group	
Weber & Reilly, 1997	n = 190 control group n = 186 intervention group 42% white, 36% African American, 4% Asian, 7% Hispanic, 12% other Ages: 52-77 Mammogram ≤ 2 years: 60%	During 16-week intervention period – 25% of intervention group received mammogram 9.8% of control group	

CHAPTER III

METHODS

This chapter examines the research questions, hypotheses, mixed methods

research design using quantitative and qualitative methods, theoretical definitions,

operational definitions, study sample and setting, human subjects, data collection,

instrumentation, and data analysis. First, the research questions, hypotheses, and the

mixed methods research design are discussed. Next, the study sample and setting, human

subjects, data collection, instrumentation, and data analysis are discussed for the

quantitative and qualitative methods.

Research Questions and Hypotheses

The purpose of this study is to examine factors that influence mammography use

of CHWs and the relationship of self-efficacy, social norms, and mammography use of

CHWs. Understanding health behavior change in a social context is important for

planning health interventions on the community level (Bandura, 2004). CHWs are

informal leaders in their social networks and influence family members or friends to

develop positive health behavior changes such as mammography use (Eng, 1993).

To examine factors that influence mammography use of CHWs in a social

context, the following research questions based on the PRECEDE model and review of

the literature were posed:

1. What factors (age, educational level, susceptibility, benefits, barriers, health

   motivation, insurance, income, place of care, belief that CHW behavior influences

   others, physician recommendation to get a mammogram, talking to family members

or friends about mammograms, knowing someone who has/had breast cancer, and family history of breast cancer) influence mammography use of CHWs?

2. What is the relationship between self-efficacy and mammography use of CHWs?

3. What is the relationship between social norms and mammography use of CHWs?

The 14 hypotheses for the first question based on the literature review were:

1. CHWs 50 years of age or older will have higher mammography use than CHWs under 50 years of age.

2. CHWs with over 12 years of education will have higher mammography use than CHWs with 12 years of education/GED or less.

3. CHWs with incomes $12,000 or higher will have higher mammography use than CHWs with incomes lower than $12,000.

4. CHWs with health insurance will have higher mammography use than CHWs without insurance.

5. CHWs with a regular source of care will have higher mammography use than CHWs without a regular source of care.

6. CHWs who report their CHW behavior influences others will have higher mammography use than CHWs who do not report their CHW behavior influence others.

7. CHWs receiving a physician recommendation to get a mammogram will have higher mammography use than CHWs not receiving a physician recommendation to get a mammogram.

8. CHWs with a family history of breast cancer will have higher mammography use than CHWs without a family history of breast cancer.

9. CHWs who know someone with breast cancer will have higher mammography use than CHWs who do not know someone with breast cancer.

10. CHWs who talk with family or friends about mammograms will have higher mammography use than CHWs who do not talk with family or friends about mammograms.

11. CHWs with higher perceived susceptibility will have higher mammography use than CHWs with lower perceived susceptibility.

12. CHWs with higher perceived barriers will have lower mammography use than CHWs with lower perceived barriers.

13. CHWs with higher perceived benefits will have higher mammography use than CHWs with lower perceived benefits.

14. CHWs with higher perceived health motivation will have higher mammography use than CHWs with lower perceived health motivation.

The hypothesis for the second question based on review of the literature was:

15. CHWs with higher perceived self-efficacy will have higher mammography use than CHWs with lower perceived self-efficacy.

The hypothesis for the third question based on review of the literature was:

16. CHWs with higher perceived social norms will have higher mammography use than CHWs with lower perceived social norms.

Research Design

The mixed methods research design was chosen combining quantitative and qualitative methods to answer the research questions in this study (Creswell, 2003). The mixed methods research approach was used in other cancer studies such as a cancer screening program for Hispanics (Puschel, Thompson, Coronado, Lopez, & Kimball, 2001), a cancer screening project (Taylor, et al., 1994), and a pap testing study for Chinese American women (Hislop, et al., 2003). The advantages of using mixed methods research were to confirm the quantitative and qualitative findings and to identify any new perspectives about factors that influence mammography use of CHWs (Creswell, 1994; Denzin & Lincoln, 1998; Tashakkori & Teddle, 2003). Triangulation, defined as the combination of data from different methodologies, was used to explore the findings of the factors that influence mammography use of CHWs (Creswell, 1994). Using different data sources provided a depth of understanding to identify which factors influence mammography use of CHWs and the reasons the factors were important. The disadvantages of using this research design were the additional time to conduct the study and the cost for survey mailings.

The quantitative method was used first to examine the factors that influence mammography use and the qualitative method was used next to explore the attitudes and beliefs of mammography use that underlie the behavior (Creswell, 1994). The qualitative method explored why and how the factors that influence mammography use were important to the CHWs. Quantitative and qualitative findings were integrated in the results in Chapter 4 and the discussion in Chapter 5.

Quantitative method

The cross-sectional research design was chosen so that the preliminary findings in this study may be used in the development of other CHW research areas or in testing hypotheses in future CHW research (Isaac & Michael, 1997). Furthermore, the study design may also provide information for future CHW training program development (Isaac & Michael, 1997). This research design was used in previous breast cancer studies (Black, et al., 2001; Champion & Menon, 1997; Lee, 2003).

Qualitative method

The descriptive research design was chosen to find patterns or common themes as an inductive process (Creswell, 1994). An inductive process has no predisposed constructs and this process was used as a detailed exploration of the factors that influence mammography use of CHWs (Isaac & Michael, 1997; Patton, 1997). The research design was well suited for exploratory research since there were no previous studies examining factors that influence mammography use of CHWs (Creswell, 1994).

Variables of the Study

The dependent variable was mammography use within the past two years and was determined by self-report. This variable was used in the National Health Interview Survey and BRFSS data collection and followed the NCI guidelines for screening mammography (BRFSS, 2000; NCI, 2002). Two survey items were "Have you had a mammogram?" and "Was your most recent mammogram within (a) the past year, (b) the past two years, or (c) longer than two years?"

The independent variables were based on an extensive body of literature identified in the review of literature section. The sociodemographic variables were age,

educational levels, income, regular source of care, and insurance. Age was measured by asking participants to record their age in years. Educational level had three categories ranging from some high school or some grade school, completed high school or GED, to some college or completed college. These variables were based on findings from other studies. Income was measured as annual income with two groups, less than $12,000, and $12,000 and above. $12,000 was based on the federal poverty guidelines for a family of two. Regular source of care and having health insurance were measured with *yes* or *no* answers.

Other independent variables measured with *yes* or *no* answers were having a family history of breast cancer, knowing someone who has/had breast cancer, physician recommendation to get a mammogram, and talking with family members or friends about getting a mammogram. These variables were based on findings from other studies. Another variable that measured one's perception that CHW behavior influences others was recoded from a continuous variable (*1* = *strongly disagree* to *5* = *strongly agree*) to a dichotomous variable of *yes* (*agree and strongly disagree*) and *no* (*strongly disagree, disagree, and neutral*). The survey item was written as a positive statement and the respondents were likely to score *strongly agree* or *agree* if they believed their behavior influenced others.

Continuous variables were perceived susceptibility, benefits, barriers, health motivation, self-efficacy, and social norms (Champion, 1999; Egbert & Parrott, 2001). The ordinal variables were treated as ratio variables and were measured using a 5-point Likert scale. Perceived susceptibility, benefits, barriers, and health motivation were measured using the 26-item Health Belief Model Scale (Champion,1999). The scale

items were measured with a range of *1* = *strongly disagree* to *5* = *strongly agree* with *3*

= *neutral*. Perceived self-efficacy and social norms were measured using the 21-item

Social Cognitive Scale for Female Cancer Screening (Egbert & Parrott, 2001). Self-

efficacy was measured with scale items ranging from *1* = *very uncertain* to *5* = *very*

certain with *3* = *neutral* and social norms was measured with scale items ranging from *1*

= *never* to *5* = *always* with *3* = *sometimes.*

<center>Theoretical Definitions and Operational Definitions</center>

The theoretical definition of Community Health Workers is "community members

trained to act as links between professional health care system and their communities"

(Earp, et al., 2002, p. 646). The operational definition is trained individuals as paid or

volunteer staff who serve as lay health advisors to promote disease prevention and health

promotion in their community.

The theoretical definition of perceived susceptibility is the "perceived beliefs of

personal threat or harm related to breast cancer" (Champion, 1999, p. 342). The

operational definition is a 3-item subscale with items for the likelihood of getting breast

cancer, chances of getting breast cancer, and fear of getting breast cancer in future.

Cronbach's alpha for the Perceived Susceptibility Subscale was .88. The exploratory

factor analysis procedures resulted in loadings ranging between .87 and .91 (Champion,

1999).

The theoretical definition of perceived benefits is the "perceived positive

outcomes of obtaining a mammogram" (Champion, 1999, p. 342). The operational

definition is a 5-item subscale with items related to decreased worry, finding breast lumps

early, treatment, decreasing chances of dying, and benefit of mammogram. Cronbach's

alpha for the Perceived Benefits Subscale was .70. The exploratory factor analysis

procedures resulted in loadings ranging between .55 and .75 (Champion, 1999).

The theoretical definition of perceived barriers is "Perceived emotions, physical

or structural concerns related to mammography behaviors" (Champion, 1999, p. 342).

The operational definition is an 11-item subscale with items related to fear, how to access

the resources, embarrassment, time, pain, radiation, other problems more important,

scheduling, being too old, rude providers, and lack of understanding. Cronbach's alpha

for the Perceived Barriers Subscale was .93. The exploratory factor analysis procedures

resulted in loadings ranging between .48 and .79 (Champion, 1999).

The theoretical definition of perceived health motivation is "beliefs and behavior

related to state of general concern about health" (Champion, 1993, p. 140). The

operational definition is a 7-item subscale with items related to how to discover health

problems, maintain good health, search for new information, activities to improve health,

eat balanced meals, exercise, and regular check-ups. Cronbach's alpha for the Perceived

Health Motivation Subscale was .79. The exploratory factor analysis procedures resulted

in loadings ranging between .54 and .79 (Champion, 1999).

The theoretical definition of perceived self-efficacy is "a person's ability to

organize and execute courses of action required to attain designated types of

performances" (Bandura, 1986, p. 391). The operational definition is a 10-item subscale

(breast cancer screening for mammograms, BSE, clinical breast exam, and pap test) with

items related to one's confidence in ability to follow through, perceived difficulty of

cancer detection practices, and confidence in ability to perform breast self-examination.

Cronbach's alpha for the Perceived Self-efficacy Subscale was .87. The exploratory

factor analysis procedures accounted for 76% of the variance (Egbert & Parrott, 2001).

The theoretical definition of perceived social norms is "how individuals view

their social networks as sources for health-related information as well as the normative

health behaviors present among groups of friends and family" (Egbert & Parrott, p. 224).

The operational definition is an 11-item subscale (breast cancer screening for

mammograms, BSE, clinical breast exam, and pap test) with items related to a

recommendation from friends or family to find a health care professional to receive a

mammogram, knowledge that family members get mammograms, and knowledge that

peers get mammograms. Cronbach's alpha for the Perceived Social Norms Subscale was

.77. The exploratory factor analysis procedures accounted for 74.8% of the variance

(Egbert & Parrott, 2001).

Table 3

Theoretical Definitions, Operational Definitions, and Instruments in Study

Theoretical Definition	Operational Definition	Instrument
1. Community Health Workers: "Community members trained to act as links between professional health care system and their communities." (Earp, et al., 2002, p. 646)	Trained individuals who serve as lay health advisors to promote disease prevention and health promotion in their community as paid or volunteer staff.	
2. Perceived susceptibility: "Perceived beliefs of personal threat or harm related to breast cancer" (Champion, 1999, p. 342).	3-item subscale to include likelihood of getting breast cancer, chances of getting breast cancer, and fear of getting breast cancer in future	Health Belief Model Scale (Champion, 1999) (5-point Likert Scale)
3. Perceived benefits: "Perceived positive outcomes of obtaining a mammogram" (Champion, 1999, p. 342).	5-item subscale to include items related to 1) decreased worry, 2) finding breast lumps early, 3) treatment, 4) decreasing chances of dying, & 5) benefit of mammogram.	Health Belief Model Scale (Champion, 1999) (5-point Likert Scale)
4. Perceived barriers: "Perceived emotions, physical or structural concerns related to mammography behaviors" (Champion, 1999, p. 342).	11-item subscale includes 1) fear, 2) don't know how to get a mammogram, 3) embarrassment, 4) too much time, 5) pain, 6) radiation, 7) other problems more important. 8) scheduling, 9) too old, 10) rude providers, & 11) don't understand mammograms	Health Belief Model Scale (Champion, 1999) (5-point Likert Scale)
5. Perceived health motivation: "Beliefs and behavior related to state of general concern about health" (Champion, 1993, p. 140).	7-item subscale includes 1) discover health problems, 2) maintain good health, 3) search for new information, 4) activities to improve health, 5) eat balanced meals, 6) exercise, & 7) regular check-ups	Health Belief Model Scale (Champion, 1999) (5-point Likert Scale)
6. Perceived self-efficacy: a person's ability to "organize and execute courses of action required to attain designated types of performances" (Bandura, 1986, p. 391).	10-item subscale (breast cancer screening for mammograms, BSE, clinical breast exam, & pap test) includes 1) confidence in ability to follow through 2) perceived difficulty of cancer detection practices, & 3) confidence in ability to perform breast self-examination	Social Cognitive Scale for Female Cancer Screening (Egbert & Parrott, 2001) (5-point Likert Scale)
7. Social norms: "how individuals perceive their social networks as sources for health-related information as well as to tap the perceptions of the normative behavior present among groups of friends and family" (Egbert & Parrott, p. 224).	11-item subscale (breast cancer screening for mammograms, BSE, clinical breast exam, & pap test) includes 1) recommendation from friends or family to find a health care professional to receive a mammogram, 2) knowledge that family members get mammograms, & 3) knowledge that peers get mammograms	Social Cognitive Scale for Female Cancer Screening (Egbert & Parrott, 2001) (5-point Likert Scale)

Study Sample and Setting

Quantitative Method

A convenience sample of volunteer CHWs was recruited from two urban CHW interventions in Richmond and Norfolk, Virginia. The Richmond program was organized in 1994 by a free clinic. The Norfolk program was organized in 2002 by the Minority Health Coalition of South Hampton Roads. A letter of request to conduct the study was sent to the CHW program coordinators and written consent was received from CHW program coordinators.

A total of 214 age-eligible CHWs were identified using a computer listing of current active CHWs from program databases. Overall, 200 Richmond CHWs and 14 Norfolk CHWs were included in the combined program database. Inclusion criteria for participant selection included women ages 40 and older, current and active volunteer CHWs, and the ability to read and write English. The selection of the age group for this study was based on the NCI recommendations for age-specific screening mammography beginning at 40 years of age.

Both CHW programs developed similar training and recruited volunteer CHWs from mostly African American urban communities. Other Virginia CHW programs used different curriculums and recruited paid CHWs (Virginia Center for Health Outreach [VCHO], 2004). The Richmond CHW program served as the model for a volunteer bilingual CHW program serving one Hispanic community in another region of Virginia (VCHO, 2004). However, this study did not include Hispanic CHW interventions. The various disease management and health promotion modules include health information for mammography use and breast cancer, diabetes, cardiovascular disease, hypertension,

nutrition, and blood pressure readings. Volunteer CHWs were trained to promote

mammography use but were not required to adhere to mammography screening

guidelines after training.

