BREAST CANCER RISK PERCEPTION, KNOWLEDGE, ATTITUDES, BELIEFS AND SCREENING BEHAVIORS OF CHAMORRO WOMEN IN GUAM

by

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DEDICATION

I dedicate my doctoral dissertation to my husband Jose, my strongest supporter in his everlasting love and encouragement and constant reminder that I can do this. That God will help me, and that San Antonio will find and guide my way as well. I Love you!

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ABSTRACT

Background: Breast cancer is a serious public health issue in Guam and in the world. Chamorro women in Guam have the highest incidence and mortality rates of breast cancer among other ethnic groups of women living in Guam. Early detection reduces breast cancer morbidity and mortality. Little is known regarding factors associated with Chamorro women's breast cancer screening behaviors.

Purpose: This qualitative descriptive study was designed to obtain a straight forward description of perspectives and insights of Chamorro women in Guam ages 45 – 65 years, about their breast cancer risk perception, knowledge, attitudes, beliefs and breast cancer screening behaviors.

Sample: A purposeful sample of 15 participants yielded broad insights and rich data regarding breast cancer risk perception, knowledge, attitudes, beliefs and breast cancer screening behaviors of Chamorro women. The sample size was determined by "data saturation".

Methods: The researcher conducted four focus group interviews to gain broad insight using open-ended questions. Interviews were audio-recorded, transcribed and analyzed using qualitative content analysis.

Findings: Data analysis ascertained the following categories: risk perception, knowledge, attitudes, beliefs, behaviors including motivators, benefits and barriers towards breast cancer screening. Identified subcategories: perceived breast cancer risk as multiple family members' diagnoses of breast cancer. Breast cancer knowledge was sparse with responses addressing not knowing about breast cancer, however, participants alluded that early detection towards breast cancer was the key to breast cancer screening. Cultural beliefs in suruhana/suruhano was not causing or treat cancer. Staying healthy by eating healthy foods and exercising were behaviors in

living a healthy life as a breast cancer screening behavior. Screening motivators were knowing family or friends with breast cancer, mammogram reminders, and having a health insurance coverage. Overall there was a consensus of the benefits of mammogram and the need for early detection notwithstanding barriers such as painful mammograms, hurtful comments from health care providers.

Conclusion: Findings contributes to literature and future studies about Chamorro women breast cancer risk perception, knowledge, attitudes, beliefs and behaviors as well as motivators, benefits and barriers to breast cancer screening. The study contributes to nursing knowledge and practice in understanding breast cancer in women and their families within the social context as Chamorros.

CHAPTER 1: INTRODUCTION

Breast cancer is the most diagnosed cancer in women living in Guåhan (Guam). Chamorro women who are indigenous to Guam have the highest rate of breast cancer. Although Guam has geographic, cultural, and healthcare challenges, breast cancer screening is available to most women in Guam, yet breast cancer incidence and mortality rates continue to rise in Guam. The proposed study was designed to identify factors that could influence breast cancer screening by Chamorro women living in Guam. This chapter describes the background and problem, the significance of the study, the purpose and research questions, and the philosophical and theoretical perspectives underpinning the research.

Background

Breast cancer is the most commonly diagnosed cancer worldwide other than skin cancers (Torre et al., 2015). Approximately 252,710 new breast cancer cases and 40,610 deaths in the U.S. were estimated in 2017 (ACS, 2017b). Breast cancer incidence and mortality in women Guam continue to rise, especially among Chamorro women who are indigenous to Guam. Breast cancer is the second leading cause of cancer death among Native Hawaiian and Pacific Islander (NHPI) women (ACS, 2017b; Hixson, Hepler, & Kim, 2014).

Guam is an incorporated U.S. territory. It is the largest and the southernmost island in the Mariana archipelago in the North Pacific, located approximately 1,500 miles east of the Philippines and Tokyo, Japan, and 3,700 miles southwest of Honolulu, Hawaii, with a population of 170,853. Guam is also seven miles southwest of the “Challenger Deep” Mariana Trench, the deepest part of the earth’s ocean floor (Mariana Trench, 2016). The map of Guam to illustrate its presence in the in Asia Pacific region is shown in Figure 1.

