

## **Abstract**

Health disparities for breast cancer in African American women have been well documented; although they have a lower incidence compared to Non-Hispanic Whites, they experience a higher mortality and additionally, young African American women (less than 50 years old) experience higher prevalence of a more aggressive subtype called basal-like breast cancer. These disparities are tied to socio-economic, environmental and cultural factors. The most effective mechanisms of breast cancer education for this group of women involve culturally-sensitive, direct information provided through a variety of trusted sources, including media, lay community members and health professionals. Although studies have identified specific barriers that impede the relationship and communication between African American women and their health providers, few have examined how health professionals communicate breast cancer risk information to low income and/or African American women. For this reason, the UNC Breast Cancer and the Environment Research Program (UNC BCERP) explored health professionals' communication of breast cancer information with patients, with an emphasis on young African American women. Individual interviews were conducted with 34 health professionals, including physicians, physician assistants, nurses, nurse practitioners, health educators and dietitians. Interviews were transcribed, coded and analyzed based on participants' respective occupations. This paper focuses on how a subset of these professionals, health educators and dietitians, convey breast cancer risk information to African American women, and how they address environmental risk factors with this group. In addition, factors that influenced or hindered their sharing of breast cancer risk information were explored.

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## Introduction

### Breast Cancer

Breast cancer affects both men and women, but is the second leading cause of cancer death in women (ACS, Cancer Facts & Figures, 2012). Breast cancer incidence rates have significantly changed over time with incidence rates for Caucasians and African Americans peaking in the late 1980s. A likely explanation for this recent decline is the advancement of screening technology that could detect earlier stages and various subtypes of breast cancers. Incidence rates for women older than 50 have gradually declined since the early 2000s, which is likely due to the awareness of risks associated with hormone therapies post-menopause (ACS, Breast Cancer Facts; Breast Cancer Facts & Figures, 2011-2012). However, it is estimated in 2013 about 232,340 new cases of breast cancer will be diagnosed in women, and 39,610 women will die from the disease (ACS, Cancer Facts and Figures, 2013).

The most common types of breast cancer are those that originate in the ducts or lobules, which are organs of the breast that are responsible for moving and producing milk, respectively. The severity of breast cancer is determined by whether the cancer is invasive (metastatic) or not and by the stage at diagnosis; the earlier the cancer is detected, the more positive the disease outlook becomes. Molecular and genome-wide studies have revealed four molecular subtypes of breast cancer: luminal A, luminal B, triple negative/basal-like and human epidermal growth factor receptor 2 (HER2) type (Susan G. Komen, Molecular Subtypes of Breast Cancer, 2012). Of these four subtypes, triple-negative/basal-like breast cancers are typically associated with poor prognosis and diagnosis due to the physical characteristics of the tumor(s). This subtype is prevalent among premenopausal African American women (Foulkes et al, 2010). It typically has a poorer prognosis than other subtypes because it lacks estrogen and progesterone receptors as

well as HER2 (Millikan et al, 2008; Susan G. Komen for the Cure, Understanding Breast Cancer, Risk Factors & Prevention, Race & Ethnicity). In literature and health professions alike, the terms “basal-like” and “triple-negative” are commonly used interchangeably. However, current science techniques target misconceptions of these tumor classifications. Basal-like carcinomas express genes that are similar to basal cells—a cell population next to the basement membrane of the breast tissue (Rahka et al., 2008). In most cases, basal-like breast cancers also lack ER, PR and HER2 expression—hence the convention to assume that basal-like and triple-negative breast cancers are synonymous. However, Foulkes et al., (2010) affirm that “clinical, microarray and immunohistochemical data” provide evidence that the two subtypes are not always the same (p 1938). Risk factors for these aggressive subtypes may be different from those related to other types of breast cancer. When compared to women without cancer, women who develop basal-like breast cancer typically reach menopause at younger age, “have a higher body-mass index during their premenopausal years, higher parity and a lower lifetime duration of breastfeeding” (Foulkes et al, 2010, pp 1940-1941).

### Risk Factors

There are a variety of non-modifiable and modifiable risk factors that have been demonstrated to increase breast cancer risk; a basic overview of these factors is provided in Table 1 (revised from Komen.org). Many hereditary and environmental risk factors have the potential to initiate and promote damage or mutations that lead to breast cancer. A woman’s lifetime exposure to estrogen has been shown to impact her breast cancer risk. Therefore, exploring the underlying mechanism of action for certain exposures that occur during critical periods of a woman’s life (“windows of susceptibility”) is significant for understanding the disease (BCERP, 2010).

Continuing experiments are being used to determine the strength of evidence for some of the noted risk factors while some risk factors present conflicting results. For example, “increasing parity is protective against breast cancer in the general population, but the effects of early birth and parity are less in women diagnosed with breast cancer before the age of 40. [In addition], there is a transient increase in the risk of breast cancer after giving birth” (Narod, 2012, p 3). Substantial weight gain and obesity are risk factors of postmenopausal disease (Thomson, 2012); however, there is conflicting epidemiological evidence for the association of specific dietary factors with breast cancer risk. Low-fat, high fiber diets are thought to exhibit modest protective mechanisms against breast cancer risk. Healthy diet choices for breast cancer survivors are believed to be more pronounced in their effects of preventing recurrent disease (Thomson, 2012). On the other hand, data from international comparisons has shown that polyunsaturated and saturated fats have a strong association with breast cancer (Hargreaves et al., 1997). Some studies have shown that diets rich in fiber, as well as the consumption of vegetables, fruits and whole grains, may help reduce circulating levels of estrogen in the body, thereby lowering breast cancer risk (Hargreaves et al, 1997). There is also a growing body of evidence that shows alcohol consumption is associated with breast cancer risk, though the exact mechanism is not completely understood (Thomson, 2012). In addition, certain environmental chemicals have been associated with breast cancer risk. Chemicals that mimic naturally-occurring hormones and their effects are called endocrine disrupting chemicals (EDCs). Some chemicals such as Bisphenol A (BPA) have the capacity to mimic the estrogen hormone (Jenkins et al., 2012). Due to the endocrine-disrupting nature of these chemicals, studies have shown that they are likely associated with breast cancer risk. Other EDCs that persist in the environment and in consumer products are continuously being explored for their association with breast cancer

risk. Investigators in the UNC Breast Cancer and the Environment Research Program (UNC BCERP), which supported this technical report, are performing experiments to further investigate how diet and obesity influences breast cancer risk (UNC BCERP, 2011). In addition, BCERP investigators at other participating universities are exploring how different environmental chemicals influence breast cancer risk.

Table 1: Non-Modifiable & Modifiable Risk Factors of Breast Cancer

<b>Non-Modifiable Risk Factors</b>	<b>Modifiable Risk Factors</b>
Age	Alcohol use
Age at onset of menopause	Contraceptive use
Age at onset of menstrual cycle	Diet
Breast density	Environmental chemicals
Family history (i.e., number of immediate family members who have breast cancer)	Hormone replacement therapy
Gender	Parity/childbirth
Genetics (BRCA1 & BRCA2 genes)	Post-menopausal weight gain

Adapted from: ACS, Breast Cancer, Risk Factors; Susan G. Komen, Breast Cancer, Risk Factors & Prevention; PubMed Health, Breast Cancer <http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0001911/>

### Detection

Early detection and screening measures are the most effective means of prevention for breast cancer. Clinical breast exams (CBEs) are performed by healthcare providers for both premenopausal and post-menopausal women during regular doctor visits. Mammography detects about 80-90% of breast cancers in women lacking symptoms (ACS, Cancer Facts & Figures, 2012). The United States Preventive Task Force (USPTF) guidelines for breast cancer screening currently recommend against health professionals teaching breast self-examinations (BSEs) and suggests regular mammography screening for women ages of 50-74 (USPTF, Screening for Breast Cancer, 2010). However, in years preceding these guidelines, women were encouraged to perform BSEs and to begin mammography screening at an earlier age.

## Health Disparities

Research has shown that discrepancies exist among different ethnic groups' patterns of breast cancer survival and mortality. Breast cancer survival rates have increased substantially within the past 30 years, however a significant racial disparity still remains—black women typically experience shorter survival and higher death rates due to breast cancer, even though the incidence within this group is lower compared to white women (O'Brien et al., 2010). However, African American women ages 40 and younger, experience higher incidence than Non-Hispanic Whites (Atlanta ACS, Breast Cancer Facts & Figures 2012; Cancer Facts & Figures for African Americans 2011). A likely explanation of the overall poor prognosis for African American women may be due to a more aggressive breast cancer subtype (O'Brien et al., 2010).

### *What Factors Put African American Women at Risk?*

Health disparities such as these exist within the African American community for several cancers (Wolff et al., 2003) due to a unique combination of factors that place African Americans at risk for chronic diseases. Numerous studies have attempted to explore these factors in efforts to provide plausible explanations for these disparities. For example, several investigators (Yost et al., 2001; Webster et al., 2008) have evaluated the influence of socioeconomic status, which encompasses a variety of inter-related concepts such as education, health insurance coverage and access to healthcare.

Poor prognosis has been shown to be associated with less favorable breast cancer outcomes in African American women (ACS, Cancer Facts & Figures for African Americans, 2011-2012). The aforementioned factors, as well as others such as lack of knowledge, lack of trust in the healthcare system, and competing priorities possibly all contribute to African American women's lack of appropriate screening behaviors which in turn leads to late detection or diagnosis (Wolff

et al., 2003). Also, African American women's attention is focused primarily on seeking help for immediate issues, rather than on measures of preventative health (Guidry et al., 2003). Along with these clinical and medical barriers, African American women may choose certain health behaviors that generally put them at higher risk for all cancers. For example, food choices and cooking practices historically prevalent in this ethnic group typically involve a diet that is high in fat and low in fiber, such as fried or salted meats and sweetened beverages (Hargreaves et al., 1997).