Population, race distribution, and socioeconomic variables were similar in

Richmond and Norfolk (Census 2000). According to the Census 2000, the population of

Richmond is 197,790 with a race distribution of 38% White and 57% African Americans.

The population of Norfolk is 234,403 with a race distribution of 48% White and 44%

African Americans (Census 2000). The percent of incomes less than $15,000 of the total

household incomes is 22% in Richmond and 24% in Norfolk (Census 2000). The percent

of educational attainment levels less than 12th grade for the population ages 25 years and

older is 25% in Richmond and 22% in Norfolk (Census 2000).

The age-adjusted 2000 breast cancer incidence rates in Richmond and Norfolk for

women were higher than the state overall age-adjusted 2000 breast cancer incidence rates

(127.0, 134.0, and 126.6 per 100,000 respectively) (Virginia Cancer Registry, 2003). The

cities ranked in the middle compared to other Virginia cities for age-adjusted 2000 breast

cancer incidence rates. In Virginia, the age-adjusted 2000 breast cancer incidence rates

for African Americans was lower compared to the breast cancer incidence rates for the

White women (118.2 vs. 129.1 per 100,00 respectively) (Virginia Cancer Registry,

2003). However, the age-adjusted 1996 to 2000 breast cancer mortality rates of African

Americans in Virginia were higher than the national age-adjusted breast cancer mortality

rates of African Americans (38.2 vs. 35.9 per 100,000 respectively) (CDC, 2003).

Qualitative Method

A purposeful sampling was used to recruit key CHWs as a small homogeneous group (Isaac & Michael, 1997; Patton, 1997). Program coordinators and the researcher contacted CHWs by telephone and requested participation in the study. The selection criteria included women 40 years of age or older, active CHW involvement in the communities, the ability to provide a depth of understanding of the volunteer CHW role, receiving a mammogram within the past two years, and the availability of time for the interview.

Two in-depth interviews and one focus group were conducted in settings based on convenient locations and room availability. Three Richmond CHWs were selected for a focus group. The focus group was conducted in a room during the annual CHW state conference. This setting provided a private and informal setting for the discussion about breast cancer and mammography use. One Richmond CHW and one Norfolk CHW were selected as participants for the in-depth interviews. The in-depth interviews were conducted in public facilities. Interviews were to be completed when the interviews with additional people gained no new insights (Taylor & Bogdan, 1998).

Human Subjects

A request to conduct the study and approval for research in accordance with guidelines for human subjects was received from the Institutional Review Board of Old Dominion University.

Quantitative Method

The completion and return of the mailed survey indicated consent by CHWs for participation. Participants were able to decline at any time to be part of the study.

Survey copies were stored in a locked file drawer by the researcher. After storage for

five years, the survey copies will be destroyed.

Qualitative Method

Verbal consent for participation and audiotaping of interviews was received from

CHWs prior to the interviews. CHWs were able to decline at any time to participate

during the interviews. CHWs received assurance the taped information was confidential

and not linked to their names. They were informed that the tapes would be destroyed

after the data collection, transcription, and data analysis. The interviewer respected the

rights of the participants and ensured confidentiality of information as ethical

considerations (Creswell, 2003).

Data Collection

Quantitative Method

A mailed survey method was chosen for data collection to reach a wide range of

CHWs in the two cities. The mailed survey provided anonymity for women in this study

instead of information sharing during the group interview (Isaac & Michael, 1997).

Some women may have viewed the topic of mammography use as a sensitive area for

discussion in a group interview. CHWs received a mailed survey packet after the

Institutional Review Board approval. The survey packet included a cover letter, self-

administered survey with a demographic information section, self-addressed stamped

envelope, and drawing form for a department store gift certificate. The survey titles

included the city program titles to ensure program familiarity. The Richmond survey was

entitled *Lay Health Promoter Breast Cancer Screening Survey* and the Norfolk survey

was entitled *Ministry Health Coordinator Breast Cancer Screening Survey*. The terms

lay health promoters, *ministry health coordinators*, *lay health advisors*, and *community health workers* are used interchangeably by different CHW programs (Annie E. Casey Foundation, 1998).

Five strategies were developed to promote completion and return of surveys. First, a drawing for a chance to win one of four prizes was used as an incentive. The drawing prizes included one $200 department store gift certificate, two $100 department store gift certificates, and one $50 department store gift certificate. CHWs chose to complete the drawing form and returned the form with the completed survey to the researcher. The drawing form included the CHW's telephone number and the date of the drawing. The completed drawing forms were placed in a concealed container. The winners were selected by a person not involved in the study. The winners were contacted by phone and received the gift certificates in the mail. Second, the cover letter included the city coordinators' names to encourage participation. The cover letter also included contact information for the researcher and Dissertation Chair to encourage a partnership between the researchers and the city coordinators. Third, directions for completion of survey items were located at the top of the first page of the survey and at the beginning of each section. The statement, "Circle the number for each question," was highlighted with a yellow marker as a reminder to answer each question. Fourth, colorful stickers for marketing the drawing to win a store gift certificate were placed on the envelopes. Finally, an announcement in one city's CHW bulletin was used to promote the upcoming breast cancer screening survey and the importance of the survey completion.

The surveys and mailing lists were coded with numbers for confidentiality and no identifying information pertaining to the participants was used in reports. Numbers were

linked to the participants' names. The papers linking the numbers to the participants' names were destroyed so that there was no link between the names and the numbers prior to data entry.

The mailing was completed in three waves. First, a cover letter, self-addressed stamped envelope, survey with a demographic information section, and drawing form were mailed to CHWs. CHWs were requested to return the completed survey and optional drawing form in the mail to the researcher by a specified date in the fifth week. The drawing date was scheduled for the week after the requested return date. Second, a brightly colored postcard as a reminder to return the survey was sent to non-respondents two weeks after the original mailing. Double-checking the list of numbers of the returned surveys was conducted prior to the second mailing to avoid any duplication in the second mailing. Non-respondents were reminded to request a duplicate copy of the survey if the original survey could not be found. Third, a self-addressed stamped envelope and replacement survey was sent twenty-four days after the original mailing to non-respondents.

Qualitative Method

Open-ended survey items, in-depth interviews, and a focus group were used as methods for qualitative data collection. The mailed survey included open-ended survey items to allow respondents to describe what was meaningful to them and to openly answer the questions with flexibility, depth, and clarification (Denzin & Lincoln, 1998; Isaac & Michael, 1997). Items included questions such as "Why did you become a Community Health Worker?", "What support do you give to family and friends to get a mammogram?, and "What support do you receive to get a mammogram?" The

disadvantage of using a survey with closed-ended and open-ended survey items was the inability of the researcher to probe for additional information (Isaac & Michael, 1997).

The in-depth interviews and focus group were chosen to explore additional information about attitudes toward mammography use, to provide variation for interviewing, and to give a closer look at the CHWs' specific social settings that define their behaviors (Denzin & Lincoln, 1998; Taylor & Bogden, 1998). The advantages of using in-depth interviews included the collection of rich data using the words of CHWs, flexible interview times, and the availability of face-to-face encounters (Taylor & Bogden, 1998). Information sharing in a one-to-one private conversation may elicit more information in an informal environment compared to a group interview (Denzin & Lincoln, 1998). Small group interviews were used extensively in the literature for other health issues, health messages, and social marketing (Borra, Kelly, Shirreffs, Neville, & Geiger, 2003; McDermott & Sarvela, 1999). Using a focus group generated more dialogue, served as an aid in recalling information as a group, and provided lower costs by scheduling one interview instead of several in-depth interviews (Denzin & Lincoln, 1998). The disadvantages of using a focus group and in-depth interviews were an inconvenience in coordinating and conducting interviews and the availability of time for members to attend the interview (Isaac & Michael, 1997).

Gaining trust and building a relationship with the groups were important for the success of the interview process and access to the CHWs in their communities (Denzin & Lincoln, 1998). Contacts with the city program coordinators and CHWs were established one year prior to the study. The researcher was invited to attend a monthly coalition

meeting, formal CHW class graduation, and annual CHW banquet honoring CHWs in one city.

Five CHWs volunteered to participate in a focus group or in-depth interviews. Five African American CHWs were between the ages of 41 and 56. Four CHWs had some high school or were high school graduates and one CHW was a college graduate. They were very active in their communities providing help in a one-to-one setting with friends or family or a small group setting with church members.

At the beginning of the interviews, the researcher explained the interview process, the use of note taking, and the process for audiotaping. The researcher created a relaxed setting and listened attentively to the CHWs (Taylor & Bogden, 1998). While conducting the interviews, the researcher also remained nonjudgmental and communicated empathy (Taylor & Bogden, 1998).

Qualitative data provided a richness of information in the participants' words and numbers in qualitative studies were not generally large (Patton, 1997). It was determined the participants provided no new information by the end of the fifth interview. Thus, the interview process was completed after the fifth interview.

<div align="center">Instrumentation</div>

Quantitative Method

The 78-item survey instrument with three sections was developed to assess the factors that influence mammography use of CHWs (see Appendix B). The first section included closed-ended items with *yes/no* options for mammography use, knowing someone who has or had breast cancer, and talking with others about mammograms. The second section included closed-ended survey items with 5-point Likert scale items for the

Benefits, Barriers, and Susceptibility Subscales of the Health Belief Model Scale

(Champion, 1999) and Social Norms and Self-efficacy Subscales of the Social Cognitive

Scale for Female Cancer Screening Scale (Egbert & Parrott, 2001).

Reliability coefficients of the summated scales in this study were examined (See

Table 4). Reliability was demonstrated to have good internal consistency with

Cronbach's alpha ranging from .70 to .93.

Table 4

Scale Characteristics: Range, Means, Standard Deviations, and Internal Reliabilities for Two Scales in this Study

Scale	Possible Range	Mean	SD	α
Health Belief Model Scale				
Susceptibility	3-15	6.33	2.82	.88
Benefits	5-	19.14	3.55	.70
Barriers	11-55	17.92	6.61	.93
Health Motivation	7-35	30.72	3.03	.74
Social Cognitive Scale for Female Cancer Screening Scale				
Self-efficacy	10-50	42.70	5.92	.87
Social Norms	11-55	30.50	5.79	.77

The third section included sociodemographic variables for age, educational levels, income, race, and marital status. The demographic variable for age was recorded by writing in the response. Respondents identified their education level (some high school or grade school, high school/GED, or over 12 years of school), income ($12,000 or higher or less than $12,000), race (White, African American, other), and marital status (single/divorced, married, widowed). The variables for race and marital status were not used in this study since most CHWs were African Americans and marital status was not a factor in other studies. The educational level variable was selected based on prior approval and requirement by CHW program coordinators. $12,000 was based on the federal poverty guidelines for a family of two. Other variables used *yes/no* options for health insurance, family history of breast cancer, regular source of care, and physician recommendation to get a mammogram.

Health Belief Model (HBM) Scale

The HBM scale with the Susceptibility, Benefits, Barriers, and Health Motivation Subscales for mammography use was developed by Champion in 1993 and revised in 1999 (Champion, 1993, 1999). Champion (1987) previously developed the HBM scale for breast self-examination in 1987 and later added the Mammography Subscale. This instrument has been used extensively in research studies for breast cancer screening (Champion & Menon, 1997; Graham, 2002; Lee, 2003; Phillips & Wilbur, 1995). The readability level was a 4.3 grade level computed using the Flesch-Kincaid scale.

Written permission was received to use the instrument in this study. The subscales were used with no modifications. The items were measured using a 5-point

Likert scale ranging from *1* = *strongly disagree* to *5* = *strongly agree*. The middle point of *3* was measured as *neutral.*

Content validity was reported using a review by an expert panel (Champion, 1999). The items were based on examination of literature review, theory, and input from a focus group discussion. Culturally sensitive items were used to provide more accurate patient behavior assessments (Champion, 1999). Construct validity was examined using two types of factor analysis. Strong construct validity was demonstrated with high correlations between items and the respective subscales (Champion, 1999). Exploratory factor analysis using principal components with a varimax rotation was completed and the loadings ranged between .87 and .91 for susceptibility, .55 and .75 for benefits, .48 and .79 for barriers, and .54 and .79 for motivation. Confirmatory factor analysis tested how well items fit with theoretical concepts. Predictive validity was assessed by examining bivariate correlations between each subscale and mammography use from Time 1 to Time 2 during a six-week interval. Reliability was demonstrated to have a high internal consistency and test-retest reliability (Champion, 1993, 1999).

Social Cognitive Scale for Female Cancer Screening

The Social Cognitive Scale for Female Cancer Screening with the Self-efficacy and Social Norms Subscales was developed to measure perceived self-efficacy and perceived social norms of breast cancer screening (Egbert and Parrott, 2001). This instrument was used in previous studies (Egbert & Parrott, 2001; Parrott, Steiner, & Goldenhar, 1996). The readability level was a 5.6 grade level computed using the Flesch-Kincaid scale.

Written permission was received to use the instrument in this study. The term "other farm wives" was replaced with "other women" in the Peer Norms Subscale of the instrument for this study. The item stated, "How often do other women in your area conduct breast self-exams, receive clinical breast exams, receive mammograms, and receive pap tests?" The items for the Self-efficacy Subscale were measured using a 5-point Likert scale ranging from 1 = *very uncertain* to 5 = *very certain*. The middle point of 3 was measured as *neutral*. The items for the Social Norms Subscale were measured using a 5-point Likert scale ranging from 1 = *never* to 5 = *always*. The middle point of 3 was measured as *neutral*.

Content validity for items was verified using a literature review (Egbert & Parrott, 2001). Construct validity was examined using exploratory factor analysis and principal-axis factoring. The retention of items was determined if the loading was at least .30 or above on one factor. Reliability was demonstrated to have a high internal consistency (Egbert & Parrott, 2001).

The Self-efficacy Subscale was developed to examine self-efficacy for female cancer screening. Cronbach's alpha was .95 for Women's Confidence in Their Ability to Follow Through Subscale, .75 for Perceived Difficulty of Cancer Detection Practices Subscale, and .70 for Women's Confidence in Their Ability to Perform Breast Self-examination Subscale (Egbert & Parrott, 2001). The three factors accounted for 76% of the variance (Egbert & Parrott, 2001).

The Social Norms Subscale was developed to identify perceptions about the health-related behavior of one's social network as an influence to promote breast cancer screening. Cronbach's alpha was .74 for Referral to Professional Subscale, .89 for

Family Norms Subscale, and .89 for Peer Norms Subscale (Egbert & Parrott, 2001). The two factors accounted for 74.8% of the variance (Egbert & Parrott, 2001).

Pilot testing.

Pilot testing of the survey for this study was conducted to establish face validity and test the survey format. The advantage of using pilot testing was to identify any suggestions or approaches that were not foreseen in instrument design or development (Isaac & Michael, 1997). The researcher displayed information for the study during the annual state CHW conference. CHWs who expressed an interest in participation and reported receiving CHW breast cancer training were invited to complete an inquiry form. Requested information on the form included name, address, program name, and city. A survey, self-addressed, stamped envelope, and drawing form were mailed to 14 CHWs five weeks prior to the CHW survey mailing. Eight surveys were completed and returned resulting in a 57% return rate. The evaluation section at the end of the survey included a section for recommendations. Overall, all CHWs confirmed it was easy to read and understand. No recommendations for the survey were reported and the survey was not revised prior to the mailing.

Qualitative Method

The mailed survey instrument included eight open-ended survey questions to explore more in depth the factors that influence mammography use. The open-ended survey items included items such as, "Why did you become a Community Worker?", "What are the difficulties in getting a mammogram?", "What help or support do you give family members or friends to get a mammogram?", and "What help or support do you receive to get a mammogram?" The qualitative survey items were developed after a

review of the CHW responsibilities and input from faculty members. After revisions were completed, approval of the open-ended items was obtained from the faculty.

The interview guide was developed to ensure key topics were covered in the semi-structured interviews (See Table 5). Standardized questions to explore underlying factors that influence mammography use of CHWs were included (Isaac and Michael, 1997). The interview questions were related to understanding in depth through the voice of CHWs how the factors were important. The first section covered important information for the CHW role, knowledge, attitudes, and behavior influencing others. The second section covered specific CHW roles as health advocates promoting mammography use. The interview questions included, "What do you practice today as a role model that you learned in training class?", "What ways do you help with promoting healthy lifestyles?", "Can you explain how confident you are after training to explain the importance of a mammogram and the early detection of breast cancer?", and "Can you explain how you may have changed your feelings about breast cancer and/or mammograms after your training class?" Probes were included to gather information for more insight if needed by the researcher. For example, probes such as "refer them to a clinic or doctor, help them find a ride, or take them with you to the doctor's office or clinic" were listed as clarifications for the question, "What are some ways you help someone find out how to get a mammogram?"

Criteria were examined through a verification process to validate findings of the qualitative data (Creswell, 2003; Isaac & Michael, 1997). Credibility, defined as a process for findings that are believable and accurate, was planned using a member-checking approach to strengthen internal validity (Creswell, 2003; Isaac & Michael,

1997). With member-checking, the participants in the interviews were given an

opportunity to check the final report or specific themes to determine accuracy (Creswell,

2003). The information from the transcriptions and themes were reviewed by the

participants and no suggestions for revisions were reported. Triangulation, defined as the

use of data collection from different sources, was planned also to strengthen credibility

and transferability (reliability) (Creswell, 2003; Isaac & Michael, 1997).

Data Analysis

Quantitative Method

Data analyses were computed using SPSS, Version 11.0 (2001). Descriptive

statistics and frequency distributions were analyzed for categorical and continuous

variables. In bivariate analysis, chi-square tests and Fisher's Exact test were used to

assess the associations between the sociodemographic variables and mammography use

of CHWs. Independent t-tests were used to determine the mean differences between

mammography use of CHWs and the factors of susceptibility, barriers, benefits, self-

efficacy, health motivation, and social norms. In multivariate analysis, logistic regression

was used to determine which factors best predict mammography use of CHWs, the

dependent variable, while controlling for other variables (Munro, 2001; Tabachnick &

Fidell, 1996). Logistic regression was chosen since the study included continuous and

discrete independent variables and a dichotomous dependent variable (Tabachnick &

Fidell, 1996).

Qualitative Method

The audiotapes were transcribed verbatim and reviewed by the researcher for

accuracy. The names of the participants were not used in the transcription. Following

the transcription, a peer reviewed the audiotapes and transcription for confirmation of accuracy.

Coding and categories as patterns emerged while reading the open-ended survey item responses, transcriptions, and interview notes. The categories were arranged into themes. The data analysis process established a justification for themes. An external person new to the study and experienced in qualitative research reviewed the transcriptions and assessed the themes and coding. A consensus for the themes and coding was developed after the review.

Table 5

Interview Guide for Community Health Workers

Interview Guide
A. CHW's View of Her Role & Behavior Influencing Others

Category	Interview Guidelines
Self-efficacy & CHW Health Behavior Influences Others	What do you practice today as a role model that you learned in training class?
	Can you describe a situation where you used your CHW training to help family or friends? (probe - your behavior influences others)
Social Support/ Social Norms	What people do you help with promoting healthy lifestyles? (probe – family, friends, co-workers, church members)

B. CHW Serving as Health Advocate for Breast Cancer Awareness and Mammography Use

Category	Interview Guidelines
Attitudes, Beliefs, Behavior Changes, & Self-efficacy	Can you explain how you may have changed your feelings about breast cancer and/or mammograms after your training class?
Self-efficacy	Can you explain how confident you are after training to explain the importance of a mammogram and the early detection of breast cancer? (probe – explain how you feel about your self-confidence)
Self-efficacy - Role Modeling	Where do you talk to someone about mammograms or breast cancer screening? (probe – situations such as on the phone, church, work, home or arrange guest speakers to talk to friends, mammography van to visit church, etc.)
Self-efficacy - Role Modeling, Emotional Arousal & Verbal Persuasion	What ways do you teach someone about breast cancer and mammograms? (probe – talk, be a sister, give class materials, referrals, share personal experiences, talk about self-defeating feelings and barriers)
Physician Recommendation to get a Mammogram	What ways do you help someone find out how to get a mammogram or have physician give someone this information? (probe – refer them to a clinic or help find a free mammogram, take person to clinic, find them a ride or bus)
Worksheets (results not used in study)	Filling in worksheets for the CHW program is part of your role of helping others. Can you explain some reasons why it may be difficult to fill in the worksheets?

CHAPTER IV

RESULTS

This chapter examines the quantitative and qualitative results and data analysis.

First, quantitative data using closed-ended survey item responses are examined. Second,

quantitative data are tested using bivariate and multivariate analysis to determine the

significant factors that influence mammography use of CHWs. Third, qualitative data

using responses from open-ended survey items and interviews are examined for emergent

themes to strengthen the understanding of the quantitative results and explore possible

unexpected findings. The quantitative and qualitative data analysis are integrated in the

results.

Survey Results

Survey packets with a survey, gift certificate drawing form, and self-addressed

stamped envelope were mailed to 214 CHWs. Twelve surveys were returned with no

forwarding address and one survey was returned with a notice the addressee was

deceased. Of the total 201 remaining surveys, 109 surveys were completed and returned

in the mail resulting in a 54% survey return rate.

Characteristics of the Sample

Table 6 summarizes the characteristics of CHWs. CHWs ranged in age from 40

to 73 with the mean age of 54.7 years (SD = 9.86). The age variable was grouped into

two age ranges of 40 to 49 and 50 years of age and older. The age group distribution was

based on general NCI recommendations for mammograms every two years from ages 40

to 49 and annual mammograms starting at age 50. Overall, 35.8% were between the ages

of 40 to 49. Of all CHWs, 89.9% were African American, 8.3% were White, and 1.8%

were Hispanic/other. Almost half of the CHWs (46.8%) were married, 36.7% were

single/divorced/separated, and 16.5% were widowed. CHWs had 12 years of education

or less (49.1%) and almost 40% had annual income levels less than $12,000 (38.9%).

CHWs most commonly reported a regular source of care (90.8%), income levels $12,000

or greater (61.1%), and health insurance (76.1%). The majority of CHWs reported

receiving a physician recommendation to get a mammogram (93.6%). In addition, 86.2%

talked about mammograms with others, 13.8% had a family history of breast cancer, and

74.1% knew someone who has/had breast cancer. Most CHWs (78.9%) reported their

CHW behavior influenced others. Overall, 84.4% of the CHWs received a mammogram

within the past two years.

Table 6

Characteristics of Community Health Workers

Characteristic	Total N (%) (N = 109)		Adherent* n (%) (n = 92)		Nonadherent** n (%) (n = 17)	
Age (n = 109) (mean = 54.7 years, SD = 9.86)						
40-49	39	(35.8)	29	(31.5)	10	(58.8)
50+	70	(64.2)	63	(68.5)	7	(41.2)
Ethnic group (n = 109)						
African American	98	(89.9)	85	(92.4)	13	(76.5)
White	9	(8.3)	5	(5.4)	4	(23.5)
Hispanic/Other	2	(1.8)	2	(2.2)	0	
Marital status (n = 109)						
Married	51	(46.8)	41	(44.6)	10	(58.8)
Single/Divorced/Separated	40	(36.7)	34	(37.0)	6	(35.3)
Widowed	18	(16.5)	17	(17.3)	1	(5.9)
Education (n = 108)						
12 years of education or less	53	(49.1)	46	(50.5)	7	(41.2)
More than 12 years of education	55	(50.9)	45	(49.5)	10	(58.8)

Table 6 (Continued)

Characteristic	Total N % (N = 109)		Adherent* n % (n = 92)		Nonadherent** n % (n = 17)	
Income (n = 108)						
< $12,000	42	(38.9)	33	(36.3)	9	(52.9)
≥ $12,000	66	(61.1)	58	(63.7)	8	(47.1)
Health insurance (n = 109)						
Yes	83	(76.1)	71	(77.2)	12	(70.6)
No	26	(23.9)	21	(22.8)	5	(29.4)
Regular source of care (n = 109)						
Yes	99	(90.8)	86	(93.5)	13	(76.5)
No	10	(9.2)	6	(6.5)	4	(23.5)
MD recommendation for mammogram (n = 109)						
Yes	102	(93.6)	91	(98.9)	11	(64.7)
No	7	(6.4)	1	(1.1)	6	(35.3)
Family history of breast cancer (n = 109)						
Yes	15	(13.8)	13	(14.1)	2	(11.8)
No	94	(86.2)	79	(85.9)	15	(88.2)

Table 6 (Continued)

Characteristic	Total N % (N = 109)		Adherent* n % (n = 92)		Nonadherent** n % (n = 17)	
Know someone who has/had breast cancer (n = 108)						
Yes	80	(74.1)	67	(73.6)	13	(76.5)
No	28	(25.9)	24	(26.4)	4	(23.5)
Talk about mammograms with family or friends (n = 109)						
Yes	94	(86.2)	84	(91.3)	10	(58.8)
No	15	(13.8)	8	(8.7)	7	(41.2)
CHW behavior that influences others (n = 109)						
Yes	86	(78.9)	75	(81.5)	11	(64.7)
No	23	(21.1)	17	(18.5)	6	(35.3)
Mammography Use						
Had mammogram (n = 109)						
Yes	98	(89.9)				
No	11	(10.1)				
Had mammogram within past 2 years (n = 109)						
Yes	92	(84.4)				
No	17	(15.6)				

Note. * CHW had a mammogram within the past two years ** CHW did not have a mammogram within the past two years

Findings of Quantitative and Qualitative Methods

Factors that Influence Mammography Use of CHWs

The first research question asked what factors influence mammography use of

CHWs. First, data screening was conducted to identify outliers and missing data. Data

screening for outliers was conducted using box plots (Mertler & Vannatta, 2002; Munro,

2001). Values between the 1.5 and 3 box lengths from the upper or lower edges of the

box for barriers, benefits, susceptibility, health motivation, self-efficacy, and social

norms subscales were examined. In addition, values over 3 box lengths from the edges

for benefits, self-efficacy, and barriers subscales were examined. Outliers were checked

for possible data miscoding and three survey items were revised for data miscoding.

Outliers were changed to the next extreme scores not previously listed as outliers (Munro,

2001; Tabachnick & Fidell, 1996). Data screening for missing data was conducted for

possible data miscoding or patterns of missing data. Three survey items were revised for

data miscoding. No patterns of missing data were identified. There was less than 5% of

missing data for each case. Listwise deletion, the SPSS default, was utilized for bivariate

data analysis due to the small percentage of missing data and calculations for cases with

complete data were used (SPSS, 2001).

One variable was collapsed to increase sample size for analyzing potential

differences. The education variable was collapsed from three groups (some high school

or grade school, high school/GED, or more than 12 years of school) to two groups (high

school/GED or less and some college or completed college). Each group represented

approximately 50% of the sample (49.1% and 50.9% respectively).

The 5-point Likert scale items for each subscale were added together and the summative score was divided by the number of subscale items. This method was used in previous studies in the literature using the Health Belief Model Scale (Champion & Menon, 1997; Lee, 2003). A summary of means and standard deviations for subscales in this study is presented in Table 8.

Chi-square tests, Fisher's Exact test, and independent t tests were used to test the factors that influence mammography use of CHWs for bivariate analysis (Daniel, 1999). Chi-square tests and Fisher's Exact test were used to analyze significant associations between ordinal and nominal variables and mammography use of CHWs. Chi-square tests were used for testing nine variables of age, education, income, health insurance, regular source of care, CHW behavior influences others, family history to get a mammogram, knowing someone who has/had breast cancer, and talking about mammograms with others. The Fisher's Exact test was used to test one variable, physician recommendation to get a mammogram, as an alternative to chi-square tests for 2 x 2 tables due to one extremely small cell count (Munro, 2001). Independent t tests were used to test the differences between the means of perceived susceptibility, barriers, benefits, health motivation, self-efficacy, and social norms that influence mammography use of CHWs.

In the bivariate analysis, the results showed barriers, health motivation, self-efficacy, age, regular source of care, a physician recommendation to get a mammogram, and talking to family and friends about getting a mammogram were statistically significant factors ($p < .05$) that influence mammography use of CHWs.

Hypothesis 1

The data did support hypothesis 1 stating CHWs ages 50 and older will be more likely to get a mammogram than CHWs ages 40 to 49. There was a statistically significant difference in mammography use of CHWs ages 50 or older and CHWs under age 50 ($\chi^2(1) = 4.65$, p = .015) as summarized in Table 7.

Hypothesis 2

The data did not support hypothesis 2 stating CHWs with more than 12 years of education will be more likely to have a mammogram than CHWs with 12 years of education or less. There was no statistically significant difference in mammography use of CHWs with more than 12 years of school and CHWs with 12 years of school or less ($\chi^2(1) = .504$, p > .05) as summarized in Table 7.

Hypothesis 3

The data did not support hypothesis 3 stating CHWs with annual incomes $12,000 or higher will have higher mammography use than CHWs with annual incomes less than $12,000. There was no statistically significant difference in mammography use of CHWs with income $12,000 or higher and CHWs with incomes under $12,000 ($\chi^2(1) = 1.676$, p > .05) as summarized in Table 7.

Hypothesis 4

The data did not support hypothesis 4 stating CHWs with health insurance will have higher mammography use than CHWs without health insurance. There was no statistically significant difference in mammography use of CHWs with health insurance and CHWs without health insurance ($\chi^2(1) = .343$, p > .05) as summarized in Table 7.

Hypothesis 5

The data did support hypothesis 5 stating CHWs who have a regular source of

care will have higher mammography use than CHWs who do not have a regular source of

care. There was a statistically significant difference in mammography use of CHWs

with a regular source of care and CHWs without a regular source of care ($\chi^2(1) = 4.981$,

$p = .013$) as summarized in Table 7.

Hypothesis 6

The data did not support hypothesis 6 stating CHWs who perceive their CHW

behavior influences others will have higher mammography use than CHWs who do not

perceive their CHW behavior influences others. There was no statistically significant

difference in mammography use of CHWs reporting their CHW behavior influences

others and CHWs reporting their CHW behavior does not influence others ($\chi^2(1) = 2.437$,

$p > .05$) as summarized in Table 7.

Hypothesis 7

The data did support hypothesis 7 stating CHWs who receive a physician

recommendation to get a mammogram will have higher mammography use than CHWs

who do not receive a physician recommendation to get a mammogram. There was a

strong statistically significant difference in mammography use of CHWs who receive a

physician recommendation to get a mammogram and CHWs who do not receive a

physician recommendation to get a mammogram using Fisher's Exact Test ($p = .000$) as

summarized in Table 7.

Hypothesis 8

The data did not support hypothesis 8 stating CHWs with a family history of

breast cancer will have higher mammography use than CHWs without a family history of

breast cancer. There was no statistically significant difference in mammography use of

CHWs with a family history of breast cancer and CHWs without a family history of

breast cancer ($\chi^2(1) = .068$, p > .05) as summarized in Table 7.