Due to the prevalence of aggressive subtypes of breast cancer seen in young African American women, the UNC BCERP program aims to study how different factors such as obesity and diet, impact these women's susceptibility to the disease (UNC BCERP, 2011). Investigators are also interested in identifying different types of interventions and tools to better educate and inform young African American women. In doing so, investigators have performed a study to understand the beliefs and attitudes these women have about breast cancer (Allicock et al., 2013). Furthermore, it is also of interest to determine what types of information health professionals convey about breast cancer risk to young African American women. Researchers conducted in-depth interviews with 34 health professionals to better understand their communication of breast cancer risk with African American women. This following paper reports results from a subset of these professionals (i.e. health educators and dietitians) to explore factors that influenced their sharing of breast cancer risk information and how they conveyed this information to African American women.

## **Review of Literature**

The leading causes of death and disability in the United States are chronic diseases such as heart disease, cancer and diabetes (CDC, 2013). Since most chronic diseases are due to a combination of modifiable and non-modifiable risk factors, health communication is a critical mechanism for preventing disease (Hill et al., 2011). Examining barriers to and strategies of risk communication can inform proposed strategies and interventions.

### **Cancer and Risk Communication**

#### **Health Professionals Who Communicate Cancer Risk**

Individuals who are involved in risk communication and education pertaining to cancer prevention, diagnosis and/or care include health professionals ranging from cancer specialists to dietitians and even staff in non-profit agencies. The American Cancer Society provides an extensive list of health professionals who are involved in cancer care and have different roles in communicating risks (ACS, Health Professionals Associated with Cancer Care, 2012). For example, primary care physicians and nurse practitioners are generally those providers who patients visit on a regular basis and with whom they discuss primary health issues or symptoms. Medical specialists such as oncologists are formally trained and educated individuals who diagnose and treat cancer. Dietitians specialize in areas of nutrition with regard to weight management, cancer care, and exercise (ACS, Health Professionals Associated with Cancer Care, 2012). They are also trained to address dietary needs of patients on the basis of clients' pre-existing health concerns/issues. Several research institutes, advocacy groups and non/for-profit agencies have taken on roles in developing and disseminating cancer information to patients as well as those involved in the cancer care continuum. These include (but are not

limited to), the CDC (Centers for Disease Control and Prevention), National Cancer Institute of the National Institutes of Health and the American Cancer Society.

One professional role that is commonly overlooked, and is a focus of this paper, is that of health educators. Johnson and Becker (2011) claim that the role of public health educators goes unnoticed due to the “behind-the-scenes nature” of their services—“when it comes to health-related services provided by health educators, the professional literature is essentially silent” (p 723-724). Health educators are involved in community efforts of raising awareness and education—they play a role in educating individuals about screening as well as specific risk-reducing, preventive health behaviors that can lower cancer risk. In a recent study, investigators analyzed the health-related services provided by public health educators in North Carolina over a 6-year period (Johnson and Becker, 2011). Results showed there was a significant decrease in time spent on chronic disease services in 2007 compared to 2001, while there was a significant increase in time spent on physical activity and nutrition (Johnson and Becker, 2011), likely due to an increase in scientific evidence associating these behaviors with chronic disease prevention. In recent years, lay health advisors (LHAs) have gained recognition for being influential in meeting community needs of health promotion, information and support (Earp et al., 1997). LHAs are individuals to whom members of a community look for guidance, emotional support and tangible assistance (Haber, 2010). LHAs do not possess the same credentials and formal education/training as certified public health educators; however, Earp et al. (1997) suggest these individuals as an intervention of relevance with the potential to approach community issues such as disease. Health promotion programs that involve LHA interventions “identify and train ‘natural helpers’, building on the informal ‘lay helping’ systems that are internal to communities” (Earp et al., 1997, p 433).

### Perceptions of Cancer Risk and Prevention

Existing perceptions and knowledge of cancer prevention among the general public can hinder cancer risk communication provided by health professionals. Hawkins et al. (2010) examined results from the Health Information and Trends Survey (HINTS 2003) to determine the association of individuals' cancer prevention awareness and preventive behaviors. Results showed that the most frequently mentioned cancer prevention strategies included "quit smoking", "better nutrition", "exercise", and "go to the doctor" (p 495). Investigators also found that Hispanics, as well as individuals with lower levels of income or education, cited cancer prevention strategies the least. Goldman et al. (2008) performed interviews with participants who were working or living in "working class" areas to determine their perceptions of cancer prevention. The researchers found that "in conceptualizing cancer risk, for some [participants], personal experience took precedence over scientific information" (p 784). The most frequently mentioned risk factors for cancer included health behaviors such as smoking, diet, tanning bed use, obesity, and nutrition. Some mentioned environmental factors such as exposure to radiation and air/water pollution. Researchers also found that individuals were relatively unaware of the cancer-reducing properties associated with exercise and proper nutrition. These findings imply that working-class individuals may lack familiarity and knowledge of cancer prevention behaviors.

### Barriers to Risk Communication

Research has identified a number of barriers that potentially hinder the process of risk communication. These include barriers that health professionals experience in communicating risk as well as the perceptions of individuals who receive the risk information. For example, research has shown that analysis of physician-patient interactions could provide insight into barriers to risk communication. Fischhoff (1999) noted that in some circumstances, the

“transmitters” (i.e., physicians, providers, etc.) misunderstand and misinterpret their audience by using language that is incomprehensible to patients and often “speak before they listen and undermine their credibility” (p 12). Schwartz et al. (1999) discussed clinicians and other healthcare providers’ unfamiliarity with the discipline of risk communication; they state that few providers receive the appropriate training needed to communicate cancer risks effectively to patients. They also referenced how the “competing demands of clinical practice” place limitations on what clinicians can be expected to cover in time-constrained visits, during which the provider must address the chief complaints of the patient before other concerns are discussed (p 124). Another challenge that Hill et al. (2011) suggested is that providers must be able to accurately calculate and apply risk concepts to individual patients in a way that can be understood as well as motivating.

There is also evidence that individuals’ perceptions of their own risk may influence their desire to manage those risks. For example, Klein et al. (2007) suggested that individual risk perception predicted “risk-reduction practices, health behaviors and processing of cancer information” and that “people who feel more at risk spend more time seeking out and processing information that might be used to reduce their risks” (p 147-148). Health literacy is also a factor that can impede individuals’ risk perceptions. Davis et al. (2002) reported that “an individual’s health literacy may be worse than his or her general literacy” after examining the effects of health literacy on cancer communication in prostate cases (p 135). Investigators showed evidence that patients with poor health literacy had later stages of diagnosis. They concluded that these patients tend to ask fewer questions in provider visits and consultations; therefore, they are at greater risk for limited comprehension and communication. Fischhoff (1999) supported these points in stating that [patients’] knowledge and scientific literacy is often inaccurate and

fragmented. In some cases, patients may be too worried about existing health issues to focus time and energy on managing risks for impending disease. Providers and educators must also consider some patients' incapacity to process and think about numerical information (innumeracy), which is usually "accompanied by low literacy" (Klein et al., 2007, p 149).

#### *Barriers Specific to African Americans*

Some perceptions and messages are specific to African Americans and could potentially hinder their processing of risk information. In a review by Wolff et al. (2003), they addressed African Americans' tendency to access health care only in emergency situations and their limited access to facilities due to the geographic areas in which they live. African Americans typically have other priorities that they are focused on, such as survival needs, which may deter their attention to cancer prevention habits. Members of this racial group are also more likely to accept cancer myths and are often unaware of the connection between cancer and high-risk behaviors (Wolff et al., 2003). In addition, mistrust of the health care system is deeply rooted in African American culture as a result of historic, unethical experiments on minorities, such as the syphilis experiments at Tuskegee (Tuskegee University, About the USPHS Syphilis Study). African Americans are also less likely to be informed about current cancer screening guidelines or motivated by public health messages in mass media or television due to ineffective, insensitive public health messages (Wolff et al., 2003). Kreps (2006) emphasized the need for sensitive, adaptive and culturally-relevant messages for communicating risks to racial and ethnic groups.

Pessimistic, skeptical and fearful attitudes towards cancer prevention also contribute to African Americans' cancer disparities. Niederdeppe et al. (2007) suggest that fatalistic beliefs about cancer prevention may be present among the poor, African Americans and Hispanics. Niederdeppe et al. (2007) analyzed data from the Health Information National Trends Survey

(HINTS 2003) to determine an association between cancer fatalism and three cancer prevention methods: physical activity, non-smoking and fruit/vegetable consumption. Their results showed that the beliefs were “stronger among less educated Americans” but “weaker” when analyzed by race (i.e., comparison of African Americans and Hispanics to Whites) (p 1000). A study by Powe and colleagues (2006) summarized recent research findings in stating how fatalistic cancer perceptions influence cancer-screening decisions. These perceptions are most apparent among minority groups as well as women, the elderly or individuals with lower-level education or income.

Current “data [indicates] that religiosity and spirituality may have a greater influence on health behaviors among African Americans than Caucasians” (Kinney et al., 2002, p 835); however, total reliance on spirituality and faith can have both positive and negative implications for African American women (Barg and Grier, 2008). Kinney et al. (2002) performed a cross-sectional survey among women belonging to a large African American family with the BRCA1 gene in order to determine how religious factors contributed to their beliefs about breast cancer screening behaviors. Their study showed that women who believed that God “exerted control of [their] health state”, adhered less frequently to behaviors/recommendations such as the CBE (clinical breast examination) and mammography, but this was not the case for BSEs (breast self-exams).

Findings from a cultural models study of African American women and breast cancer suggested certain cultural cues inserted in marketed media communications may be responsible for motivating targeted audiences in unintended ways (Barg and Grier, 2008). Nicholson and others (2008) suggested that there may be unintended effects of emphasizing cancer disparities when communicating with African Americans, noting “repeatedly hearing that one’s group is

worse off could lead to active avoidance, devaluation or rejection of the information” (p 2947). In examining African Americans’ reactions to different articles on colorectal cancer, the investigators found that the participants responded more positively toward articles that emphasized “progress” rather than “disparity” or “impact” (p 2950).