Hypothesis 9

The data did not support hypothesis 9 stating CHWs who know someone who

has/had breast cancer will have higher mammography use than CHWs who do not know

someone who has/had breast cancer. There was no statistically significant difference in

mammography use of CHWs who know someone who has/had breast cancer and CHWs

who do not know someone who has/had breast cancer ($\chi^2(1) = .060$, p > .05) as

summarized in Table 7.

Hypothesis 10

The data did support hypothesis 10 stating CHWs who talk to family or friends

about mammograms will have higher mammography use than CHWs who do not talk to

family or friends about mammograms. There was a statistically significant difference in

mammography use of CHWs who talk to family or friends about mammograms and

CHW who do not talk to family or friends about mammograms ($\chi^2(1) = 12.756$, p = .000)

as summarized in Table 7.

Table 7

Associations Between Mammography Use and Factors that Influence Mammography Use of CHWs

Hypo-thesis	Effect	df	(χ^2)	p
H1	Age	1	4.650	0.015*
H2	Education	1	0.504	0.239
H3	Income	1	1.676	0.097
H4	Health insurance	1	0.343	0.279
H5	Regular source of care	1	4.981	0.013*
H6	CHW behavior influences others	1	2.437	0.059
H7	MD recommendation for mammogram+	1		0.000*
H8	Family history of breast cancer	1	0.068	0.397
H9	Know someone who has/had breast cancer	1	0.060	0.403
H10	Talk about mammogram with family and friends	1	12.756	0.000*

Note. *p < .05, one-tailed. + Fisher's Exact test

Hypothesis 11

The data did not support hypothesis 11 stating CHWs with higher perceived

susceptibility will be more likely to have higher mammography use than CHWs with

lower perceived susceptibility. There was no statistically significant difference in

mammography use of CHWs with higher perceived susceptibility and CHWs with lower

perceived susceptibility ($t(107) = 1.447$, p > .05) as summarized in Table 8.

Hypothesis 12

The data did support hypothesis 12 stating CHWs with lower perceived barriers

will have higher mammography use than CHWs with higher perceived barriers. There

was a statistically significant difference in mammography use of CHWs with lower

perceived barriers and CHWs with higher perceived barriers ($t(107) = 7.588$, p = .000) as

summarized in Table 8.

Hypothesis 13

The data did not support hypothesis 13 stating CHWs with greater perceived

benefits will have higher mammography use than CHWs with fewer perceived benefits.

There was no statistically significant difference in mammography use of CHWs with

greater perceived benefits and CHWs with fewer perceived benefits ($t(107) = .060$,

p > .05) as summarized in Table 8.

Hypothesis 14

The data did support hypothesis 12 stating CHWs with higher perceived health

motivation will have higher mammography use than CHWs with lower perceived health

motivation. There was a statistically significant difference in mammography use of

CHWs with higher perceived health motivation and CHWs with lower perceived health motivation ($t(107) = -2.513$, p = .006) as summarized in Table 8.

Table 8

Group Differences for Factors that Influence Mammography Use Between CHWs Who Received or Did Not Receive a Mammogram Within the Past Two Years

Hypo-thesis	Factor	M	SD	t	p
		Health Belief Model Subscales			
H11	Susceptibility	2.07	.88	1.447	.075
H12	Barriers	1.54	.57	7.588	.000*
H13	Benefits	3.90	.61	.060	.476
H14	Health Motivation	4.39	.42	-2.513	.006*
		Social Cognitive Scale for Female Cancer Screening Subscales			
H15	Self-efficacy	4.41	.56	-5.255	.000*
H16	Social Norms	3.05	.52	-0.689	.246

Note. * p < .05, one-tailed.

In multivariate analysis, a logistic regression model was used to determine the predictors of mammography use of CHWs, the dependent variable, while controlling for other independent variables. Logistic regression data analysis explained the relationship between the dependent variable and the categorical and continuous predictor variables. Logistic regression predicts odds ratios as the "probabilities of occurrence over the probability of nonoccurrence" (Munro, 2001, p. 285). In confidence intervals (CI),

values for odds ratios greater than 1 indicate a greater chance of compliance with

mammography use of CHWs and values less than 1 indicate a lesser chance of

compliance with mammography use of CHWs. The value of 1 indicates the variable is

not statistically significant. The 95% confidence levels were calculated for each factor at

$p < .05$. The 95% confidence levels and p-value ($p < .05$) were used in previous

mammography studies in the literature with a sample size less than 200 (Allen, et al.,

1998; Black, et al., 2001; Phillips & Wilbur, 1995). The dependent variable,

mammography use of CHWs within the past two years, was coded as 0 = no

mammogram within past two years and 1 = mammogram within past two years. Age was

recoded as 0 = 40 to 49 years of age and 1 = 50 years of age and older. The selection of

the variables in the preliminary main effects model was based on theoretical frameworks

and influenced by statistical methods and sample size. The minimum observation or

predictor ratio of 10 to 1 as a standard with a minimum sample size of 100 was

recommended for logistic regression to achieve a reasonable level of stability (Peng, et

al., 2002). Five selected variables in the model building were age, barriers, self-efficacy,

health motivation, and social norms. Twelve variables with a p-value $< .25$ were

considered based on the recommendation by Hosmer and Lemeshow (2000). The twelve

variables were age, education, income, regular source of care, CHW behavior influences

others, physician recommendation to get a mammogram, talking with family or friends

about mammograms, barriers, susceptibility, health motivation, self-efficacy, and social

norms. Age was the only significant demographic variable ($p < .05$) in the bivariate

analysis and was chosen for the model. Barriers, self-efficacy, and health motivation

were included in the model since there were strong relationships between these factors

and mammography use of CHWs in the bivariate analysis. Social norms was chosen

based on previous research findings showing an association between peer and family

norms and BSE (Egbert & Parrott, 2001). Physician recommendation to get a

mammogram was considered; however, the variable was dropped after an examination of

the frequency of one as a cell count. Logistic regression models are sensitive to

extremely small cells (Mertler & Vannatta, 2002; Munro, 2001).

Data screening for missing data, outliers, and multicollinearity were examined in

the multivariate model. Values were correctly entered and no cells with a zero cell count

were identified. Mahalanobis distance was used to identify any multivariate outliers by

comparing values for Mahalanobis distance significant at the p-value of $< .001$ to the

chi-square critical value (Mertler & Vannetta, 2002; Tabachnick & Fidell, 1996). Three

cases with missing data and one outlier were deleted. The sample size was reduced to 105

with the elimination of four cases and the sample size met the recommended standard for

a minimum sample size of 100 for logistic regression (Peng, et al., 2002).

Multicollinearity, the interrelatedness of independent variables, was examined using

tolerance statistics. Tolerance is referred to as "the proportion of the variance in a

variable that is not accounted for by the other independent variables" (Munro, 2001, p.

272). Tolerance statistics showed tolerance values greater than .1 for the independent

variables (Mertler & Vannatta, 2002). A tolerance value of 0 indicated perfect

collinearity and .1 indicated no multicollinearity (Metzler & Vannatta, 2002). Therefore,

multicollinearity was not violated in the model.

After the identification of the preliminary main effects model and data screening,

the preliminary final model was tested for possible interactions between age, barriers,

self-efficacy, health motivation, and social norms. Possible interactions were tested in the model by adding the crossproducts of each pair of independent variables. No interactions contributed to the model between age, barriers, self-efficacy, health motivation, and social norms.

The logistic regression results of the final model are presented in Table 9. The logistic regression equation is:

Mammography use = (-1.899) + (-.172)*age + (-3.863)*barriers + (.098)*self-efficacy + (1.581)*health motivation + (1.305)*social norms

The variables were entered simultaneously in the model for theory testing (Peng, et. al., 2002). The logistic model results were based on the overall model fit, statistical tests of predictors using the Wald statistic and Hosmer and Lemeshow goodness-of-fit statistic, and the validation of predicted probabilities. The overall model fit was determined by the amount of improvement of the model with the predictors compared to the baseline model with only the constant (null model). The values for likelihood ratio chi-square tests and -2 Log Likelihood (-2LL), the Deviance, were examined. Based on the values, the logistic model was an improvement compared to the null model. A good model has a smaller value for -2LL and a high likelihood of the observed results (Tabachnick and Fidell, 1996). The Wald statistic tested if the logistic regression coefficients were significantly different than zero however the Wald statistic may not be reliable for small samples (Munro, 2001). Barriers was a significant predictor ($p < .05$) using the Wald statistic. The Hosmer and Lemeshow (H-L) goodness-of-fit statistic assessed the fit of the model against the actual outcomes. The H-L goodness-of-fit statistic indicated the data fit the model (2.702, df $= 8$, $p = .952$) since $p > .05$. In

addition, the Cox & Snell R^2 estimate and Nagelkerke R^2 estimate, a further modification

of the Cox and Snell coefficient, explained 32.2% and 57.5% of the variance in the model

respectively. Predicted probabilities using classification tables with predicted versus

observed values showed that the final model classified accurately 89.5% of the cases.

It should be noted SPSS was used in this study for logistic regression data

analysis and in previous studies for mammography use in the literature (Black, et al.,

2001; Champion & Menon, 1997; Lee, 2003; Miller & Champion, 1997). Based on the

consistent use of SPSS in the previous studies, SPSS was the statistical software package

chosen for this study. However, Peng at al. (2002) reported the goodness-of-fit statistics

computed using SPSS may be a limitation due to computations from individual

observations instead of covariate patterns used in SAS, another statistical software

package. There may be slightly different SAS computations with provisions for reduced-

bias for predicted probabilities (Peng, et al., 2002).

Logistic regression analysis showed that CHWs with fewer barriers were more

likely to get a mammogram after controlling for age, self-efficacy, health motivation, and

social norms (OR = .021, CI = .003, .175). For every 1-unit increase in the barriers score,

the odds of CHWs getting a mammogram decreased 98%. Barriers remained a

statistically significant factor in the bivariate and multivariate analysis. Age, self-

efficacy, and health motivation were not significant in the regression model but were

significant (p < .05) in the bivariate analysis.

Table 9

Summary of Logistic Regression Analysis Predicting Mammography Use of CHWs

Predictor	B	SE	Sig.	Wald	Odds Ratio	95% CI
Age (0 = 40-49)	-.172	.831	.836	.043	.842	.165, 4.294
Barriers*	-3.863	1.083	.000	12.736	.021	.003, .175
Self-efficacy	.098	1.044	.925	.009	1.103	.142, 8.539
Health Motivation	1.581	1.145	.167	1.906	4.860	.515, 45.871
Social Norms	1.305	.888	.142	2.160	3.689	.647, 21.041

	χ^2	df	p
Overall model evaluation:			
Likelihood ratio test	40.783	5	.000
H&L goodness-of-fit	2.702	8	.952
-2LL 45.341			
Cox & Snell R^2 .322			
Nagelkerke R^2 .575			
Overall rate of correct classification 89.5%			

Note. *p < .05

Factors hindering or facilitating mammography use of CHWs.

Qualitative methods were used to explore how and why specific factors that influence mammography use were important to CHWs. The qualitative data using responses from interviews, a focus group, and open-ended questions were analyzed. Two emergent themes were common factors hindering mammography use of CHWs (barriers) and facilitating mammography use of CHWs (provider recommendation to get a mammogram). The themes were illustrated using quotes from adherent and nonadherent CHWs to identify any possible different responses or unexpected responses. The term *adherent* referred to CHWs who received a mammogram within the past two years. The open-ended survey item responses are listed in Appendix D.

CHWs mentioned barriers to get a mammogram even though they learned in training the importance of mammography use and early detection of breast cancer. CHWs reported how their attitudes influenced their decision to get a mammogram. In addition, they found common barriers with family and friends when they talked to them about mammograms.

The three categories of barriers were physical/mental barriers (pain and worry), financial barriers (cost and insurance), and access barriers (time and transportation). Only compliant CHWs reported the barrier of pain as the most common barrier. General descriptions of pain were reported as "it hurts." Specific descriptions of pain were related to the pressure and pinching of the mammography screening equipment. Compliant CHWs tried to help others overcome this barrier. They explained " ... encourage them and let them know that a couple of minutes of pain doesn't compare with years of cancer" and "Discuss what is to be involved and that a slight discomfort may be experienced but

that is minor compared to not having a mammogram." One CHW explained the pain may be a potential reason for noncompliance after receiving the first mammogram. She mentioned, "Anyone who has had a mammogram knows it is uncomfortable so they tend not to like to get them."

CHWs mentioned worry or fear of the unknown such as a misdiagnosis and not knowing what to expect as barriers. They were concerned about the possibility of hearing bad news. They expressed their concerns as "worrying that the doctor may miss something" and "being scared because you don't know what to expect."

Access barriers included the lack of available time with their work schedule, transportation, and inconvenient locations of screening facilities. CHWs explained the difficulties specifically as "scheduling the time off" or "time (work as a live-in)." Only compliant CHWs reported a lack of transportation to travel to the clinic or provider's office as a barrier.

Financial barriers included a concern about cost, money, and lack of health insurance. The most common financial barrier was the lack of money. One CHW noted being responsible for the deductible was a barrier even though she had insurance. She had concerns about her financial responsibility for paying the high deductible.

In contrast, CHWs mentioned they received positive written or verbal messages from their physicians to get a mammogram. They explained that the physicians led the discussions about mammograms during their office visit. These positive words of encouragement were important to the CHWs. In addition, it was clear that using this communication, a physician recommendation to get a mammogram, was very effective for some CHWs. One compliant CHW explained, "I get help from my doctor. She really

encouraged me to get one and it works." Noncompliant CHWs also received

encouragement and reported, "My doctor told me I need to get one" and "My PCP

explained why it is needed after you reach a certain age." However, they did not follow

through to get mammograms.

Only compliant CHWs reported they provided a ride or transportation to the

physician's office or clinic for others and referred others to providers. With

determination and encouragement, they explained, "I keep after them and also have taken

them to get the mammogram" and "I am constantly reminding my friend she needs to

have one. I have offered to take her or just go with her for support."

Self-efficacy and Mammography Use of CHWs

The second research question asked if there was a relationship between self-

efficacy and mammography use. In the bivariate analysis, the results showed self-

efficacy was a statistically significant factor ($p < .05$) that influences mammography use

of CHWs.

Hypothesis 15

The data did support hypothesis 15 stating CHWs with higher perceived self-

efficacy will have higher mammography use than CHWs with lower perceived self-

efficacy. There was a statistically significant difference in mammography use of CHWs

with higher perceived self-efficacy and CHWs with lower perceived self-efficacy ($t(107)$

$= -5.255$, $p = .000$) as summarized in Table 8.

Increasing self-efficacy.

CHWs learned to increase their self-efficacy during CHW training through a combination of observation, self-mastery, verbal persuasion, and emotional arousal. They observed role models such as health educators, patient models in breast cancer educational print materials or videos, and breast cancer survivors as class guest speakers. After training, one CHW explained her pride as a role model because "... people that know what I am doing refer people to me." CHWs also mentioned learning new information about mammography use and early detection of breast cancer in CHW training helped them understand the importance of mammography use. They were more confident in their ability to follow through to get a mammogram. Class activities for self-mastery of breast self-examination (BSE) skills were included in the class instruction. Health educators taught CHWs how to identify breast lumps using small breast models. One CHW mentioned, "I like going out into the community ... a lot of people don't know how to do breast self-exams or the importance of mammograms."

CHWs received encouragement as verbal persuasion to get a mammogram from health educators, family, friends, and co-workers during and after training. One CHW mentioned, "I feel very confident so that if there is anything I am not really sure of, the health educators are always there to answer any questions ... to give correct information to outreach work." Other CHWs explained that the encouragement from family and friends was important.

CHWs gave encouragement to others so that they may follow through to get a mammogram. They shared class handouts and resource materials with family and friends. As a result of the encouragement, other family members or friends were

empowered to change their health behaviors. One CHW coordinated the use of a mobile

mammography van at her church during the weekend. She said, "... I brought the

mammography mobile van to the people where they are to increase the number of people

to get mammograms." She inspired others as a role model to get low cost mammograms

at the convenient church location in her community.

Social Norms and Mammography Use of CHWs

The third research question asked if there was a relationship between social norms

and mammography use. In the bivariate analysis, the results showed there was no

significant relationship between social norms and mammography use of CHWs.

Hypothesis 16

The data did not support hypothesis 16 stating CHWs with greater perceived

social norms will have higher mammography use than CHWs with fewer perceived social

norms. There was no statistically significant difference in mammography use of CHWs

with higher perceived social norms and CHWs with lower perceived social norms ($t(105)$

= -.689, p > .05) as summarized in Table 8.

Reasons for volunteering as CHWs..

CHWs mentioned the importance of volunteering as lay health advisors and the

influence of their informal leadership role in their communities. The four categories

explaining reasons for volunteering included improving their own health, helping family

or friends improve their health, serving in the community, and having a calling to become

CHWs. The responses were not mutually exclusive but were reported separately. First,

the most common reason for volunteering as CHWs was to improve their health. Their

specific interest in health issues included health promotion and overcoming difficulties

with specific diseases such as breast cancer, diabetes, and heart disease. CHWs

explained, "To learn more about health problems and how to deal with them."

Second, helping family or friends become more knowledgeable about adopting

healthy lifestyles was an important reason for volunteering. CHWs were interested in

teaching their family or friends about general or specific health information for diabetes,

cancer, or heart disease. There was a sense of social approval and trust between CHWs

and their family and friends. CHWs were willing to help those who were unaware of

certain illnesses. One CHW explained:

> Some people don't have health insurance, some people don't feel comfortable
>
> going to the doctor, but as an outreach worker, they feel safe and comfortable
>
> with you and you can encourage them to do the right thing.

Third, CHWs responded with a more altruistic view for helping or serving their

community to learn about health issues. CHWs wanted to serve in their minority

community where "there is a need to help minorities especially African Americans to be

smart about their health care." One CHW had an active role in her neighborhood as an

informal leader and she was enthusiastic about helping her community. She explained,

"It was nothing for my neighbors to ask me questions about different things so I thought

why not learn about various health subject problems and spread the word."

Lastly, CHWs explained that a calling or blessing to help in the church while

serving God was an important reason to volunteer as CHWs. The majority of the CHWs

were from different congregations or community groups in their area. CHWs mentioned,

"To help others live healthier as they think on God thru daily prayer and encourage them

to pass it on" and "Being a CHW helps put God's plan in action. I feel God's plan is for me to help people spiritually, physically, and mentally."

Influence of social norms.

Social norms refers to the knowledge of health behaviors and health behavior changes of family or friends. CHWs mentioned they learned the mammography screening behaviors of family and friends and their influence to change health behaviors of family and friends. They talked to family, friends, church members, co-workers, strangers, and sorority sisters in their social networks. They met with family members and friends in mostly one-to-one settings and explained in their own words the benefits of mammograms so that others may understand the message. One CHW explained simply that "... it takes a mammogram to see small dots that you can't feel" and "It's better to know than not know." Another CHW explained her willingness to coordinate activities for church members in a group setting. She explained to church members the importance of getting a mammogram and following through to get a mammogram:

> I have my church involved with Breast Cancer Awareness Month ... I make sure
>
> we have literature at church at that time ... and everyone gets a ribbon at the
>
> church service ... a lot of times people are not aware of things going on because
>
> they are working, they have busy schedules ...

In addition, only compliant CHWs shared their personal or family experiences with breast cancer during discussions about mammography screening behaviors. Overall, 14% of compliant CHWs had a family history of breast cancer and 12% of the noncompliant CHWs had a family history of breast cancer. Compliant CHWs mentioned,

"Because breast cancer is in my family I became a pain in their side until they have one done on a yearly basis" and "I had a lump detected that I did not feel in self-exam ..." Another compliant CHW became more involved to help others after her own personal history. She explained:

> Maybe you get so busy and don't think much of it but breast cancer awareness is so prevalent, you know, and it's openin' your eyes to see it ... So sometimes when it hits home, you are prone to pay attention to it more and really share it and it's something that we have to be aware of ...

Three compliant CHWs mentioned they did not talk to family or friends about getting a mammogram but they knew the mammography screening behaviors of family and friends. They explained that family and friends keep their appointments or "they are fine with mammograms." One CHW also explained that her daughters were not old enough to get mammograms.

Summary

In bivariate analysis, the quantitative results showed seven statistically significant factors (p < .05) that influence mammography use of CHWs. Using one-tailed chi-square tests and Fisher Exact tests, the four statistically significant associations (p < .05) were physician recommendation to get a mammogram (Fisher's Exact test, p < .000), regular source of care ($\chi^2(1) = 4.981$, p = .013), age ($\chi^2(1) = 4.650$, p = .015), and talking with family or friends about mammograms ($\chi^2(1) = 12.756$, p = .000). There were no significant associations between mammography use of CHWs and the individual factors of education, income, health insurance, family history of breast cancer, CHW behavior

influences others, and knowing someone with breast cancer. Using one-tailed

independent t tests, results showed three statistically significant differences (p < .05) for

the means of self-efficacy ($t(107)$ = -5.255, p = .000), barriers ($t(107)$ = 7.588, p = .000),

and health motivation ($t(107)$ = -2.513, p = .006) for mammography use of CHWs.

Barriers were inversely related to mammography use of CHWs. Decreased barriers were

associated with higher mammography use of CHWs. There were no significant

differences between the means of susceptibility, benefits, and social norms that influence

mammography use of CHWs.

In multivariate analysis, logistic regression was used to examine the factors

predicting mammography use of CHWs. Logistic regression analysis revealed barriers as

the significant predictor of mammography use of CHWs (OR = .021, CI = .003, .175)

while controlling for age, self-efficacy, health motivation, and social norms.

The qualitative data analysis showed common themes emphasizing the factors

that hindered or facilitated mammography use, the benefits of increased self-efficacy to

overcome barriers, and the influence of social norms. Pain was the most commonly

reported barrier to get a mammogram. In addition, cost, time, and transportation were

common barriers. Only compliant CHWs reported specific barriers of pain and

transportation, shared their personal or family experiences regarding breast cancer, and

provided transportation to the physician's office or clinic for others to get a mammogram.

CHWs also reported the positive influence of a physician recommendation to get a

mammogram was very important. However, noncompliant CHWs were not able to

overcome their barriers to get a mammogram despite the strong influence of a physician

recommendation to get a mammogram.

In training, CHWs learned how to increase their self-efficacy to take action to get mammograms. Teaching strategies used by health educators included giving verbal persuasion, providing positive messages to build self-efficacy beliefs, and serving as role models to promote mammography use. After training, CHWs also used similar teaching strategies to help family and friends increase their self-efficacy. CHWs reported they had more influence regarding screening mammography behaviors with family members than friends. They knew the mammography screening behaviors of their family and tailored their positive message as trusted informal leaders. In addition, they learned that sharing with family or friends the benefits of getting mammograms was not always the motivator for health behavior change to overcome barriers. They continued to be persistent to help others overcome barriers and understand the importance of mammography use for early detection of breast cancer.

CHAPTER V

DISCUSSION, LIMITATIONS, IMPLICATIONS, AND CONCLUSION

This chapter examines the discussion of the findings, limitations, implications for

practice and future research, implications for future urban research, and the conclusion.

The findings from the quantitative and qualitative data analyses are compared and

integrated in the discussion of findings.

Discussion

This study addressed three questions pertaining to the factors that influence

mammography use of CHWs, the relationship between self-efficacy and mammography

use of CHWs, and the relationship between social norms and mammography use of

CHWs. The findings from this study contribute to the knowledge base of CHW

interventions and training by identifying factors that influence mammography use of

CHWs. Quantitative and qualitative research methods were used to confirm the findings.

The PRECEDE model guided this study as a model combining sociodemographic

factors, beliefs, attitudes, behaviors, availability, and accessibility of resources. The

results highlight the need to use PRECEDE as a comprehensive program planning model.

PRECEDE may be used to identify which places in the CHW training to strengthen. It is

important to identify the precursors to behavior first using a needs assessment in training

before implementing CHW training that influences health behavior change (Bandura,

2004). Otherwise, general training may not target and address specific barriers, regular

source of care, or social norms that may influence health behavior change of CHWs.

Health professionals may be unfamiliar with social settings and cultural factors in a

community since they may not be indigenous members of the CHW community. Thus,

the use of PRECEDE in program development may lead to a culturally and socially

oriented approach to health and insights into cultural and social perspectives (Bandura,

2004). PRECEDE was used in previous studies of mammography use (Black, et al.,

2001; Eng, 1993) and cancer screening studies (Hislop, et al., 2003; Taylor, et al., 1994).

Factors that Influence Mammography Use of CHWs

The first research question addressed the factors that influence mammography use

of CHWs. In multivariate analysis, the only significant predictor of mammography use

of CHWs was barriers while controlling for age, self-efficacy, health motivation, and

social norms. Barriers was also a significant predictor of mammography use in previous

studies of African Americans, Korean Americans, and White women (Black, et al., 2001;

Buelow, et al., 1998; Champion & Menon, 1997; Maxwell, 1998; Miller & Champion,

1997; Phillips & Wilbur, 1995). This finding highlights the need for health educators to

use strategies to help CHWs identify their perceived barriers to mammograms and how

to overcome their barriers. For example, this is very important for health educators to

help the 15.6% nonadherent CHWs in this study work toward 100% compliance since

they are community role models promoting mammography use. Findings also

demonstrate the need to understand how the CHWs help others identify their barriers.

The qualitative findings show how adherent CHWs used their own words in a cultural

context as encouragement to convey messages about mammography use for others.

These combined findings suggest the importance of the perceived trust level between the

family and friends and the CHWs as in previous studies of minority groups (Christopher,

McCormick, Smith, & Christopher, 2005; Fernandez, et al., 2005).

The results of this study indicate the need to incorporate any cultural differences for barriers to get a mammogram into CHW training. For instance, there may be cultural differences for the most commonly reported barrier of pain. Pain was associated with mammography use for African Americans and White women in previous studies (Black, et al., 2001; Miller and Champion, 1997). However, pain was not associated with mammography use in a study of low-income Korean Americans (Maxwell, et al., 1998). One possible explanation may be that Korean Americans are not comfortable discussing pain, fear, or worry with providers (Maxwell, 1998). This may be attributed to Korean cultural values for respect of providers by not questioning providers during the office visit. This was an interesting finding because marketing materials for the promotion of mammography use do not address the latest technology and equipment that reduce possible pain. This suggests materials be developed to include positive messages about the newest technological advancements in mammography screening.

Cost, insurance, and transportation were reported barriers in the qualitative data collection in addition to similar reported barriers in the quantitative data responses such as pain, embarrassment, time, other problems, fear, and age. These unexpected findings suggest the benefits of using a mixed methods design for data collection to provide a more in-depth understanding of the factors that influence mammography use of CHWs. Qualitative methods were used in this study to strengthen the quantitative findings and gain a better understanding for barriers that hindered mammography use not included in the quantitative survey items. Qualitative methods were used to understand how CHWs viewed mammography use and cost, insurance, or transportation. Cost was a barrier in other studies of mammography use for low-income women, women ages 35 to 49, and

noncompliant women ages 50 and older (Champion, 1994; Miller & Champion, 1997; Partin & Slater, 2003). CHWs explained their inability to pay the co-payment or the deductible despite having health insurance. There is a need to include information to locate community resources for low-cost mammograms. In addition, it is important to note that providing free mammograms for low-income women may not always be a solution to lower mammography rates. For example, in a study offering free mammograms for low-income women, mammography rates for women in the no-cost group (69%) were similar to the mammography rates for women in the insurance pay group (66%) (Perlstein, 2003). This suggests that understanding both cost and other barriers as underpinnings to health behavior change are important. Transportation and time from work were identified as barriers by CHWs and this finding was consistent in other studies of mammography use or BSE (Egbert & Parrott, 2003; Maxwell, 1998; Partin & Slater, 2003). Possible explanations may reflect limited week day mammography screening hours during normal working hours, no available weekend mammography screening hours, limited use of a community mobile mammography van, and inflexible work schedules. In addition, the proximity of the work site to the facility may be a problem for CHWs who rely on public transportation. Traveling a distance to the facility may be reflected in lost time from work and lost wages.

A physician recommendation to get a mammogram was strongly associated with mammography use of CHWs in the bivariate analysis. This finding suggests the physician's key role in promoting mammography use during provider-patient interactions as shown in previous studies (Allen, et al., 1998; Black, et al., 2001; Champion & Menon, 1997; Maxwell, et al., 1998; Phillips & Wilbur, 1995; Saha, Arbelaez, & Cooper,

2003). This clearly demonstrates that CHW training focus on conveying the important message to CHWs regarding physician-led discussions about mammograms during office visits. Previous studies confirmed the need for physician-led discussions for minority groups during office visits since there may be embarrassment or fear (Maxwell, et al., 1998; Otero-Sabogal, et al., 2003; Solomon, et al., 2005). The quantitative and qualitative findings add strength to this study to understand how CHWs valued the provider's recommendation to get a mammogram. Discussions initiated by providers building trust with patients were important to CHWs during the office visit (Champion & Menon, 1997; Gochman, 1988; Otero-Sabogal, et al., 2003).

Health motivation was a significant factor that influenced mammography use of CHWs in the bivariate analysis. CHWs with higher health motivation to maintain healthy lifestyles were more likely to get a mammogram than CHWs with lower health motivation. This finding lends support for CHW training to include health promotion and information for healthy lifestyles. This also supports the current trend in health promotion on the individual level for self-management and on the community level for local health campaigns (Bandura, 2004). Few studies in the literature examined health motivation as a factor that influences mammography use or BSE (Graham, 2002; Lee, 2003). In one study, health motivation was not a significant factor for BSE for Korean nurses (Lee, 2003). One explanation may be an increase in health motivation for CHWs after learning new health information during training compared to nurses who have established interests in health concerns.

Previous studies showed an association between mammography use and sociodemographic factors of income, education, age, health insurance, and regular source

of care for minorities and low-income women (Makuc, 1999; O'Malley, et al., 1997; Otero, et al., 2003; Phillips & Wilbur, 1995; Puschel, et al., 2001). This study was different from other studies in that there were fewer significant socioeconomic differences for mammography use. In bivariate analysis, the results showed an association between mammography use and two individual factors, regular source of care and age. One possible explanation may indicate that CHWs with or without insurance may know how to locate community resources for mammography screening and take action to get mammograms. This supports also the importance of effective provider-led discussions to get mammograms. This may suggest CHW training efforts include a better focus on providing resource information for those women who do not know how to navigate through the healthcare system. Furthermore, CHWs 50 years of age or older were more likely to get a mammogram within the past two years than CHWs between the ages of 40 and 49. One explanation may be that training and breast cancer screening education are targeted for women ages 50 and older since the chance to get breast cancer increases with age. These findings suggest the need to include training that is targeted for different age groups in CHW classes. A surprising finding in this study was that income, education, and health insurance were not significant barriers even though 39% had incomes less than $12,000, 49% had 12 years of education or less, and 24% lacked health insurance. This finding indicates that health professionals need to focus on selecting volunteer CHWs who want to participate as role models and health advocates in their neighborhoods. The selection of CHWs may not be beneficial if the selection is based solely on factors such as education and income.