### *Overcoming the Barriers: Risk Communication Strategies and Interventions*

Current literature reveals information regarding effective strategies of risk communication. The goal of risk communication is to provide relevant information that is useful and accurate in an understandable language and format, for a particular risk group. Such information may include the nature of risk as well as potential benefits, uncertainties and strategies for managing risk (Fitzpatrick-Lewis et al., 2010). Julian-Reyneir et al. (2003) examined two approaches to risk communication: the probability-based approach and the contextualized approach. Probability-based approaches involve the presentation of numerical information in verbal labels or displays (e.g., frequencies or ratios). Contextualized approaches involve the presentation of risk factors that would “make consequences of risk more salient to the recipient” such as testimonials from individuals who have experienced the health problem or issue (Julian-Reyneir et al., 2003, p 731). Janssen et al. (2012) described the influence of narrative risk communication which “includes real-life, affect-laden information such as a personal story of somebody developing a certain disease” (p 3). This idea of narrative risk communication is similar to the aforementioned contextualized approach.

Interactive multimedia is also a proposed method for more effective risk communication versus that of mass media messages (Strecher et al., 1999). Interactive multimedia provides a means for individuals to “sort out major from minor, proven from suspected, and controllable

from uncontrollable risks.” Interactive multimedia can therefore be used to present risk information, reduce inaccurate risk perceptions and facilitate informed decision making (Strecher et al., 1999). Schwartz et al. (1999) proposed a three- part approach of strategies as a means of improving health risk communication particularly for cancer: inclusion of office-based tools during the clinical encounter, inclusion of patient education to improve patient comprehension and media messages.

Successful interventions have been those directed towards the patient and/or healthcare provider. For example, the PACE (Presenting, Asking, Checking, Expressing) system is a patient-directed intervention designed to improve physician-patient cancer communication as well as patient adherence (Diefenbach et al., 2009). PACE was designed as a communication training tool, “emphasizing the acquisition of [patients’] proficiency in four categories: 1) presenting details about emotions; 2) asking questions; 3) checking their understanding of provided information; and 4) expressing concerns about provider recommendations” (Diefenbach et al., 2009, p 59). An example of a patient-directed intervention would be the patient care model developed/adopted by Johns Hopkins Avon Foundation Breast Center in 1997. Due to the demand for better decision aids, communication and outcomes for patients, multidisciplinary breast care teams were developed. The National Institute for Clinical Excellence strongly suggests due to the complexity of breast cancer, women should be treated by multidisciplinary teams (NICE, 2002). In these teams, multiple professionals from different disciplines contribute opinions based on patient treatment needs, and then a consensus is determined (Johns Hopkins Medicine, 2013).

Provider-directed interventions have included those designed to help healthcare/oncology professionals overcome challenges of cancer patient communication (Diefenbach et al., 2009).

For example, Baile et al. (1999) addressed the issue of limited training and preparation medical oncologists have for dealing with cancer patients' psychological and emotional needs throughout the duration of diagnosis and treatment. Upon utilizing interactive, formal teaching workshops focusing on two primary themes, "breaking bad news" and "managing difficult patient situations", investigators evaluated oncologists' satisfaction and confidence in their own patient communication skills and found improvements in participants' confidence in breaking bad news to patients.

## Breast Cancer Risk Communication

### *Health Professionals: What Influences their Ability to Convey Breast Cancer Risk Information?*

Health professionals play a significant role in educating women about breast health and ways to manage breast cancer risk. However, there is evidence of limitations that may influence these professionals' capacity to communicate with patients. A study by Jenkins et al. (2001) suggested that some colleagues within multidisciplinary breast care teams are largely unaware of each other's role, causing "confusion for patients about diagnoses, prognoses and future management plans," which can lead to "unnecessary distress for patients" and frustrating, unrewarding experiences for team members (Jenkins et al., 2001, p 70). Results of their study revealed that the most 'unforeseen' professional role (according to other team members) was that of the breast nurse specialist (Jenkins et al, 2001).

Prior knowledge, work setting and patient experiences may influence the type of breast health/cancer information providers accept and share with patients. As mentioned previously, providers' inability to accurately convey risk information can impede patients' knowledge and risk-reducing behaviors. In a study by McMullin and others (1994), they discussed a medical-

anthropological approach in examining how physicians' knowledge, experience and work setting (university versus community) influence their perceptions of breast cancer risk factors. In discussing breast cancer risk factors, university-based physicians "did not speculate or stray too far from what was found in contemporary medical literature", nor did they use inferences and cues from patients experiences or other disease risks as the community-based physicians did (p 304).

### Barriers to Breast Cancer Risk Communication

#### *Assessing Women's Knowledge of Breast Cancer Risk Factors*

Katapodi and Aouizerat (2005) explored the existing knowledge of breast cancer risk factors among women from different ethnic backgrounds and found that women's knowledge is incomplete and that they do not often recognize the differences among categories of breast cancer risk factors (i.e., hereditary breast cancer, familial breast cancer and sporadic breast cancer). Results showed that factors that increase a woman's risk for sporadic breast cancer, "such as early age at menarche, late age at menopause, late age at first live birth, and having one or more breast biopsies, were less acknowledged as breast cancer risk factors" (p 621). Also only 57% of the women recognized that aging is a risk factor for breast cancer. Regression analysis showed characteristics that were significantly associated with higher knowledge of risk factors were "education, [having] one or more affected second degree relatives, and being of Ashkenazi Jewish descent" (p 620). Royak-Schaler et al. (2004) investigated African American and Hispanic women's perceptions of breast cancer risk as well as their understanding of specific risk factors and risk-reduction strategies. Results showed women lacked an understanding and familiarity with specific breast cancer types and treatments. Although women revealed some knowledge of certain risks pertaining to environmental exposures and pollutants, others had

misconceptions and limited awareness of breast cancer risk pertaining to contraceptive use and reproductive factors.

#### *Assessing the Role of Patient-Provider Relationships*

Undoubtedly, healthcare providers play an essential role in communicating breast health and/or breast cancer risks to women. They have the capacity to strongly influence a patient's attitudes concerning health, diagnosis and treatment. Unfortunately, in some cases, a woman's perceived barriers can impede professionals' mechanisms of risk communication and health education. Exchange or dialogue during clinical visits ultimately affects the perceived communication and relationships that are built between patients and providers. In order to examine perceptions of communication experiences with healthcare providers, McWilliam et al. (2000) performed in-depth interviews with a small group of Caucasian, breast cancer patients. Women who had experienced positive communication relationships defined feelings that constituted a "working relationship" with their providers, in which themes/phrases such as the following were described: sharing information, relationship building, control and learning to live with breast cancer. Those women who had negative experiences described feelings of "false reassurance [and] poorly timed information" (McWilliam et al., 2000, p 194). Lurie et al. (1997) showed evidence of provider preference and its association with how effectively breast cancer information is received by women in general. They concluded that women who see female physicians have higher rates of breast or cervical cancer screening.

#### *Perspectives of African American women*

Allcock et al. (2013) conducted focus groups of young African American women (ages 18-49) to understand how they interpret and perceive breast cancer information. When women were asked about causes of breast cancer, responses included a range of both non-modifiable and modifiable risk factors such as family history, hormones, lack of exercise and poor diet. Among

their main sources of breast cancer information, women identified those that are relevant to their lives such as television, internet, clinics, magazines and family/friends. They suggested the significance of learning about Robin Roberts' (an African American television personality) experiences as a breast cancer survivor and how this raised their awareness. Allicock and colleagues (2013) found that although the women were aware of a more "aggressive type of breast cancer" that affects African American women, their knowledge of existing subtypes was limited—they were relatively unaware of cancer terms such as "basal-like" or "triple-negative breast cancer." The women also noted that in media, breast cancer is still depicted as a "white woman's disease," in which there is very little portrayal and representation of African American women. This finding is supported by other researchers who have determined that the socially-marketed image of breast cancer is typically that of a middle-class, young white woman (Barg and Grier, 2008).

Casciotti and Klassen (2011) took the work of Lurie and colleagues (1997) a step further by examining the impact that met or unmet provider preference has on regular breast cancer screening for a group of post-menopausal, African American women. Investigators determined that women who had female providers (but no gender preference) were more likely to report having had a mammogram within the past year. They also found women who did not have female providers, but preferred one, were less likely to anticipate having a mammogram within the next couple of years.

Several studies have revealed clinical barriers as well as personal experiences that influence African American women's communication with their healthcare providers. These types of communication barriers affect adherence to mammography screening and even treatment within this target group. Young et al. (2011) mentioned clinical care barriers such as physicians' lack of

communication, interaction, education and referrals for patients pertaining to breast cancer risk information and mammography. Upon interviewing a group of African American breast cancer patients, Sheppard et al. (2011) concluded the relationships that the women had with their providers influenced “their knowledge about their diagnosis” and perceived efficacy and understanding of treatment options, as well as their adherence to recommended treatments (p 1313). They also found that the women were largely unfamiliar with medical terms used to describe their prognosis and breast cancer type (Sheppard et al, 2011). Lende and Lachionodo’s (2009) results from interviews with a group of African American women (ages 40 and older) showed when asked to discuss a negative medical experience, a majority of women talked about their dislike of “doctors who went about ‘their business’ without regard for any fears or questions, focusing instead on the process of diagnosis and treatment.” Allicock et al. (2013) provide evidence of the conflicting messages that pre-menopausal, African American women receive, given that when inquiring about their own breast health concerns, some healthcare providers can be dismissive.