Self-efficacy and Mammography Use of CHWs

The second question in this study addressed the relationship between self-efficacy and mammography use of CHWs. Self-efficacy was a significant factor in the bivariate analysis. Previous studies also suggested an association between self-efficacy and mammography use or BSE for African Americans and White women (Allen, et al., 1998; Egbert & Parrott, 2001; Lee, 2003).

Strategies for effective program development to increase self-efficacy beliefs are needed for effective CHW training to change health behaviors for mammography use. This underscores the importance for health educators to include in training a measurement for self-efficacy beliefs of CHWs. According to Bandura (2004), self-efficacy is related to a specific task. Merely providing factual knowledge in training about breast cancer and assessing knowledge may not capture any cultural barriers and may not focus on self-efficacy beliefs. CHWs would need to know how to acquire skills to use the knowledge to change their health behaviors and influence others. CHWs with lower self-efficacy may have viewed personal barriers with futility and discouragement whereas CHWs with higher self-efficacy may have identified how to follow through to get a mammogram despite their personal barriers (Bandura, 2004).

Social Norms and Mammography Use of CHWs

The third research question in this study addressed the relationship between social norms and mammography use of CHWs. It was hypothesized that CHWs with higher social norms will be more likely to get mammograms than CHWs with lower social norms. The hypothesis was not supported in the bivariate analysis. This was an unexpected finding since CHWs took an active part in their social networks as informal

leaders. One possible explanation is that social networks were already established by the CHWs in their communities and some CHWs may be more comfortable discussing issues such as diabetes or hypertension instead of mammography use with their family or friends. CHWs may influence the set expectations for health behaviors of family, friends, or a group in their social network and this may lead to a better understanding of specific health behaviors (Bandura, 2004; Kegler & Miner, 2004). For example, African Americans may find support within their sister circles as a social network and set expectations for breast cancer screening (Husaini, et al., 2001). In contrast, social norms were associated with mammography use or BSE in previous studies of Korean Americans, women who underutilize mammograms, and White women (Allen, et al., 1998; Egbert & Parrott, 2001; Maxwell, et al., 1998). For instance, Korean Americans who knew if their family or friends had a mammogram were 4.54 times more likely to get a mammogram (Maxwell, 1998). One noteworthy finding in this study was the significant relationship between family norms, one dimension of social norms, and mammography use of CHWs in the bivariate analysis. This finding was confirmed using qualitative methods to understand how family members influenced CHWs to get mammograms more often than peers. In addition, CHWs also influenced family members to get mammograms more often than peers. Clearly, there is a need to emphasize in training how the family can be a support system. Reinforcement for seeking family support for health behavior change and health behavior maintenance may be addressed in CHW training.

Limitations

This study had several limitations for the interpretations of the results. First, the use of self-report of mammography use may limit the study. However, other studies have shown self-report of mammography use by low-income women appeared to be reliable in general (Etzi, et al., 1994; King, Rimer, Trock, Balshem, & Engstrom, 1990).

The sample was a convenience sample of predominantly African American CHWs (89.9%) serving as trained volunteer lay health advisors in urban communities. Findings may be generalized with caution to similar populations of ethnic identity and size. This may limit the generalizability of the findings for this study.

CHWs who did not receive a mammogram within two years (15.6%) may be underrepresented in this study even though the survey return rate was 56%. Different strategies were used to decrease possible nonrespondent bias. A cover letter with the program coordinators' names was designed to promote an increased interest in the survey. An article in the CHW newsletter and verbal messages by program coordinators served as reminders of the importance for the completion and return of the survey. A drawing form for a chance to win department store gift certificates was included in the mailed survey to increase the return rate. A request to contact the nonrespondents was recommended but not approved by the program coordinators.

The study is a cross-sectional design and does not address behavior changes for compliance over time as in a longitudinal study design. Cause and effect cannot be determined using the findings of this study. Any changes in attitudes, beliefs, or self-efficacy over time were not identified in this study design. Compliant CHWs may know the resources for access to care but may have personal barriers such as a painful

experience or cost that may deter them from mammography maintenance after their first mammogram.

Implications for Practice and Future Research

The findings in this study have important implications for CHW program development in training, research, and the use of theoretical frameworks. This study adds to the CHW literature since no studies in the literature were found that identified factors that influence mammography use of CHWs and why the factors were important to CHWs. Previous CHW studies assessed knowledge acquired in training (Earp, et al., 1997), recruitment of CHWs (Farquhar, et al., 2005), or types of social support used by CHWs (Eng, Parker, & Harlan, 1997).

The findings in this study demonstrated that well-targeted CHW training programs may be developed using the comprehensive PRECEDE model and adapted to fit the specific communities using an assessment for the factors that influence mammography use (Bandura, 2004). General training that works in one city with a volunteer CHW group may not work in another city with a different volunteer CHW group. For example, tailoring the training for class participants such as Latinas, African Americans, or Korean Americans may differ. Latinas may have a strong solidarity among their family members and may make decisions collectively as a family (Otero-Sabogal, 2003). African Americans may prefer church-based programs within their social networks (Russell, Champion, & Perkins, 2003). Korean Americans may not choose to get a mammogram if the screening location was a mobile mammography unit (Maxwell, et al., 1998). There may also be similarities between minority groups. For example, African Americans and Latinas may have a fatalistic view of breast cancer

(Hunter, et al., 2004; Miller & Champion, 1997; Otero-Sabogal, et al., 2003; Phillips, Cohen, & Moses, 1999; Powe, 1996). Therefore, some CHWs may be uncomfortable discussing mammography use with family, friends, or providers if they have fatalistic views of breast cancer (Miller & Champion, 1997).

The findings of this study are consistent with other studies (Egbert and Parrott, 2003; Maxwell, 1998; Partin & Slater, 2003) that have identified transportation, cost, and and pain as particularly important barriers to mammography use. Using these findings, program coordinators may be prompted to develop resource information for conveniently located facilities offering low-cost mammograms, local transportation, and the latest technological advancement updates for the reduction of any discomfort during mammography screening. Future practice-based research using quantitative and qualitative methods is needed to support the findings in this study and identify other cultural factors and social norms that influence mammography use of CHWs. Additional studies are needed to explore the barriers of the women served by CHWs and how CHWs influence them to overcome their barriers to get mammograms.

The effectiveness of CHW training may depend in part on how self-efficacy is measured and addressed in training since it has been related consistently to health behavior changes (Bandura, 2004). Health educators may translate theory into practice for CHW training during program development. The use of statements measuring self-efficacy as part of a needs assessment may include, "How certain are you that you could find a medical doctor/nurse to conduct mammograms?" and "How difficult is getting an annual mammogram?" These statements may provide insights into perceived self-efficacy beliefs of class participants. CHWs may have perceptions about their limited

capabilities to get a mammogram that influence their motivation levels and their decision to get a mammogram. Differences in self-efficacy beliefs are important to examine for reinforced health behavior changes over time as shown in a previous study of women who underutilized mammography screenings (Allen, et al., 1998, Phillips & Wilbur, 1995). This may also involve qualitative and quantitative research to identify barriers that may be attributed to underutilization for maintaining mammography use. Additional research is necessary to confirm the findings of this study and contribute to future CHW research for health behavior change and the influence of self-efficacy. Future CHW longitudinal studies are needed to identify normative health behavior change over time and to understand the reasons for a lack of rescreening by some CHWs.

Findings demonstrate that training include role modeling, verbal persuasion, and emotional arousal as teaching strategies to increase self-efficacy beliefs as shown in other studies (Bandura, 2004; Carson, et al., 2002; Oetker-Black, et al., 2003; Schott-Baer & Christensen, 1999). For instance, there was a correlation between self-efficacy and performance of fourth-year medical students for cardiovascular patient nutrition education (Carson, et al., 2002). The faculty served as role models, shared their experiences how to use nutrition education with patients, provided the students with case studies and pocket cards, and discussed in class how to address nutrition education with different patients. In other studies, self-talk and positive messages were taught successfully to patients with asthma (Schott-Baer & Christensen, 1999) or preoperative hysterectomy patients (Oetker-Black, et al., 2003). Training may include the use of guest speakers from minority or low-income communities to serve as breast cancer survivor role models. They may share their emotional stories and emphasize a positive message

about mammography use and early breast cancer detection. Addressing self-efficacy using verbal persuasion such as "I know you will be able to get a mammogram" may positively affect CHW behavior and promote a sense of efficacy (Chowdhury, Endres, & Lanis, 2002). In addition, the use of teaching strategies to aim at health motivation and awareness of healthy lifestyles is important as in previous studies (Rutledge, et al., 2001). Measuring the increase of self-efficacy beliefs in CHW training as a factor that influences mammography use is a promising area for future CHW research.

Findings of this study may prompt program coordinators to develop culturally appropriate CHW materials for effective training. The findings suggest the organization of a minority community health advisory committee to review culturally appropriate materials during development of classroom materials. For example, the development of African American materials as part of social marketing messages may include an emphasis on racial pride (Russell, Champion, & Perkins, 2003). The culturally appropriate materials may use the wording such as "Black women should keep up with issues that are important to the Black community" (Kreuter, et al., 2003, p. 141). Another emphasis may include the phrase *Brothers and Sisters* or a message from a well-known African American role model (Icard, Bourjolly, & Siddiqui, 2003). The development of Hispanic materials may include the use of bright colors, messages to address fatalistic views common to Hispanics, and messages about the importance of family (Kreuter, et al., 2003; Otero-Sabogal, et al., 2003; Powe, 1996). Further research is needed for development of effective culturally appropriate training materials for mammography use.

Provider-patient relationships and cultural competencies of providers may be improved with an understanding of attitudes and beliefs of mammography use of

minority and low-income CHWs. Providers may benefit from the findings of this study to address any specific barriers with their patients for mammography use. When communicating with patients, providers can address the patients' concerns and sensitivity for specific barriers such as embarrassment. Some women who underutilize mammograms may tend to avoid asking questions during the office visit and provider-led discussions are needed (Allen, et al., 1998). The use of simple medical words instead of clinical words may improve provider-patient communication for women with lower education levels or minority women (Otero-Sabogal, et al., 2003). Cancer fatalism may be a cultural barrier that influences health behaviors of African Americans and Latinas and providers may initiate the discussion about these issues (Otero-Sabogal, et al., 2003; Phillips, et al., 1999; Powe, 1996). Nonetheless, CHWs and the community members served by CHWs may develop more trust with providers who begin to understand their cultural differences. Future quantitative and qualitative research may explore the providers' perceptions of mammography use for minority and low-income women and the providers' knowledge of the barriers that influence mammography use for this underserved population. Qualitative research is also needed to explore the attitudes of CHWs related to the care and support given by providers.

In summary, the implications for CHW program development for breast cancer awareness and mammography use and research based on the findings of this study include the use of:

1. needs assessments to identify cultural differences of CHWs based on PRECEDE

2. strategies to measure and increase self-efficacy beliefs of CHWs ages 40 and older

3. culturally appropriate materials for the curriculum

4. effective provider-patient communication

Implications for Future Research

Qualitative and quantitative research studies are needed to examine the relationship of age and mammography use for minority or low-income CHW interventions. This underscores the importance of educational efforts to include information to reach different CHW age groups. For example, African American women ages 48 to 55 were least likely to adhere to mammography guidelines in a previous study (Phillips & Wilbur, 1995). This may help clarify any differences in attitudes about mammograms for women or differences in mammography use for a particular age group.

Future studies should explore how the behavior of CHWs may influence the decisions of family and friends about mammography use and healthy lifestyles. Identifying the types of support received by women served by CHWs can contribute to an understanding of the cultural norms of minority groups as shown in previous studies (Larkey, et al., 2001). In addition, providers and program coordinators may learn how to convey messages for health behavior changes with sensitivity and knowledge of the cultural context for a target population.

The cost effectiveness of low-income or minority CHW interventions for mammography use and the effectiveness of CHW interventions in comparison with other intervention approaches need further exploration. Future research may examine the use of new health care delivery models to include care provided by CHWs as part of a healthcare delivery team. Few previous studies suggest a cost savings using CHW interventions for the promotion of mammography use or asthma education (Anderson, et al., 2002; Krieger, et al., 2005). Additional studies are needed using comparison groups

with various intervention approaches such as mail reminders, internet messages, or telephone reminders to examine the cost-effectiveness of CHW interventions. It is important to examine which intervention works best for a target population that serves low-income or minority communities.

Future studies are needed for the comparison of factors that influence mammography use for CHW interventions recruiting volunteer or paid CHWs. Differences may be identified for adherence, barriers, social norms, or attitudes about mammography use for the two CHW groups. A better understanding of these factors that influence mammography use for volunteer CHWs will benefit program development for tailoring CHW training to meet the needs of the participants.

<div style="text-align:center">Implications for Future Urban Research</div>

This study provides further support for the use of the PRECEDE model in planning health programs in complex urban social settings influenced by group dynamics and social determinants of health (Green & Kreuter, 1991). PRECEDE combined social factors, beliefs, attitudes, behaviors, availability, and accessibility of resources (Green & Kreuter, 1991). Different minority city neighborhoods may be cohesive units or subgroups with unique social norms (Fitzpatrick & LaGory, 2000). For example, there is a steady increase in the number of Hispanics who receive health care services yet there is limited research about specific Hispanic subgroups such as Mexicans or Puerto Ricans (Hunter, et al., 2004). The perception of breast cancer as a personal risk may be overshadowed with how to survive and cope with the daily stress and depression for some low-income minority women in urban areas (Icard, et al., 2003; Schultz, Parker, Israel, Allen, Decarlo, & Lockett, 2002). Future research is needed to support the use of

PRECEDE as a model for CHW interventions promoting mammography use and other independent variables such as stress or types of social support that influence health behavior changes.

Findings demonstrate neighborhoods may have different levels of ability to begin CHW interventions focusing on health promotion or disease prevention programs and may seek partnerships (Merzel & D'Afflitti, 2003). Partnerships may be formed with coalitions, churches, and universities serving the urban areas and the partnerships may help to translate research into practice. The partners may provide assistance with planning focus groups to improve the development of effective program evaluation instruments measuring attitudes, beliefs, and mammography behaviors (Fedder, et al., 2003). Additional research is needed to identify how successful urban CHW interventions work with partnerships and the roles and responsibilities of the partnerships. Future qualitative and quantitative studies are needed to examine the attitudes of CHWs and university partners for sustainability of programs.

Conclusion

The findings of this study provide a clear direction for effective CHW program development and training efforts to include an assessment of the factors that influence mammography use of CHWs. It is not enough to assess the gain in knowledge about mammograms, breast cancer, and breast cancer screening guidelines. The quantitative and qualitative findings demonstrate the importance of identifying barriers that influence mammography use so that training may focus on helping CHWs overcome their barriers. In addition, training may be developed to include measuring and addressing self-efficacy of CHWs, health motivation, and the importance of the provider's recommendation to get

mammograms during office visits. Training may also include the development of materials for different CHW cultural groups with support from a minority community health advisory committee to review culturally appropriate materials.