Cultural and psychological factors, “such as fear, distrust, fatalism, and other ‘historic rooted’ factors, are major determinants to participation in [breast cancer prevention and control] interventions by African American women” (Guidry et al., 2003, p 318). Women within this group typically rely on their faith as a means of coping with the disease because it provides them with a sense of strength (Barg and Grier, 2008). Lende and Lachionodo (2009) sought to determine “what shapes African American women’s decisions to screen for breast cancer” and identified three overall concepts: “structural causes, the deficit approach and cultural beliefs” (p 217). These approaches are important for improving screening rates as they address better access, education and services.

### Strategies for Communicating Breast Cancer Risks to Women

Researchers have explored different types of communication formats to determine which health communication and educational approaches women value most as it pertains to their overall health, breast health and cancer education. Studies have shown a variety of educational tools have proven to be effective in communicating issues about breast health and cancer risk to women. These include internet-based tools, media displays, posters, pamphlets, theatre and videos. Bouton et al. (2012) concluded the success of a short, educational video in improving a group of breast cancer patients' overall understanding of breast cancer concepts. Montazeri & Sajadan (2004) reported a group of Iranian women's perceptions concerning poster displays in breast cancer waiting rooms, with about 25 percent of the women indicating that the displays created feelings of anxiety and generated more questions than answers.

Some studies have designed and examined the effectiveness of internet or computer-based programs in meeting consumer needs when communicating breast health/cancer risk information. For example, Ryhänen and colleagues (2011) examined women's use of an internet-based patient aid, the Breast Cancer Patient Pathway (BCPP), while undergoing treatment. They found that the women were pleased with the structure, language and sense of empowerment that the program provided for them. However, women were most displeased with content and instructiveness of the tool: it was reported that there were certain practical examples about breast health missing such as actions to improve well-being (Ryhänen et al, 2011). Another study by Lu et al. (2011) determined how the use of an online health consultation tool improved perceptions of low-income breast cancer patients. They found that "greater use of the service was associated with improvement in patients' perception of health self-efficacy, participation in health care and doctor-patient relationship" (Lu et al., 2011, p 518). They

concluded that use of the tool may provide a means for low-income women to participate in their healthcare decisions more actively by providing them a sense of empowerment and support.

Kreuter et al. (2006) examined the effectiveness of tailored breast cancer information delivered in five community settings (e.g., laundromats, beauty salons, churches, health centers and social service agencies) using computer kiosks. Kiosks were utilized and programmed to assess kiosk-user characteristics and to also assess users' breast cancer or mammography knowledge, perceived barriers and health care experiences. Results showed that kiosks provided at Laundromat facilities were utilized the most and beauty salons the least. Mammography knowledge scores varied greatly between community settings, however, "on average, kiosk users at churches had the highest scores, followed by users at beauty salons, neighborhood health centers, social service agencies and Laundromats" (Kreuter et al., 2006, p 635).

New strategies to overcome barriers such as access to health care facilities are necessary, especially for women who reside in rural areas. Kratzke et al. (2013) explored cell phone/text use, breast cancer information seeking behaviors, and interest among a sample of rural women in New Mexico. Results showed that the cell phone use was higher among younger women, as was the interest in receiving prevention messages. Coincidentally, the prevalence of cell phone use was greater for those with higher incomes, but interest in receiving preventive messages was not—women with lower incomes showed greater interest in receiving these messages. Also Hispanic women showed greater interest than non-Hispanics in receiving prevention messages.

Given some of the limitations of traditional breast health education strategies, Yu et al. (2007) suggested and examined a cultural competency training program for LHAs in breast cancer. Using the health communications model from the National Cancer Institute, Yu and

others (2007) proposed and utilized a two-fold approach (i.e., training and outreach) among Chinese communities in Michigan and found that the program increased the participating LHAs' knowledge and self-efficacy. Yi and Park (2012) examined the effectiveness of trained breast cancer survivors teaching a breast health class to healthy, Korean women. In the class, survivors presented information about "breast cancer, BSE knowledge, skills, performance and self-efficacy". Yi and Park (2012) concluded that the breast health classes produced significant outcomes of breast health education for the women by comparing the pre-education to post-education scores. They determined that survivors' sharing of personal experiences and testimonies encouraged the women to pay attention, while increasing their breast cancer awareness and decreasing the reluctance to talk about breast cancer issues.

#### *Strategies for Communicating Breast Cancer Risk to African American Women*

Specific studies have examined educational tools and materials developed for women in the African American community. Theatre was used by Livingston and others (2009) to communicate information about breast cancer to a population of African American people. Overall, the play increased the community's knowledge and awareness of breast cancer issues as well as the importance of regular screening. In a study performed by Powe and colleagues (2005), they sought to determine whether breast cancer information pamphlets challenged the perceptions and misconceptions of breast cancer for a group of African American women. The pamphlets evaluated were those that had been provided in the waiting areas of community-based primary care centers. The investigators found that the pamphlets failed to challenge certain misperceptions about breast cancer—certain myths, such as "being hit in the breast" or "love bites" as causes of cancer, were not addressed. Also there was no "discussion comparing the effectiveness of mammography and BSE for early detection" or explicit dietary

recommendations pertaining to limiting red meats, and incorporating more fruits and vegetables (Powe et al., 2005, p 203).

#### *Spiritual Values and Breast Cancer Risk Communication*

Holt and colleagues (2003) partnered with African American churches to develop a spiritually-based educational booklet for women and breast cancer. Content within the booklet was purposefully written to stress the importance of breast cancer awareness and breast health while encompassing the women's Christian beliefs, faith and culture. Scriptural messages were incorporated and "the concept that faith can be used to get through the mammogram experience and to ease anxiety" was emphasized (p 41). In follow-up, cognitive responses and feedback provided by African American women showed that the spiritually-based intervention/booklet initiated more responses of "personal connection" and "self-assessment" concerning their own breast health and health behaviors (Holt et al., 2008, p 19).

#### *How Nutrition Interventions Can Influence Breast Cancer Communication*

Due to the association of diet and breast cancer risk, addressing nutrition interventions for African American women is important for modifying their breast cancer risk. Mixed successes of nutrition programs with African American communities have resulted from failures to predict change and incorporate behaviors to which African Americans adhere over time. Hargreaves et al. (1997) postulate the importance of new models that focus on the longitudinal basis of how and why people change their behavior proposing that effective dietary change can be implemented and accelerated in this community by utilizing familiar locations and messengers of nutritional information and by incorporating their "distinct habitual eating patterns" into intervention methods (Hargreaves et al., 1997, p S261).

Robinson (2008) conducted a systematic review of other studies to explore how implementation of the socio-ecological model can influence dietary change for low-income African Americans and identified the importance of incorporating interpersonal, intrapersonal and organizational factors in settings such as restaurants, churches and healthcare organizations. Strategies that targeted intrapersonal factors were focused on providing education on nutrition topics (i.e., label reading and serving sizes), and providing professional dietary counseling. Strategies focused on interpersonal factors included building on family values to influence diet behaviors, while those focusing on organizational factors included establishing businesses that offer healthy foods in underserved areas (i.e., farmers' markets and super markets) and making healthy foods more visible in restaurants. Resnicow et al. (2004) reported the success of incorporating the 'Body and Soul' dietary intervention using lay health members at African American churches while focusing on fruit and vegetable intake. Results showed that at follow-up (6 months) women had greater consumption of fruits and vegetables as well as greater efficacy and motivation to eat fruits and vegetables.

Although there have been several successful interventions pertaining to weight loss and lifestyle changes for breast cancer survivors, none of them have considered the specific needs of African American breast cancer survivors (Stolley et al., 2009). Some studies have suggested that African American women gain more weight than white women post-diagnosis, and that they are greater risk of mortality due to comorbid conditions (Stolley et al., 2009). Stolley et al. (2009) discuss the success of Moving Forward, a pilot, weight loss program (over a 6-month period) which targeted African American breast cancer survivors. The program was structured to provide women with knowledge about the associations of breast cancer with diet, physical activity and weight loss through twice-weekly classes. Results at follow-up showed that women

made several positive changes to their diets and physical activity, following the intervention. Improvements in social support were also noted by the study participants.

*Lay Health Advisors as a Culturally-Competent Approach for Breast Cancer Education*

Given the aforementioned perspectives that African American women have concerning breast cancer, it is important to consider cultural approaches of education for this population. Barg and Grier (2008) suggested that members of racial and ethnic groups share specific experiences and may also share schemas (mental associations) about particular health issues. Authors emphasized the need for establishing cultural model components into breast cancer messages to help eliminate disparities. Guidry et al. (2003) propose that traditional health education methods in promoting breast cancer awareness and prevention have not produced substantial results for African Americans. Therefore, a considerable health promotion approach for minority groups includes programs that implement “specially trained members of the target population to provide group and/or one-on-one health education” (p 320). These specially trained members are known as lay health advisors, lay health educators or lay health workers.

Guidry et al. (2003) provided some examples of community-based, lay health interventions for breast cancer education in African American women such as the Witness Project and the North Carolina Breast Cancer Screening Program. Eng and Smith (1995) further examined the Save Our Sisters Project of North Carolina, and suggest that lay health advisors have the capacity to fulfill three roles: assist individuals, negotiate with professionals for health system support and mobilize health resources. Due to African American women’s “modesty about their bodies and their tendency to give higher priority to the needs of others over their own, women would raise their concerns and questions about breast cancer only with female friends and relatives” (p 25). Eng and Smith (1995) suggested that the best means of “breaking the silence” of breast cancer

was by utilizing an LHA intervention composed of younger, African American women involved in community groups and organizations.

The North Carolina BEAUTY and Health Pilot Study, conducted by colleagues at the UNC Lineberger Comprehensive Cancer Center, (Linnan et al., 2001), suggested the effectiveness of LHA interventions using licensed cosmetologists as a means of disseminating health information to women. Wilson and others (2008) further suggested the effectiveness of this approach for breast cancer education/communication with African American women. Wilson et al. (2008) examined the effectiveness of hair salon stylists as LHAs for African American and Afro-Caribbean women. They concluded that “self-reported exposure to breast health messages in salons was associated with an increased likelihood of reporting having completed monthly breast self-examinations over the past 3 months and to greater levels of behavioral intention to receive a clinical breast examination” (p 223).

## **Summary**

This review emphasizes several factors to consider for breast cancer risk communication with women and, specifically, for African American women. Different barriers exist in the process of cancer/breast cancer risk communication to African American women. Healthcare professionals have the capacity to positively or negatively influence these women’s attitudes and knowledge about breast cancer by way of their communication and relationships with patients. However, depending on their knowledge, education and clinical residence, certain providers are more inclined to share relevant information about breast cancer risk with their patients. In addition, some professionals experience difficulty in addressing certain concepts of risk communication due to their limited familiarity with risk communication and limited time in clinical practice.

Given the identified barriers, perceptions and attitudes African American women experience related to the healthcare system, cancer risk, screening and prevention, there is an increased need for tailored, culturally-sensitive messages in educating this population.

The incorporation of interactive multimedia or spiritual messages in breast health messages has been effective in educating African American women. The use of LHAs has also been documented as an effective strategy in raising African American women's awareness of breast cancer risk. Though the success of these strategies has been documented, their focus has been primarily on screening and surveillance while little attention is given to addressing prevention. Messages about breast cancer prevention typically occur in the context of discussing environmental factors (such as diet) with breast cancer survivors so that they may prevent recurrent disease. This emphasizes a need for interventions that not only promote screening, but educate African American women about breast cancer preventive strategies. In addition, healthcare providers and lay health professionals should be educated and prepared to communicate information about breast cancer risk factors and prevention with African American women.

## **Methods**

### *Sampling, Design and Data Collection*

Investigators from the UNC BCERP interviewed 34 health professionals to determine how they convey breast cancer risk information to African American women. In-depth, in person or phone interviews were conducted to enable investigators to explore the health professionals' attitudes and knowledge about breast cancer risk factors, especially as they pertain to African American women. They recruited these professionals using letters, emails and follow-up phone

calls to various clinics, hospitals, health care centers, health departments and professional health care organizations within rural and urban communities of central North Carolina. Participants were considered eligible according to three criteria: 1) their service in either of the following professions (physician, physician assistant, nurse, nurse practitioner, health educator or registered dietitian), 2) employment status in central North Carolina and 3) if they served female patients. Efforts were made to recruit providers serving African American women using community demographic data; however that principle was not a screening criterion. An interview guide was developed to assess the health professionals' approaches to conveying breast cancer information to women. Investigators inquired about professionals' main health concerns for women, as well as their perceptions of breast cancer risk knowledge and awareness among women. Participants were also asked to describe their use of educational tools in communicating breast cancer risk to women. Each professional's knowledge of breast cancer related terms was assessed using a series of questions. All study procedures, including recruitment, design and data collection, were approved by the Institutional Review Board at the University of North Carolina at Chapel Hill. Qualitative interviews were performed among a sample of 34 health care professionals. To accommodate the participants' needs, investigators allowed them to choose an interview location, and the interviews were kept at a maximum of 60 minutes. All interviews were recorded and transcribed. Upon completing the interviews, participants were given an option to complete a demographic survey. Data collection was completed prior to my involvement in the project.

### Data Analysis

UNC BCERP investigators coded and analyzed interview transcripts for the health professionals. The responsibility of analysis was allocated evenly among three team members—

interviews were analyzed in pairs based on respective categories of profession (physicians/physician assistants, nurses/nurse practitioners and health educators/dietitians). For this report, I analyzed responses from health educators and dietitians, which included a subset of 11 health professionals—9 health educators and 2 dietitians. (*See Table 2 for demographics of the entire survey population; it was not possible to separate out this subset in the demographic data.*)

Analysis of transcribed interviews involved an iterative process of independent review and collaborative discussions. Primary analysis involved independent review of transcribed interviews with an initial assessment of key topics and emerging themes by each team member, followed by the team convening to discuss emerging topics/themes. Independent, secondary analysis was then conducted using the following categories as a guide for text abstraction: 1) knowledge of breast cancer risks among clients; 2a) information conveyed by health professionals to clients; 2b) technical information used and discussed by health professionals; 3) barriers in communicating breast cancer risk to clients; 4) tools used to communicate/educate clients about breast cancer risk; 5) information and training needs of professionals and 6) the influence of patient race or socioeconomic status (SES) on provider communication. In addition, transcripts were analyzed for evidence of professionals serving low income and/or African American women (due to UNC BCERP focusing on this population) and these data were used to identify specific populations served by health educators and dietitians. (*See Table 3 for populations served by health educators and dietitians.*) Following several rounds of transcript coding and analysis, the UNC BCERP team met to discuss and organize findings for a currently developing manuscript.

Table 2: Demographics of Health Professionals

	<b>% OF RESPONDENTS (n = 34)</b>
<b>Occupation</b>	
Dietitian	6% (2)
Health Educator	26% (9)
Nurse	32% (11)
Nurse Practitioner	6% (2)
Physician	15% (5)
Physician Assistant	6% (2)
<b>Education</b>	
2-Year College Degree	9% (3)
4-Year College Degree	29% (10)
Graduate or Professional Degree	47% (16)
Other	3% (1)
Missing	12% (4)
<b>Years in Profession, y</b>	
0-4	26% (9)
10-19	26% (9)
20 or above	35% (12)
Missing	12% (4)
<b>Age, y</b>	
18-29	15% (5)
30-39	21% (7)
40-49	15% (5)
50-59	32% (11)

60 or above	6% (2)
Missing	12% (4)
<b>Gender</b>	
Female	100% (34)
Male	--
<b>Race/Ethnicity</b>	
Black or African American	35% (12)
White	53% (18)
Hispanic	3% (1)
Missing	9% (3)

Table 3: Specific Populations Served by Health Educators and Dietitians

<b>Interview Participant</b>	<b>Populations Served</b>
#1, D	Overweight women/children; low income, underinsured
#9, D	Low income, minorities (African Americans and Hispanics) and younger women
#2, HE	African American women
#3, HE	Under/un-insured women
#4, HE	Seniors; low income
#5, HE	Women before/in child-bearing years
#6, HE	African American women
#7, HE	African American women
#8, HE	African American women
#10, HE	Women with low financial resources; Hispanic, African and African American women
#11, HE	Diverse group of employees at healthcare company

## Results

### Health Professionals General Health/Breast Health Concerns for Patients

In describing their general concerns for their patients, one health educator reflected on experiences helping women manage chronic diseases, saying:

*"And not just in older women, in all age groups, physical activity and nutrition or lack thereof are typically the risk factors for probably 75% of the chronic diseases out there. So really that was my main concern, not to really focus on one specific disease, but just try to create a curriculum where I was encompassing all of them, with a focus primarily on physical activity and nutrition." (#4, HE)*

One dietitian expressed her concern for patients' lack of access to healthy, affordable foods:

*"My main concern is actually [women's] lack of access to good nutritional food in terms of having affordable healthy food." (#9; D)*

Additionally, one professional described her concerns with the USPTF breast cancer guidelines, but asserted her own opinions of how to educate women about their breast cancer risk:

*"...my only concern is making sure that they're getting their annual mammograms. However, I know about the controversy a few years back with the Federal task force and recommending every other year. But that would be my concern, and the reason is because we do screen these women once a year..."*

*"the only other thing is women knowing how to check their breasts for lumps. Again, going back to the task force, they have certain recommendations about that, and they felt it was not cost-*

*effective. But I'm of the belief personally that women should still know how to check their breasts for lumps because of the fact that there are breast changes over time."* (#10; HE)

In the following table, information is presented regarding health educators and dietitians' general health concerns and breast health concerns they have for their clients. In discussing their general health concerns, professionals mentioned clients' lack of resources, access to healthcare and management of chronic diseases through healthy behaviors. On the other hand, when professionals were asked about the concerns they have for women's breast health, most answered with phrases pertaining to women's limited awareness of breast cancer risk as well as the importance of breast cancer screening.

Table 4: Health Professionals' Concerns for Clients

<b>Interview Participant</b>	<b>General Health Concerns</b>	<b>Breast Health Concerns</b>
#1, D	Being overweight	n/a
#9, D	Lack of access to healthy, affordable foods	Lack of knowledge Lack of awareness of risk factors Not discussing family cancer/medical history
#2, HE	Lack of resources Misinformed and lack of health awareness/information	n/a
#3, HE	Lack of appropriate access to medical care, insurance coverage	Women don't want to know if they have a problem because they are concerned with physical appearance/body image
#4, HE	Access to healthcare Management of chronic diseases Physical activity and nutrition to prevent chronic illnesses	Difficulty getting older women to participate in activities dealing with breast cancer
#5, HE	Women's health before pregnancy and how it affects child	Mistrust of healthcare system, which prevents clients from seeking care

<b>Interview Participant</b>	<b>General Health Concerns</b>	<b>Breast Health Concerns</b>
#6, HE	Preventive care for underinsured	Self-detection (BSEs) and insurance coverage
#7, HE	Preventive care and proper screenings	Early detection Breasts are considered sexual organs Clients more concerned with personal appearance/image than aggressive/invasive breast cancer treatments
#8, HE	Regular doctor visits and screening Women should be taking advantage of resources and programs	Regular visits/screens, mammograms Some older women have never had a mammogram Barriers to follow-up/care
#10, HE	Barriers such as transportation, insurance coverage and treatment	Annual mammograms Controversy between Federal Task Force's recommendations/implementations and what should be conveyed to patients BSEs, becoming aware of body and breast changes
#11, HE	Awareness of potential risks for diseases	Increase in breast cancer risk with age Importance of BSEs

### Facilitators of Breast Cancer Risk Communication for Health Educators and Dietitians

These health professionals' experiences presented opportunities and ways to convey breast cancer risk information to these women. These health professionals asserted that the women they serve have limited knowledge of breast cancer risk. In most cases, it was evident that these professionals' frames of reference (e.g. occupations, miscellaneous activities and personal experiences) were influential in conveying breast cancer information to women. For example, one health educator (a breast cancer survivor) described her open communication of breast health

with community members, as well as her expression of the significance of “knowing your breasts” and early detection. Another health educator described how her volunteer experiences with Save our Sisters (of Raleigh, NC) and the IWILL program (at the NC Correctional Center for Women) enabled her to convey breast cancer information on a frequent basis. Likewise, these frames of reference were also reflected in their general health/breast health concerns about the women they served. (See Table 4 for health concerns of women served.)