Comprehensive development of CHW interventions and training may support the use of the PRECEDE model during CHW program development. PRECEDE includes three factors that affect behavior change. Predisposing factors motivate or hinder health behavior changes such as benefits, health motivation, self-efficacy, susceptibility, or barriers. Enabling factors facilitate the motivation to get a mammogram such as having health insurance, income, or a regular place of care. Reinforcing factors serve as support to maintain mammography use such as a physician recommendation to get a mammogram, family history of breast cancer, or social norms.

While improving the health of women in low-income and minority communities, CHW interventions may also influence state and federal public policy. A window of opportunity may open for additional funding for CHW program initiatives and funding for the CHW Technical Assistance Center which provides support for these programs (Kotecki, 2002; Center for Sustainable Health Outreach, 2004). CHW program coordinators may promote their programs using research findings with policymakers. In addition, CHWs may share the positive impact of their roles and become advocates for policy change.

Finally, this study lays the foundation for future CHW research since the findings underscore the need for research efforts in planning effective CHW training to influence health behavior changes. This is important since one of the goals of Healthy People 2010 is the elimination of health disparities. The development of CHW training for minority

and low-income women requires an understanding of health behaviors in a social context. Health educators are faced with a challenge to target CHW training for different cultural CHW groups and tailor their messages (Krueter, et al., 2002). This study may stimulate research questions to develop a fuller understanding of the social context in which CHW interventions occur and the attitudes of CHWs toward mammography use and providers in a larger study. A promising direction for future research includes examining self-efficacy and barriers for different CHW minority groups or age groups serving low-income and minority communities. This study may guide CHW program coordinators to design well-targeted CHW training and teaching strategies that have the greatest potential to reach all CHW class participants in different minority groups.

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APPENDICES

APPENDIX A

RICHMOND CONFIRMATION LETTER

CROSS✝OVER

M i n i s t r y

COMPASSIONATE HEALTH CARE FOR PEOPLE IN NEED

March 14, 2003

Dear Cindy,

I am writing to confirm that you have permission from Cross Over Ministry to send a survey to Lay Health Promoters who volunteer with us. We understand the purpose of this information is to solicit information for your research which you will share with us.

Good Luck,

Marilyn Metzler

Marilyn Metzler, RN, BSN
Health Education Director

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NORFOLK CONFIRMATION LETTER

**Minority Health Coalition
of South Hampton Roads**

5215 Colley Avenue • Norfolk, Virginia 23508
757-625-4248 ext. 21   Fax 757-625-1946

July 8, 2003

To Cindy Kratzke:

We receive your e-mail concerning the meeting. We
also apologize for the delay in returning a reply
to your request.

The Minority Health Coalition of South Hampton
Roads gives you permission to conduct a survey
with the Church Health Ministries   (Community
Health Workers for your dissertation) in the
community health ministry program.

Gloria D. Smith
Minority Health Coalition of South Hampton Roads
5215 Colley Avenue
Norfolk, Virginia 23508
757- 625-4248 ext. 21
757-722-9290 (h)
757-722-8230 (fax)

APPENDIX B

COVER LETTER AND SURVEY

Breast Cancer Screening Survey

- Enclosed you will find a survey about breast cancer screening.
- Understanding the reasons why women do or do not get a mammogram is important.
- An Old Dominion University student is conducting this survey.
- She is interested in breast cancer since she has a family history of breast cancer.

What You Can Do to Help

☺ Volunteer to complete this survey which takes approximately 15 minutes. Filling out the survey indicates you agree to participate.

☺ Remember the survey has no names and the information is kept confidential.

Enter a Drawing

☺ Enter a drawing. Here's a chance to win a $100 Target gift certificate, $100 Wal-Mart gift certificate, or $50 Hecht's gift certificate. To enter the drawing, return the form and the completed survey by November 4, 2003.

☎Questions? Contact Cindy Kratzke in Richmond (804-354-2088) or Dr. Garzon at Old Dominion University (757-683-5250).

* * * * * * * * *

We appreciate your help and cooperation.
Thank you for promoting healthy lifestyles. Your work is very important!

| Marilyn Metzler | Cindy Kratzke |
| Cross Over Ministry | Old Dominion University |

Lay Health Promoter Breast Cancer Screening Survey

Note: All information is confidential. Please answer each question.

A. Your Health and General Questions. Directions: Check a box or write an answer in the blank.

1. What is your health in general? ☐ Excellent ☐ Good ☐ Fair ☐ Poor	
2. Why did you become a Lay Health Promoter?	

3.   What are the three most important things you do as a Lay Health Promoter? (write on back of the sheet if you need more space)
     1.
 	
     2.
 	
     3.	

B. Your Healthy Lifestyle. Directions: Circle the number for each question.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
4. I want to discover health problems early.	1	2	3	4	5
5. Maintaining good health is important to me.	1	2	3	4	5
6. I search for new information to improve my health.	1	2	3	4	5
7. I feel it is important to carry out activities to improve my health.	1	2	3	4	5
8. I eat balanced meals.	1	2	3	4	5
9. I exercise at least 3 times a week.	1	2	3	4	5
10. I have regular health check-ups even when I am not sick.	1	2	3	4	5

(write on back of the sheet if you need more space)	
11. Have you had a mammogram? ☐ Yes ☐ No If no, go to #13	17. If yes, what do they think about getting a mammogram?
12. If yes, when was your most recent mammogram? ☐ within the past year ☐ within the past 2 years ☐ more than 2 years	18. What help or support do you give family members or friends to get a mammogram?
13. What are the difficulties in getting a mammogram?	19. What help or support do you receive to get a mammogram?
14. What are the reasons you get or not get a mammogram?	20. Do you know someone who has or has had breast cancer? ☐ Yes ☐ No If no, go to #22
15. Do your family members or friends encourage you to get a mammogram? ☐ Yes ☐ No	21. If yes, what was her experience like?
16. Do you talk about mammograms with your family or friends? ☐ Yes ☐ No If no, go to #18	22. Have you ever talked about breast cancer with family or friends? ☐ Yes ☐ No

C. Benefits of Getting a Mammogram. Directions: Circle the number for each question.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
23. If I get a mammogram and nothing is found, I don't worry as much about breast cancer.	1	2	3	4	5
24. Having a mammogram will help me find breast lumps early.	1	2	3	4	5
25. If I find a lump through a mammogram, my treatment for breast cancer may not be as bad.	1	2	3	4	5
26. Having a mammogram is the best way for me to find to find a very small lump.	1	2	3	4	5
27. Having a mammogram will decrease my chances of dying from breast cancer.	1	2	3	4	5
28. I believe my CHW behavior affects others.	1	2	3	4	5

D. Your Family/Friends and Cancer Screening. Directions: Circle the number for each question.

	Never	Seldom	Some-times	Fre-quently	Always
29. How often do other women in your family get mammograms?	1	2	3	4	5
30. How often do other women in your family get clinical breast exams? (a doctor or nurse examines the breast for unusual lumps through touch)	1	2	3	4	5
31. How often do other women in your family conduct breast self-exams?	1	2	3	4	5
32. How often do other women in your family get pap tests? (a test to detect cervical cancer)	1	2	3	4	5
33. How often do other women in your area get mammograms?	1	2	3	4	5
34. How often do other women in your area get clinical breast exams?	1	2	3	4	5
35. How often do other women in your area conduct breast self-exams?	1	2	3	4	5
36. How often have you asked someone to help you find a health professional to get a mammogram to detect breast cancer?	1	2	3	4	5
37. How often have you asked someone to help you find a health professional to examine your breasts for signs of cancer?	1	2	3	4	5
38. How often have you asked someone to help you find a health professional to get a pap test?	1	2	3	4	5

E. Difficulties in Cancer Screening. Directions: Circle the number for each question.

	Very Difficult	Difficult	Neutral	Easy	Very Easy
39. How difficult is getting a mammogram?	1	2	3	4	5
40. How difficult is getting an annual clinical breast exam?	1	2	3	4	5
41. How difficult is conducting a breast self-exam?	1	2	3	4	5
42. How difficult is getting a pap test? (a test to detect cervical cancer)	1	2	3	4	5

F. Breast Cancer Screening. Directions: Circle the number for each question.

	Very Uncertain	Uncertain	Neutral	Certain	Very Certain
43. How certain are you that you could recognize unhealthy changes in your breast?	1	2	3	4	5
44. How certain are you that you could find a medical doctor/nurse to help you learn to conduct breast self-examinations?	1	2	3	4	5
45. How certain are you that you can remember to conduct monthly breast self-examinations?	1	2	3	4	5
46. How certain are you that you could find a medical doctor/nurse to conduct mammograms?	1	2	3	4	5
47. How certain are you that you could find a medical doctor/nurse to conduct breast examinations?	1	2	3	4	5
48. How certain are you that you could find a medical doctor/nurse to conduct pap tests?	1	2	3	4	5

G. Breast Cancer Knowledge. Directions: Check the answer for each question.

49. Most breast cancers can be seen on mammograms several years before they can be felt as lumps.
      ☐ True   ☐ False

50. Breast cancer is the leading cause of cancer death in women.
      ☐ True   ☐ False

51. Underarm antiperspirants and underwire bras cause breast cancer.
      ☐ True   ☐ False

52. Having lumpy breasts can increase your risk of developing breast cancer.
      ☐ True   ☐ False

53. Chances of being diagnosed with breast cancer increase with age.
      ☐ True   ☐ False

54. You may get breast cancer even if no one in your family has had breast cancer.
      ☐ True   ☐ False

H. Barriers to Getting a Mammogram. Directions: Circle the number for each question.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
55. I am afraid to have a mammogram because I might find out if something is wrong.	1	2	3	4	5
56. I don't know how to go about getting a mammogram.	1	2	3	4	5
57. Having a mammogram is too embarrassing.	1	2	3	4	5
58. Having a mammogram takes too much time.	1	2	3	4	5
59. Having a mammogram is too painful.	1	2	3	4	5
60. People doing mammograms are rude to women.	1	2	3	4	5
61. Having a mammogram exposes me to unnecessary radiation.	1	2	3	4	5
62. I cannot remember to schedule a mammogram.	1	2	3	4	5
63. I have other problems more important than getting a mammogram.	1	2	3	4	5
64. I am too old to need a routine mammogram.	1	2	3	4	5
65. I am afraid to have a mammogram because I don't understand what will be done.	1	2	3	4	5

I. Your Attitudes about Breast Cancer. Directions: Circle the number for each question.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
66. It is likely I will get breast cancer.	1	2	3	4	5
67. My chances of getting breast cancer in the next few years are great.	1	2	3	4	5
68. I feel I will get breast cancer sometime in my life.	1	2	3	4	5

J. Important Information. Place a check in the box or fill in the blank for each question.

69. Do you have breast cancer or have you had breast cancer? □ Yes □ No	74. What is the highest school grade you finished? □ some high school or grade school □ completed high school or GED □ some college or completed college
70. Is there a family history of breast cancer (such as mother, sister, or daughter)? □ Yes □ No	75. Do you have health insurance? □ Yes □ No
71. What is your age? _____	76. Do you have a regular source of care? □ Yes □ No
72. Are you: □ Married □ Single/Divorced □ Widowed	77. Does your doctor recommend that you get a mammogram? □ Yes □ No
73. Which describes your ethnic group? □ African American □ White □ Hispanic Other _____	78. What is your family income? □ Less than $12,000 □ $12,000 or more

Thank you for participating in this survey! All of this information is confidential.

If you choose to enter the drawing, return the drawing form with completed survey.

If you would like the results of this survey,

please contact Cindy Kratzke at 804-354-2088.

Permission to use Champion's Health Belief Model Scale & Egbert & Parrott's Social Cognitive Scale for Female Cancer Screening.

APPENDIX C

POSTCARD REMINDER

Reminder to Lay Health Promoters

🕑 You received a letter in the mail with a Breast Cancer
The survey results will help your Lay Health Promoter
program with Cross Over Health Center.

🕑 The survey is to understand why women get or do not get a
mammogram.

🕑 The information will be kept confidential with no names.

**Please return the completed survey by Monday, November 3,
2003.**

Here's a Chance to Win a Gift Certificate!

☺ To enter the drawing, return the drawing form and completed survey.
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☎ Questions? Contact Cindy Kratzke (804-354-2088) or Dr. Garzon (757-683-5250) at
Old Dominion University.

APPENDIX D

OPEN-ENDED QUESTIONS AND ANSWERS

No.	Why did you become a Community Health Worker?
1	get more involved in help others
2	get more involved in help others and career
3	to become more knowledgeable various illness preventions and to help others in need
4	so that I could help someone else. May it be mental, physical, or medical. If they are going through any of these I could direct them as to where they can get some help or advice.
5	to learn how to help others about what I was taught, but my husband is to sick for me to go out and help others, and that is what I want to do go out side of my home and help others.
6	to add to my health awareness for myself and immediate family (noncompliant)
7	I want to make a difference in the lives of my family and others by being aware of health problems that affect our community and helping those who need direction or info dealing with their specific concerns about their health. Also, I want to learn about what I can do to maintain my own health.
8	to learn how to teach others, have to take care of them self's and their family's and friend's.
9	I have always wanted to be a nurse. About 5 years ago, I had a chance to do hospice for two years and I loved it.
10	I was greatly helped by the clinic. I wanted to learn more about my own health and better care for myself. Also to meet others with the same reasons. Plus I can help others when and if I can.
11	to use the information as ministry in my church.
12	My husband had a heart trouble and passed away last August. I took care of him for four years.
13	because I was already active in my community and interact with people all the time. It was nothing for my neighbors to ask me questions about different things so I thought why not learn about various health subject problems and spread the word and also be as much help as I can. And because I have a lot of health problems.
14	To be better educated in health care. And to go out and share with others how important knowing about health care and getting health care is.
15	to learn more about good health habits and teach others also
16	Cross Over had a class at Beulah Baptist church
17	blank
18	to be more aware of health problems and be able to help others. Should the need arise. Also, interested in the medical field anyway.
19	blank
20	to learn more about different health issues. To help others in my familys
21	To be more knowledgeable (healthwise) for myself, family, and others.
22	To learn to help myself and others.
23	because I like to participate in classes
24	blank
25	So I could better serve my family and friends healthcare needs.
26	blank
27	blank

No.	Why did you become a Community Health Worker?
28	I wanted to help people.
29	I became a lay health promoter to learn how to better take care of my own health and also to help others.
30	to help inform other people the importance of taking care of yourself by changing the way to eat and live.
31	to learn more about my health in which a lot of information I didn't receive from my doctors. And to share with others how to find out about blood sugar (diabetic) if they did not know.
32	I thought it would prepare me to be of even more help to the community and church family
33	to advocate good health
34	to sharpen my skills and to gain more knowledge of resources available
35	Being a lay health promoter helps me put God's plan in action. I feel God's plan is for me to help people spiritually, physically, and mentally. These things work together.
36	I became a lay health promoter so that I could learn all that I could to help improve the quality of my health and the health of my family and friends.
37	I was interested to know how much, how to change my lifestyle to be in good health, to share to others who need help. (noncompliant)
38	To be able to broaden my knowledge. Learn more about my health. Be able to help to spread it in assist in my church and community.
39	So have the knowledge to be able to assist other people in accident, pain, etc.
40	to learn how to be helpful to others
41	to be able to broaden my knowledge. Learn more about my health. Be able to help to be able to understand health issues. To be able to help other people with health issues.
42	To be able to take care of myself better.
43	To learn how I can help family, friends and other people in my community.
44	blank
45	your program was what I needed to be a church nurse
46	blank
47	enjoy helping others
48	to learn more about health problems, and how to deal with them, and to be able to help other people.
49	learn how to stay healthy, practice good health habits, and learn more about diabetes, and different diseases and health others in any way I can.
50	I became a LHP so I can address a lot of materials and information that I has gotten from the workshops and I deals with a lot of elderly people. And they are thankful for the information.
51	To learn more about health. To try to help others become healthy
52	When I first started with LHP, I feel useless but after I start taking the class I fee important and how I could you the information to help other people.
53	To be more knowledgeable about health issues and know some health information to help myself as well as my family and others if need be.
54	blank
55	To learn more bout my health and to be able to help others.
56	because I thought it was for a good cause.
57	To learn about how to take better care of myself. Educate my family, friends and community on how valuable they are and the need to better educate and care for oneself.