### Factors that Hindered Communication of Breast Cancer Risk Information

Health professionals’ limited awareness, knowledge and/or familiarity with certain breast cancer related topics potentially hindered their communication of breast cancer risk information with African American women. A dietitian admitted that her knowledge of breast health/cancer information was limited, which presented her with little opportunity to discuss breast cancer:

*“I don’t think I know that much about breast cancer, so [women] might know a little less than me.” (#9, D)*

Overall, health professionals indicated limited familiarity of molecular breast cancer subtypes such as basal-like and triple-negative breast cancer (see Table 5). Those who expressed familiarity with these subtypes affirmed it by associating the terms with phrases pertaining to its “aggressiveness” or “prevalence in the African American community”. However, more health professionals were aware of the term “triple-negative breast cancer” than “basal-like breast cancer”. Also, when asked about their familiarity or knowledge of terms such as “targeted therapy” and “genomics” a majority of professionals answered with uncertainty or by using unsupported affirmations.

Table 5: Health Professionals' Knowledge of Terms

<b>Terms</b>	<b>Knowledge</b>	<b>Health Educators &amp; Dietitians (n=11)</b>
Basal-like BC	Yes	9% (1)
	Uncertain or Unsupported	36% (4)
	No	55% (6)
BC subtypes	Yes	
	Uncertain or Unsupported	36% (4)
	No	64% (7)
Clinical trials for cancer	Yes	18% (2)
	Uncertain or Unsupported	82% (9)
	No	
Genomics	Yes	
	Uncertain or Unsupported	82% (9)
	No	18% (2)
Targeted therapy	Yes	9% (1)
	Uncertain or Unsupported	82% (9)
	No	
Triple-negative BC	Yes	36% (4)
	Uncertain or Unsupported	27% (3)
	No	36% (4)

Other barriers in addressing or conveying breast health/cancer information to women were related to the health professionals' perceptions of women's pressing health issues as well as their knowledge and attitudes about cancer. One dietitian discussed her perceptions of women's pressing health issues and how this presented a barrier for discussing breast cancer risk:

*"There're way too many other problems. We're so busy putting out fires that are right there in front of us. Breast cancer and issues like cancer...gets ignored because the fire drill is happening right now, and they have to do something about that." (#9; D)*

Statements made by dietitians reaffirmed certain difficulties in cancer risk communication to women. One dietitian described difficulties in communicating cancer prevention overall, while another elaborated on women's reluctance to talk about cancer:

*"They're more concerned about what's going on in the present rather than a lot of the preventative things." (#1, D)*

*"I think cancer is very much, it's like a no-talk zone." (#9, D)*

One health educator even mentioned some misconceptions women have pertaining to their breast cancer risk:

*"I think there's still the strong [misunderstanding] of I don't have breast cancer in my family so I'm not at risk." (#6; HE)*

Health professionals' perceptions of African American women's beliefs about the health care system, breast cancer and religion were also mentioned as barriers to breast cancer risk communication. One health educator discussed the distrust of the health care system that commonly persists in the African American community. Another health educator discussed her difficulties in encouraging senior women (mostly African American), to participate in breast cancer activities, due to their complete reliance on religious faith:

*"...in the African American community, there's no trust of the medical system based on history. The things that have happened in the past still haunt us in terms of providers..." (#6, HE)*

*"...just getting them to participate in anything that had to do with breast cancer was difficult. They would kinda shy away from it...I think religion had a lot to do with it. I would often hear women say if I was handing them a flier or something, they'd say, 'I'm not gonna claim that.' As if to say by acknowledging it, you're welcoming it into your being." (#4, HE)*

*"A lot of participants were very carefree. Kind of, well you know, 'I'll leave it in the hands of the Lord,' type mentality." (#4; HE)*

With regards to socioeconomic status (SES), several professionals mentioned income as a barrier that prevented women from adopting recommended cancer/breast cancer risk-reduction strategies. On the other hand, some professionals noted certain women may not be able to understand certain risk information based on their educational status.

*"[I'd] talk about eating healthy and things like that, and the first response I would always get, 'well, it's too expensive to eat healthy.'" (#4, HE)*

*"...[when] I talked to much more high income or at least moderate income people, they had a better understanding of basic nutrition knowledge. So, I was able to take it to the next level with these people, where we were talking about eating a plant-based diet to prevent getting cancer or to deal with cancers that have already occurred. Whereas with the low income population, maybe some of them would understand that there's a direct correlation in how you're eating and how it's going to affect your chance of getting cancer. But for a vast majority, I doubt it. They don't even understand that eating 5 tortillas is going to be harmful for diabetes. We're talking really basic knowledge." (#9, D)*

Some health professionals also mentioned their patients' limited literacy as barriers to using technical terms. However, in some cases, women's limited literacy presented opportunities for

health professionals to utilize creative ways to convey risk information. For example, one dietitian commented on her general use of lay terms rather than technical terms, to help convey important nutrition information:

*"...there are certain things that I try to just kinda dumb down in my explanation. I use a lot of metaphors to try to help people understand things, and that seems to click..." (#1, D)*

Other barriers were revealed such as administrative/organizational resistance to discussing certain breast-related concepts. Interestingly, one health educator described her reluctance to talk about breastfeeding with women due to negative undertones and lack of interest portrayed by her supervisor concerning the "breast [as] a sexual object."

*"...I don't know exactly why, but there was some resistance to me talking about breastfeeding, and so I think there can be sometimes organizational resistance." (#5; HE)*

### Health Professionals Communication of Breast Cancer Risk

Regarding the information they convey to women, health professionals responded with various terms related to either of three topics: chronic disease prevention, breast cancer surveillance or cancer/breast cancer prevention. Most often, health professionals addressed health promotion topics such as nutrition and exercise in the context of a broad category of chronic diseases (see Table 6).

*"...we always encourage women to take care of themselves. Because if you take care of the one that you can modify, you're reducing your risk. So healthy weight, eating fruits and vegetables and less processed foods and that sorta thing. You know and I think physical activity and nutrition, I mean across the board of chronic diseases, you know that's just the main two things that you can control." (#3; HE)*

When prompted with questions specifically pertaining to breast cancer risk communication, a majority of professionals expressed their communication of information related to breast cancer surveillance and screening. For instance, one health educator stated the following:

*"...we just wanna make sure women are getting their screenings...doing breast-self exams, just so that they're familiar with their body. It's more of a breast health awareness with them. Then also having their clinical breast exam." (#3; HE)*

*"So I focus on mammograms and self-breast exam and knowing your body is what I focus on usually." (#7; HE)*

In addition, some professionals mentioned their communication of non-modifiable risk factors of breast cancer, such as age, ethnicity, and family history.

*"Age, the fact that they're a woman that they're more at risk [of breast cancer]. The fact that as they continue to get older, that they're more at risk. That they're African American, that they're more at risk." (#8; HE)*

*"...if your mother or your sister was affected by breast cancer, your risk may be increased..." (#8; HE)*

When cancer/breast cancer prevention was addressed, most health professionals mentioned risk factors pertaining to diet and physical activity (see Table 6).

*"A lot of times what I'm promoting more is the 'be active, eat healthy' messages. 'Eat your fruits, vegetables...lean meats', those types of things is what I more often talk about. But I think that those things do help prevent cancer and so that's more of what I would talk about..." (#5; HE)*

However, in a few cases, discussion also included certain modifiable environmental risk factors (see Tables 6 and 7). One health educator mentioned three specific environmental risk factors related to breast cancer risk such as “high fat foods”, “processed foods” and “environmental toxins” (see Tables 6 and 7).

*“...we go over controllable risk factors, which you know smoking, the diet, physical activity or inactivity, the high-fat foods. We go over the risk factors that you know genetics, age the things that you can't necessarily change. And then we go over more recently you know like toxins and just things in the environment that may contribute.” (#3, HE)*

One dietitian mentioned that women tend to have limited awareness as to how “charred” and “red meats” increase cancer risk. However, she asserted that when in a professional position (such as her) women “tend to take your word for it.”

*“For example, charred meat. If you burn your meat, you have a higher risk for cancer. Okay, I believe you. Red meat, that's why a lot of people are avoiding red meat. They don't know why they're being told to avoid red meat, but that's one of the reasons is because they have higher cancer risks. And um they're like oh I never knew that, but they just kind of accept it and believe you just because they have no other knowledge about it really. They've heard the myth, but they don't know the background behind it. So I think they do just tend to believe you; don't know if they really believe you enough to act upon it, but they do tend to take your word for it.” (#1, D)*

Table 6: Information Conveyed to Women: Surveillance vs. Prevention

Interview	Chronic Disease Prevention	Related Term(s)	Breast Cancer Surveillance	Related Term(s)	Breast & Cancer Prevention	Related Term(s)
#1; D	√	- Promoting healthy eating & weight loss	n/a	n/a	√	- Charred meats, red meats increase risk for cancer

Interview	Chronic Disease Prevention	Related Term(s)	Breast Cancer Surveillance	Related Term(s)	Breast & Cancer Prevention	Related Term(s)
						- Correlation of breast cancer risk with weight (depends on patient)
#9; D	n/a	n/a	√	- Annual exams; BSEs; regular communication with primary provider	√	- Eating plant-based diet (fruits/vegetables) to prevent cancer
#2; HE	√	- Healthy eating and exercise; keeping your body healthy	√	- Teach BSEs; mammograms	√	- Healthy eating and exercise
#3; HE <sub>1</sub>	√	- Encourage women to take care of themselves; - Nutrition and physical activity	√	- BSEs; CBEs; - Get screenings and become familiar with body	√	- Smoking, diet, physical activity - High fat foods; healthy weight; eating fruits/vegetables, less processed foods; - Environmental toxins
#4; HE	√	- Physical activity and nutrition	√	- Regular doctor visits and screenings	√	- Risk factors related to cancer overall: physical activity and nutrition; not smoking - Risk factors related to triple-negative BC: smoking, high blood pressure, etc.
#5; HE	√	- Address obesity, strokes, heart disease - Physical activity, nutrition	√	- Do some promotion around BC: tools to focus on BSEs	√	- Physical activity and eating healthy to prevent cancer
#6; HE	n/a	n/a	√	- Early detection (BSEs, self-detection);	√	- Couple breast cancer info to healthy lifestyles:

Interview	Chronic Disease Prevention	Related Term(s)	Breast Cancer Surveillance	Related Term(s)	Breast & Cancer Prevention	Related Term(s)
				encourage follow-up		watch what you eat and moving more (diet, physical activity)
#7; HE	n/a	n/a	√	- Importance of mammograms; BSEs; normal vs. abnormal	n/a	n/a
#8; HE	n/a	n/a	√	- Mammograms BSEs	√	- Discusses BMI, diet, exercise and smoking as it relates to breast cancer risk
#10; HE	n/a	n/a	√	- BC early detection; mammogram once a year; Teach women how to do BSEs	√	- Obesity/inactivity related to breast cancer risk - Making healthy food choices to prevent breast cancer
#11; HE	n/a	n/a	√	- Newsletters sent out about BC; encourage BSEs but don't teach them	√	- Discusses risk factors pertaining to cancer risk overall: diet, weight, exercise

Table 7: Information Conveyed about Environmental Risk Factors related to Overall Cancer or Breast Cancer Prevention

Categories of Environmental Risk Factors	n	%
Physical activity	8	73
Overall diet	7	64
Weight/BMI/obesity	5	45
Smoking	3	27
Fruit/vegetable intake	2	18
Charred meats *	1	9
Red meats *	1	9
Processed foods **	1	9
High fat foods **	1	9

Environmental toxins **	1	9
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\* One participant identified these two factors

\*\* One participant identified these three factors

In general, a majority of these professionals' services and education were focused on the prevention of chronic disease and surveillance of breast cancer. Professionals addressing cancer/breast cancer prevention focused mostly on risk factors related to physical activity and overall nutrition; and very few professionals mentioned specific environmental risk factors that are associated with cancer risk.

### Suggested Strategies and Educational Tools Used to Communicate Breast Cancer Risk Information

These health professionals stated the effectiveness of particular strategies in conveying breast health information, and suggested others that are needed. One health educator elaborated on the significance of the community and lay members' roles in communicating breast cancer information with women:

*"I think everything is about building relationships with people in the community. I think that is like the essential component. And cause then you develop trust. Even if it's just like an organization, or a community member, and so one of the things I have done in the past is I worked with some beauticians. And I do believe they are a good resource to have if you're trying to promote something like breast health because you're sitting in the chair and they can tell you about it." (#5, HE)*

Another health educator discussed the effectiveness of narratives provided by breast cancer survivors:

*"Whenever we go out and do presentations, we like to take our survivors with us, because they give such a great testimony..." (#10, HE)*

Another discussed the need for more technology-friendly tools to educate younger women about breast cancer risk:

*"As we try to educate younger women, I think we lack the resource of technology about reaching this younger generation. They are first of all, they like to be entertained, and they're real technology-savvy. So if we had resources in place that we could zap out a huge email blast or send something to their phones [via] text, you know in terms of preventative messages along the way." (#6, HE)*

Along with these aforementioned strategies, health professionals also described their use of different educational tools that help them convey breast cancer risk information to women (see Table 8).

Table 8: Educational Tools used by Health Professionals

<b>Interview Participant</b>	<b>Educational Tools for Chronic Disease</b>	<b>Educational Tools for Cancer &amp; Breast Cancer</b>
#1; D	Food models to help with portion sizes Visuals (i.e. soda bottles/sugar) Food logs/records	n/a
#9; D	Food models to demonstrate portion sizes Food labels Paper handouts/booklets Websites (i.e. nutritionfacts.com)	Handouts about plant-based diet in preventing cancer
#2; HE	Toolkits and fliers	Breast models (in 3 different sizes) Different cancer brochures
#3; HE		Breast models Breast necklaces (to symbolize different lump sizes) Shower cards

Interview Participant	Educational Tools for Chronic Disease	Educational Tools for Cancer & Breast Cancer
		Komen materials used to address prevention
#4; HE		Visual representation of BC burden using "breast cancer button chair"
#5; HE	Toolkit for women's health (i.e. heart health and general health)	Shower cards & pamphlets
#6; HE		Brochures One-pagers w/ graphics Fliers Public service announcements (PSAs) Webinars and websites
#7; HE		Breast models Brochures and pamphlets Shower cards
#8; HE	Health Reimbursement Account/Arrangement for women to fill out and guide them through questions Handouts on diet	
#10; HE		Breast models Breast diagram display board
#11; HE	Newsletters and online newsletters Exercise classes Lunch-n-learns	Newsletters and online newsletters Health fairs

## **Discussion**

Different factors were found to determine the likelihood of health educators and dietitians discussing breast cancer risk information with African American women. These health professionals emphasized conveying information that was most relevant according to their frames of reference, which involved their respective occupations and, professional and personal experiences. For example, dietitians elaborated on women's access to healthy foods or proper nutrition as a mechanism of weight management; however, this information was not always addressed in the context of breast cancer risk. These individuals' professional and personal experiences also influenced how breast cancer risk information was communicated. For

example, one health educator's affiliations with volunteer organizations provided her with frequent opportunities to discuss breast cancer information with women. Another health educator's personal experiences as a breast cancer survivor played a role in her open discussions of breast cancer risk. One health educator expressed her knowledge and concerns regarding the USPTF's breast cancer guidelines. In general, health educators discussed their concerns related to African American women's health care access and breast cancer screening behaviors.

Results from this study showed that health educators and dietitians commonly addressed their perceptions of African American women's lack of trust in the healthcare system; other investigators like Wolff et al. (2003) and Guidry et al. (2003) have reported this lack of trust as a barrier to cancer risk communication within the African American community. Health educators and dietitians also suggested that African American women's fatalistic perceptions about cancer/breast cancer were barriers to risk communication, another perspective that has been cited in literature (Guidry et al., 2003). Research has shown that religious belief plays a role in African American culture—though the reliance on faith encompasses concepts of “strength” and “hope”, it may also encourage the dismissal of certain messages related to breast cancer (Barg & Grier, 2008; Kinney et al., 2002). Results from this study showed these spiritual beliefs presented barriers to health educators and dietitians' conversations with patients/clients related to breast cancer screening and prevention. In discussing other perceived barriers to addressing cancer prevention, health professionals also mentioned African American women's reported tendency to focus on current pressing issues rather than prevention which has also been reported as a barrier to cancer risk communication by investigators such as Wolff et al. (2003). Furthermore, health professionals acknowledged the difficulty that African American women may experience in adopting certain breast cancer risk-reduction behaviors due to their limited

awareness or financial resources to enact such behaviors. African American women's literacy was another barrier that was addressed by health professionals. Some health educators and dietitians described limiting their use of technical terms due to their perceptions of some women's limited health literacy or lack of education.

Health professionals can play a significant role in conveying breast cancer risk information to African American women. However, limitations to professionals' knowledge and awareness of breast cancer can also hinder the transmission of risk information. For example, results showed that dietitians' general focus on nutrition limited awareness of breast cancer risk factors, which impeded the discussion of breast cancer risk information with women served. Interestingly, more health professionals were familiar with the term "triple-negative breast cancer" compared to "basal-like breast cancer". This could be an indication of the confusion that arises based on the use of these terms interchangeably/synonymously in various healthcare professions, which has been reported in literature (Rahka et al., 2008; Foulkes et al. 2010). However, professionals who were aware of the term "triple-negative breast cancer" usually associated their familiarity with discussions concerning the subtype's aggressiveness and prevalence in African American women.

The ways that information was conveyed to African American women varied among these health professionals. A majority of health educators and dietitians reported educating women about chronic disease prevention and breast cancer surveillance, while a subset focused on cancer/breast cancer prevention. Professionals who discussed overall chronic disease prevention emphasized phrases such as "healthy eating", "weight loss", and "physical activity." Some addressed terms related to cancer in general and proceeded to use these as opportunities to discuss breast cancer risk factors with African American women. Health professionals who

addressed breast cancer surveillance with African American women commonly used terms such as BSEs (breast-self exams), CBEs (clinical breast exams) and mammograms. Although there were some health professionals who addressed modifiable and non-modifiable risk factors of cancer, interestingly, there was a considerable gap for those who addressed environmental risk factors of the disease. Also, very few associated specific, environmental or lifestyle risks with discussions about breast cancer. Among the health professionals who addressed environmental risk factors, only a few of them mentioned diet-related factors like “charred meats”, “high fat foods” and “BMI”. One health educator mentioned her recent discussions of “environmental toxins” associated with breast cancer risk. A few professionals cited specific risk reduction strategies such as eating a “plant based diet” and less “processed foods”.