No.	Why did you become a Community Health Worker?
58	Because was at my church my friend take me.
59	to assist others with health issues. Better monitor my health.
60	To get information, to be able to maintain the best possible health for myself and to be able to pass on important information to others.
61	to help the people in my community.
62	being a LHP is beneficial because it give me a chance to help others in a great way.
63	I became a LHP so I could get more knowledge about health.
64	to learn more on health issues.
65	I became a LHP to learn as much as I could to share with my family and neighbors the importance of good health and helping them to improve their health.
66	for educational purposes and to help others stay healthy.
67	to help others.
68	to help educate the community in regard to health problems
69	to receive, and learn more about health problems and how to promote care and treatments in the community, and surrounding neighboring members including church parishes.
70	so I can excess other people w/ their health problems. Also educated myself more.
71	just want to learn more about women and healthy breast and how this illness comes up over them.
72	I became a LHP because one day I could help someone in need and to learn about different parts of the body.
73	to stay informed and up to date.
74	to learn more about health - how I can improve my health. Tell others or help those who are unaware of certain illnesses.
75	I became a LHP because I like helping people and most of all I like helping older people and teenagers.
76	LHP is an excellent program that provides much needed information to the layperson. I also want to involve my faithbased heart health program in the LHP.
77	to improve my community.
78	to learn all about all kinds of different health.
79	to understanding more about my health and other health.
80	to better serve my family, church, and community to better their lives and also to take good care of myself. Also to see as many people as I can to stay healthy.
81	learn about health issues.
82	to help other to about taking there blood pressure.
83	I was personally interested in good health for myself and my family but the more I learned, the more I wanted to know.
84	my interest in health matters, particularly preventive measures.
85	to provide comfort and optimal health care to my church family, my family, and the community.
86	1st out of curiosity to see what was being taught. 2nd. So I may better work with all levels of parishioners and the community.
87	career change, knowledge and experience of everyday health issues. To better care for myself and family.
88	To teach about health. I did not no.
89	to become more aware for my health to help in my community

No.	Why did you become a Community Health Worker?
90	truthfully, it had nothing to do with my being confined on RCJ but I've always wanted to learn about medications, terminology, anatomy, etc. I should be a RN by now. I love helping others!
91	to help others live healthier as they think on God thru daily prayer, and encouraging them to pass it on.
92	to be of help to the community.
93	because I wanted to be able to assist w/health promotion and education in our communities.
94	somebody in my church told me it would be a good experience and I could help people by giving some good information that I had learned.
95	to help people and to talk about health.
96	to help others and myself to live health lives.
97	to gain information so that I may be a blessing to others and my family (noncompliant)
98	I became a LHP to help encourage good health to others.
99	to learn more about the common diseases that plague our people and to learn preventive measures.
100	to learn more about health issues and to share information with others.
101	to learn more about my body and to help others.
102	to help minority esp. African Americans to be smart about their health care to be able to direct / participate actively
103	to bring very important information to my church community; especially those that are income based.
104	my pastor recommend that I will become a good coordinator.
105	blank.
106	blank
107	I am a nurse and our church does not have a health ministry. We have a lot of elderly members and youth.
108	experienced health professional interested in health disparities among African Americans
109	to help our community become more aware of their health needs

No.	What are your difficulties in getting a mammogram?
1	blank
2	you can have breast cancer or any other problems, the need to get a mammogram
3	none only a little painful
4	none really - just squeezing breast on pallet to xray(small breast)
5	none
6	taking the time to do it
7	scheduling conflicts with work or home responsibilities
8	none
9	no insurance, no money
10	transportation
11	no difficulties
12	none Medicare pays every two years
13	the machine I just feel funny having someone else's hands on my breast
14	none
15	discomfort
16	NA
17	none
18	no difficulties
19	I haven't had a problem getting a mammogram
20	technician doesn't set equipment at proper height
21	none
22	the pinching of the machine
23	blank
24	none
25	cost
26	no difficulties
27	don't have the money
28	some people do not have a doctor
29	none
30	none
31	none
32	none
33	none
34	none my PC referral sent to CMC
35	none
36	anyone who has had a mammogram knows it is uncomfortable so they tend not to like to get them.
37	fearful
38	no health insurance for some people
39	blank
40	scheduling the time off
41	not having insurance now
42	to get there to get it
43	none
44	finance

No.	What are your difficulties in getting a mammogram?
45	none
46	blank
47	none
48	none s90/a65
49	test s92/a59
50	pain and been scared because you don't know what to expect
51	health insurance deductible - yearly
52	really not knowing where to go and how to pay to have one done.
53	there is no difficulties for met getting a mammogram maybe others do not know how to find out about mammogram exams
54	the machine that presses on breast
55	blank
56	none
57	myself- I did not have any difficulties
58	not at all
59	NA
60	Has not been a problem I don't know what it will be like with Medicare as primary ins.
61	I was sick at time
62	some women don't have a regular doctor or Insurance
63	none
64	money
65	for me none - for others perhaps monetary reasons or where to go to get one
66	none
67	none
68	none
69	blank
70	pressure from machine
71	blank
72	blank
73	blank
74	none
75	blank
76	none
77	NO TIME
78	just when the machine goes down on your breast it hurt a little
79	I hate
80	none
81	timely appointments at convenient locations
82	none
83	just the general discomfort of the plates
84	conflicting schedules
85	none
86	discomfort due to pressure of xray machine
87	time (work as a live in) and money(no insurance)
88	none

No.	What are your difficulties in getting a mammogram?
89	machine is cold
90	worrying that the doctor may miss something.
91	don't see difficulties in getting a mammogram
92	scheduling an appointment and have to wait so long
93	believe it hurts
94	the machine pressing down on my breast
95	to check for breast cancer
96	no difficulties
97	none
98	there are no difficulties
99	none I have a mammogram once a year
100	none
101	don't know
102	knowledge & money
103	none
104	it hurts
105	none
106	none
107	none
108	none
109	none

No.	What support or help do you give to family and friends to get a mammogram?
1	blank
2	get yourself; self-breast exam, always them make sure you get your mammogram every year
3	encouragement and rides to the office if needed
4	I strongly advise them my family and friends. I tell them it is better to get a mammogram now instead of later.
5	it is very important to check for cancer
6	none
7	urge them to keep track of their appointments or make yearly appointments made
8	I tell them it is very important to have them
9	I encourage all women of age to have it done
10	reiterate that early detection is very vital to their health.
11	tell them about places to go and how simple the screening is
12	I keep after them and also have taken them to get the mammogram
13	because breast cancer is in my family I became a pain in their side until they have one done on a yearly basis
14	that I had a lump detected that I did not feel in self exam. It is very important
15	offer to take them or go with them
16	I tell them it is better to get one instead of not get one.
17	let them know that it is important and it doesn't hurt
18	I advise them to get one to make sure everything is okay.
19	I let them know the importance of self exam as well as getting a mammogram.
20	let them know that they need to have one and it's not a long process. willing to go with them if needed
21	encourage to do so based on age guidelines
22	we talk about not being afraid we talk about not being afraid of the outcome
23	it is important to make early diagnosis
24	my experience
25	no one else in family gets them
26	I tell my friends and family that is very important to have their exams
27	blank
28	I think it is important
29	I tell them to get a mammogram.
30	Right now my daughter is under 30
31	tell them how important it is to have
32	always seek prevention
33	encouragement
34	I share the importance of getting the test.
35	go with them for support
36	I tell them it is necessary for early detection of breast cancer, therefore it could be a life saving procedure.
37	none
38	encourage them to get a mammogram
39	tell them how important. It is
40	I contact my physician or refer people to crossover ministry

No.	What support or help do you give to family and friends to get a mammogram?
41	tell them about risk factors
42	I tell them how important it is to know early if there is a problem
43	need no support; they are fine with mammograms
44	tell them
45	encourage them to get a mammogram
46	blank
47	I go with them, also let them know it don't hurt to get one
48	all my family & friends get mammogram
49	set regular checkup for health reason
50	that you need m. to see what's going on in your breast, and if you have breast cancer and can be protected
51	none
52	Tell them to get one because it could save their life.
53	I remind my daughter each year how important a mammogram exam is for her and myself. I encourage other female friends too.
54	I give literature and phone numbers
55	some think it hurts and some don't know if there is bad news. But I always say it's important to know. And I say I'm here for you.
56	I give them paper about mammograms to read
57	talk with them, follow up, let them know that I care
58	I tell them I need one
59	reminder of the importance
60	Encouragement and letting them know a couple of minutes of pain with years of cancer
61	be there for them and help anyway I can
62	I stress the importance of getting a mammogram every year
63	I tell them it can save their life. I have an Aunt that found a lump and told her if the lump moves it is a cyst. But if it don't move it is cancer. So she went to the Dr. and her lump was breast cancer.
64	pamphlets
65	explain the procedure encourage yearly exam
66	encouragement and offer transportation
67	I encourage them because sometimes you can prevent something before it is too late
68	encourage them just in case
69	encourage females in my family friends and neighbors in all ages starting at 18 excluding self exam. Shower and bathing
70	by talking to them letting them know it's ok
71	if children are in the home, once they become grown ups that time to encourage them girls/women
72	tell them it is the right thing to do
73	give them a ride to the doctor
74	we talk about having one done and what the reports are when they return.
75	I tell them it is very importantly
76	remind them to get one
77	you can get early help in case
78	I encourage them to get them.

No.	What support or help do you give to family and friends to get a mammogram?
79	I tell them it is very important to get a mammogram because I am healthy and I had a spot on my breast. I'm ok it were not cancer
80	talk with them tell them why it should be done and also go to the doctor with them
81	blank
82	blank
83	verbal encouragement
84	discuss what is to be involved and that slight discomfort may be experienced but that is minor compared to not having a mammogram
85	encouragement
86	it is important to make early diagnosis
87	none
88	the one that of age goes.
89	it's better to know than not to know
90	they really keep their appointments.
91	I affirm the positive in getting a mammogram
92	offer to go with them or just remind them of their appointment
93	I can tell them where to go (noncompliant)
94	none
95	blank
96	encourage them to get a mammogram
97	I encourage them because sometimes you can prevent something before it is too late
98	mammogram may be uncomfortable
99	I am constantly reminding my friend she needs to have one. I have offered to take her or just go with her for support
100	usually I speak to friends about mammograms when it is time for mine.
101	we talk about it
102	preach it, encourage it, invite speakers
103	I just stress how important it is to have one.
104	I encourage them that it is very important that every woman should get one whent they turn 40.
105	all get this as part of routine heatlh checkup
106	provide health information and provide them with
107	encouragement and give literature
108	notices and encouragement
109	suggest any help if needed for transportation and encouragement

No.	What help did you receive to get a mammogram?
1	women should get mammograms
2	I started very young after the Lord heal me. So doctors didn't understand every 3 months, 6 months, until doctor release me to 1 year.
3	I get reminders so that I don't forget my appointment
4	blank
5	get one every year
6	from my doctor
7	continued encouragement to keep track of appointments made
8	none
9	I am helping to get help from Cross Over
10	blank
11	DR's referral
12	just told to make sure I go to get it done
13	my mother make a must for all my sisters and I
14	to have it done, it's important to know what's going on with your breast.
15	encouragement
16	Cross Over Ministry
17	I receive support from my family
18	blank
19	blank
20	sometimes financial. Have doctors to monitor progress.
21	insurance coverage
22	my doctor may talk to me about it
23	NA
24	my concern for me
25	None
26	Cross Over Ministry has been very supportive of my mammograms and also being a LHP. I know the importance of them
27	blank
28	I tell them I have had one
29	blank
30	Medicare pays for my mammogram
31	very good help
32	blank
33	blank
34	my PC has explained why it is needed after you are a certain age.
35	I know that I have my health to think about and the mammogram is only there for me to continue being healthy
36	blank
37	none
38	a reminder from my physician
39	blank
40	None: but I wish they were free. The cost is extreme for people without insurance
41	now non employed
42	blank

No.	What help did you receive to get a mammogram?
43	none
44	family
45	blank
46	blank
47	none what so ever
48	I don't need help or support because I get a mammogram every year
49	doctor
50	by reading a lot of articles in the paper, or sending kids and adults that's going threw breast cancer
51	none
52	I got help from my Dr. she really encouraged me to get one and it work.
53	I get a reminder from my doctor office when it is time for my exam.
54	I get help from Cross Over and St. Mary's Hospital
55	blank
56	blank
57	blank
58	not much
59	help from AHA
60	I have had insuranc
61	my friend talks about her mammogram
62	blank
63	blank
64	I had help at that time
65	reminder calls and post cards from physician's office
66	none I don't need any It's a prt of my health plan.
67	my friends and family encourage me
68	blank
69	personal health exams by my physician.
70	good support
71	blank
72	blank
73	blank
74	again from my family daughters and sister
75	blank
76	my GYN always reminds me
77	none
78	they would explain to me before I have it
79	blank
80	support of being a Lay Health Promoter knowing how important of staying healthy
81	blank
82	none
83	OB/GYN
84	support from coworkers who also get regular mammograms and discussions with tenderness, changes in breast
85	Medicare pays for my mammogram
86	my physician recommended and scheduled me for a mammogram

No.	What help did you receive to get a mammogram?
87	none
88	none
89	I go because I am over 40.
90	VCU primary physician 1
91	positive prayer
92	reminders
93	lots of friends talk to me as well as my doctor
94	none
95	blank
96	I just have it done
97	My doctor told me I need to get one.
98	the process do not last long
99	none. 1 I know the importance of having my yearly mammogram
100	doctor send notice each year
101	blank
102	private insurance, reminders by PCP
103	I just know how important it is and I do it yearly.
104	That's the smart thing to do
105	none
106	I'm following recommendation of my physician and keep up with date of last mammogram
107	none
108	none
109	none

VITA

Cynthia M. Kratzke earned a Bachelor of Science with a German Major and English Minor from Shippensburg University, Shippensburg, PA, in 1971. She participated in the Junior Year Abroad Program at the University of Vienna and Goethe Institute. She completed post-graduate work in German at the University of Salzburg. She earned a Master of Science, Training Technology Emphasis (Human Resource Development), with Linguistics electives from Old Dominion University, Norfolk, VA, in 1994. She has been a member of the Phi Kappa Phi Honor Society since 1995.

Cynthia has over fourteen years experience in health care as an educator and senior provider relations consultant. She taught various healthcare courses and developed healthcare computer based training. She is the recipient of the 1993 Martin Luther King Award from Sentara Healthcare for her outstanding cultural diversity work. She conducted workshops for addressing patients with low literacy using her expertise in health care literacy. She is published in a peer-reviewed journal on the topics of critical thinking in the classroom for nurses and effective group work.

Cynthia served in the community as a program evaluator for community health worker programs. She also served in a leadership role as the Eastern Regional Director of the Virginia Public Health Association. She was a member of the CHW Study Resolution Committee coordinated by the Virginia Center for Health Outreach that studied the status, impact, and utilization of community health workers in Virginia.