Educational tools used by health educators and dietitians varied based on the context of their discussions about surveillance, chronic disease or cancer prevention with African American women. These tools included breast models, visual demonstrations (such as food labels), handouts and pamphlets. Most professionals mentioned their use of different visual demonstrations and handouts related to chronic disease prevention. Interestingly, a majority of educational tools used pertaining to breast cancer were those intended for surveillance rather than prevention of the disease. Only a subset of these professionals addressed tools that were specific for addressing cancer prevention. For example, one health educator mentioned the use of materials provided by Susan G. Komen to address breast cancer prevention. One dietitian mentioned handouts specific for helping educate women about the association of plant-based diets and cancer prevention.

Health professionals also suggested the effectiveness and needs for specific strategies to enhance breast health/cancer risk communication with African American women. Some

elaborated on the use of lay health education in which community members, such as cosmetologists or breast cancer survivors, educate and raise awareness about breast health/cancer risk. The use of mobile phone technology was also cited as a strategy needed to promote breast health messages among younger women. Notably, these strategies have been supported in the literature as effective mechanisms of conveying breast cancer risk communication to African American women as well as other minority groups (Guidry et al., 2003; Eng & Smith, 1995; Linnan et al., 2001).

## **Limitations**

The choice to conduct in-depth interviews rather than administer a survey limited the ability to generalize the results of this research and also resulted in small sample size. These interviews provided an opportunity for health professionals to openly answer queries and offer insights into their sharing of breast cancer risk information with African American women. However, this discussion-format limited investigators ability to use traditional assessment tools to determine the accuracy of health professionals' knowledge of breast cancer risk factors and breast cancer terminology.

The wide scope of these discussions also limited the investigators' ability to probe other significant factors that may affect health professionals' knowledge and comfort levels in addressing breast cancer risk. Specifically, although health professionals' were asked to discuss ways they are kept informed about breast health research within their respective occupations, they were not asked to elaborate on the content and effectiveness of specific courses or training involving cancer prevention or breast cancer risk communication; nor were they asked to discuss courses related to their formal education/certification. Additionally, they were not asked to

provide information on the specific characteristics or the effectiveness of cancer prevention tools that they used to educate low income and African American women.

## **Future Studies & Recommendations**

It is clear that health educators and dietitians are relatively unaware of certain terms and factors associated with breast cancer risk; this presents a barrier to their communication of accurate and appropriate information to their clients. Potentially, their lack of awareness could be due to a variety of factors. These health professionals may lack appropriate on-the-job training or education when pursuing formal certification or licensure within their respective professions. Additionally, these professionals may be uninformed about current research topics related to cancer and breast cancer risk or prevention. Future study should include the examination of the educational curricula required for these health professionals' degrees and certification as a means to identify areas/courses that could incorporate discussions of risk communication, cancer risk and prevention. For BCERP, specific interventions such as workshop training and education could be provided utilizing BCERP's ongoing partnerships, and the effectiveness of these interventions could be tested using in-depth assessment of health professionals' knowledge of cancer risk and prevention strategies, possibly through the use of pre- and post-workshop surveys or questionnaires.

UNC BCERP should develop materials that are specific to these professionals' frames of reference to teaching and preparing health educators and dietitians for breast cancer risk communication with African American women. For example, materials for dietitians should consist of different ways to incorporate discussions about cancer/breast cancer risk in the context of nutrition. Other materials should be used to prepare health educators and dietitians to address

how certain environmental factors, such as diet and obesity, relate to breast cancer risk. Results showed that health professionals perceived income to be a barrier for some women adopting cancer preventive behaviors such as eating healthy meals. Therefore, these health professionals should also be given information that would help them identify different food options for African American women on fixed incomes. Since some of these women are likely to depend on government food assistance programs, professionals should also be prepared to use educational materials or demonstrations to help clients compare monetary costs and health benefits for different food items allowed under these programs. Health educators and dietitians should also consider enforcing small changes that can be made in typical meals, such as less salt or butter. Utilizing social support groups to address healthier eating behaviors (i.e., food selection, grocery shopping, and meal preparation) may also be effective for African American women (Crump et al., 2006).

Undoubtedly, it is not enough to discuss the implementation of future interventions without considering their courses of action or effectiveness. It is clear that health educators and dietitians need to be better educated in order to adequately convey information about cancer/breast cancer risk and prevention to clients. Given the fragmented and underdeveloped characteristics of some continuing education courses for health professionals (Committee on Planning and Continuing Health Professional Education Institute, 2010), it is critical to determine other effective ways of equipping health professionals with current knowledge pertaining to their fields. However, further research is needed to identify how likely health professionals are to incorporate novel concepts and knowledge into their clinical practices or community education. In addition, different means of educating these professionals about breast cancer risk communication and prevention should be investigated. Further consideration of these topics

could prove insightful for improving the effectiveness of healthcare professionals' communication of breast cancer risk and corresponding risk factors with African American women.

## **Conclusion**

African American women's perceptions of cancer, breast cancer risk and prevention influence how likely they are to receive breast cancer risk information provided by health professionals. Additionally, income and education may present barriers for African American women to adopt certain breast cancer risk-reducing behaviors. Health educators and dietitians' role in the continuum of health care and risk communication is significantly different compared to other health professionals. The frequency and ways in which these health professionals convey breast cancer risk information to African American women are based on a variety of factors. Health educators are presented with different scheduling flexibilities and avenues for reaching African American communities through their professional and personal experiences and activities with volunteer organizations. Dietitians have a unique opportunity to communicate specific dietary behaviors to manage current health issues and reduce cancer risk. However, these professionals' communication of environmental risk factors associated with breast cancer is limited, as is their communication around breast cancer prevention generally.

The most effective breast health communication and education strategies for reaching African American women acknowledge the cultural needs of this group and incorporate culturally-sensitive messages. However, there is still a need to educate these women about the environmental risk factors associated with breast cancer. Health care providers generally have competing priorities and limited time to address specific breast cancer preventive measures

(Schwartz et al., 1999). This study showed that health educators and dietitians are likely presented with more time and opportunities than other health care professionals for presenting breast health information to African American women. However, these professionals' knowledge of breast cancer terminology and risk factors is limited. Therefore, future interventions are needed to prepare these professionals to address breast cancer, risk factors (especially modifiable risk factors) and prevention more effectively with African American women.

### **Practicum Experience: NC Breast and Cervical Cancer Control Program**

Several statewide programs have been created to address the burden of breast cancer for women of all ethnicities and the North Carolina Breast and Cervical Cancer Control Program (NC BCCCP) is one example. The NC BCCCP is a federally-funded program that offers free or low-cost mammogram and pap screenings for eligible women; it targets low income, uninsured and under-insured/minority women who lack the necessary resources for obtaining regular cancer screenings, with a special focus on outreach and education (NC DHHS, 2012). The NC BCCCP's outreach and health education initiatives include programming to raise breast cancer awareness for women in regions throughout the state, with enhanced efforts during the month of October. The NC BCCCP is also a community partner of the UNC BCERP.

A recent practicum experience with the NC BCCCP enabled me to gain a greater appreciation of outreach and education as they pertain to public health efforts focused on reducing the burden of breast cancer in the African American community. This opportunity also enabled me to experience several competencies within the context of environmental and public health. Under the supervision of Shannon Dupree, public health program consultant for the NC

BCCCP, I served as an intern with primary duties being assigned in program management and collaboration. Throughout the summer I worked on planning and organizing "Living Longer, Living Stronger," the second annual Breast Cancer Awareness Event which was held in Lenoir County on October 5, 2012. Initial planning involved traveling to Lenoir County with Mrs. Dupree to meet with Rhonda Ward, a health educator with the Lenoir County Health Department. We shared ideas about choosing a venue and the program format. In preparation for our meeting, I researched several places in Kinston as possible, appropriate and accessible venues for the event. In planning the program agenda, we also considered different professionals who would serve as informative and persuasive speakers for breast cancer awareness. Following the decision to host the event at The Gate Community Center of Lenoir County and throughout the summer, I diligently worked through the event planning and organization with Mrs. Dupree, editing, updating and collecting registration forms, letters and donation request forms, as well as researching and contacting local professionals, businesses and community-based organizations. I sought speakers for the panel (most of whom were breast cancer survivors) who could identify with, and successfully convey thought-provoking information to the target audience of breast cancer advocates and the broader community in Lenoir and surrounding communities.

My involvement as a graduate research assistant for UNC BCERP and intern for NC BCCCP provided a unique perspective when participating at the Breast Cancer Awareness Event. This event presented an opportunity for health professionals, non-profits, advocacy groups, survivors and lay health members to gather and promote breast cancer awareness among a diverse group of women (a majority of whom were African American). During the event, I noticed common themes in which different professionals and speakers were emphasizing the importance of screening and "knowing your family history", but little attention was given to prevention in the

context of environmental risk factors. This presented an opportunity for me to represent UNC BCERP—to portray the health disparities that exist for the disease and elaborate on current research being done involving specific environmental (modifiable) risk factors that affect the African American community.

I greatly appreciated how this practicum fit with my technical report work, allowing me to witness first-hand the significance of my research. I gained a great deal of public health experience from this practicum; however, the skills learned are incomparable to the meaningful moments that I experienced. It was very rewarding to see the organization and collaboration come to fruition at the Breast Cancer Awareness Event. I witnessed the warm smiles of women as survivors spoke of their testimonies of fear and hope. I watched as a diverse group of women portrayed their interest in supporting other women like themselves. At the start of the program, I remember standing at the UNC BCERP exhibit table discussing ongoing scientific research and community outreach activities involved in reducing the burden of breast cancer. Shortly after, a young man approached me with questions. I began to talk about the staggering statistics and health disparities of breast cancer as they relate to African American women versus other ethnic groups. Much to my surprise, I later found out that this young man was Mr. B.J. Murphy, the mayor of Kinston. Later, the mayor gave a heartfelt, opening speech describing his sister's battle with leukemia during their childhood. He addressed the significance of research, commitment and support as it pertains to fighting cancer. In his closing, he said that he learned two facts about breast cancer, one of those being that "although white women tend to get [it] more often, black women die more due to breast cancer." Instantly, I was reminded of my reason for pursuing a public health career.

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