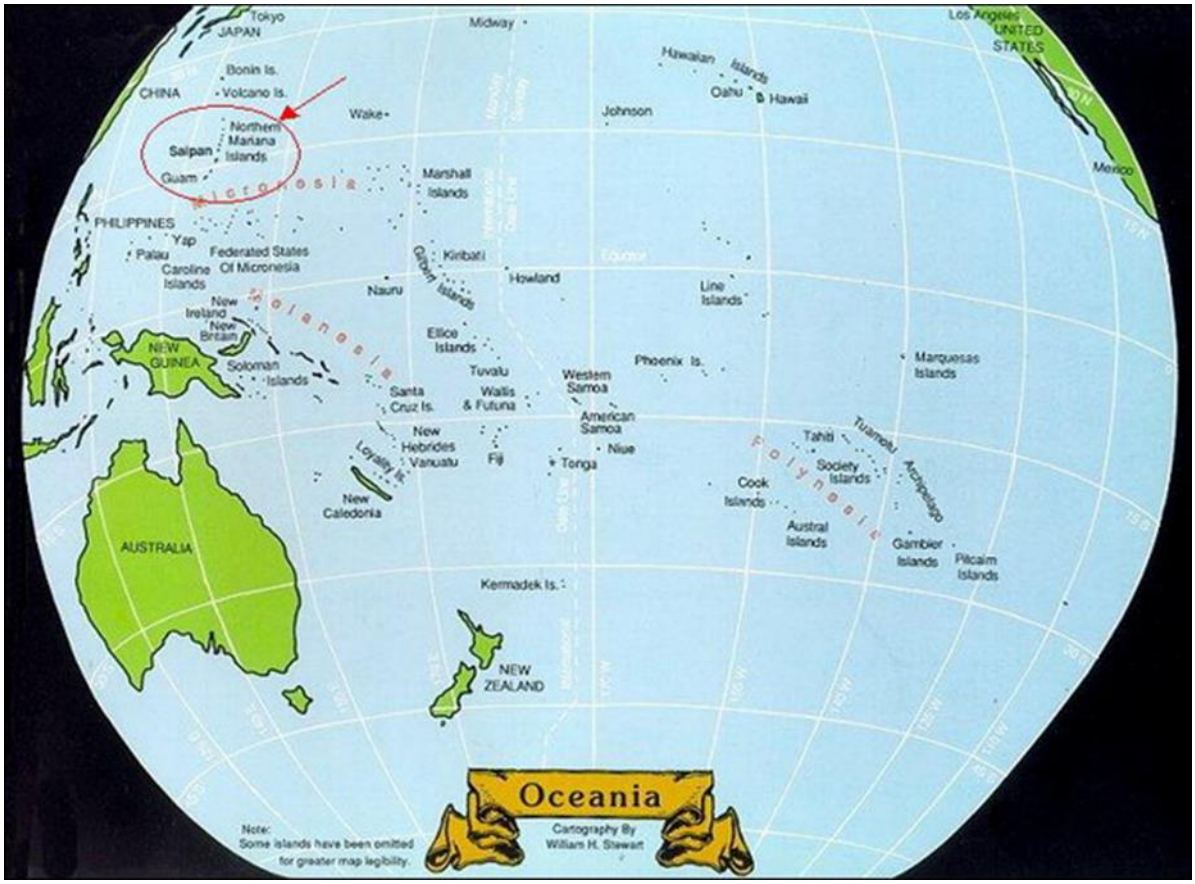

FIGURE 1. Map of Guam in the Asia Pacific Region (Map retrieved from http://www.worldatlas.com/webimage/countrys/oceania/gu.htm)

Chamorros are the indigenous people of the Mariana Islands living in Guam. Chamorros have a unique language originating from proto-Malayo-Polynesian of the Austronesian family (Vilar et al., 2013). Mitochondrial DNA maternal lineage demonstrates that Chamorros have genetic ties to the island of Southeast Asia, Indonesia, Micronesia and Polynesia (Vilar et al., 2013). Guam was colonized by the Spanish in 1521. During the colonization regime, the Chamorros were depopulated from 100,000 to less than 1,000 by1820 due to disease, brutality, and war (Vilar et al., 2013). In retaliation for pilfering from Magellan's Spanish ships, armed men from the ships burned down villages and outrigger canoes, murdered Chamorros, and harvested their intestines, which were believed to cure Magellan's crew members' illness

(Hattori, 2006b). The U.S. gained control over Guam in the 1898 Treaty of Paris as a result of the Spanish-American War (Van Dyke, Amore-Siah, & Berkley-Coats, 1996). In 1941, Guam was occupied by the Japanese during World War II and liberated in 1944 from the Japanese by the U.S. Chamorros survived memories of forced labor, starvation, brutality, mutilation, and other hardships under the Japanese.

Culture in Guam: A Historical Perspective

Both men and women had power and were important in ancient Chamorro society (Nguyen et al., 2003). Women greatly influenced village councils but had no political authority. Men and women of Guam worked together within a matrilineal system, cooperatively and interdependently for the wellbeing of their families (Hattori, 2006a). In Chamorro society, males and females had powers that were equally vital to the survival of the household (Cunningham, 1992). Men supervised with economic activities, and women decided matters of the household. In bereavements, such as deaths of close family members, Chamorro women instead of men were charged with the burial activities such as providing rosaries, nourishments, and funeral services (Thomas K. Pinhey & Ellison, 1997).

Modern day Chamorros manifest practices from their heritage of Spanish Catholicism and American values and culture. The concept of *inafa'maolek* is to live interdependently in harmony, in sharing and caring with nature, church, and the community (DeLisle, 2008). People are generous with family, friends, and visitors. In celebrations or hardship, the Chamorro people provide assistance or "*chenchule"* (Diaz, 2012). Individual and family members share food, materials, or money. The receiver of the goods is obligated to keep track of the shared "goods" by tracking according to the concept of *chenchule*.

Chamorros conceptulize illness as either natural or caused by spirits and that spirits are within the *taotaomona*, the spirits of the ancestral inhabitants (McMakin, 1978). Chamorros consult the spiritual healers *suruhana* (female) and *suruhanu* (male) to treat these illnesses. Such practices involve the use of massage, natural plants, flowers, roots, curing powder and body lotion, as well as dietary advice (Balajadia, Wenzel, Huh, Sweningson, & Hubbell, 2008; McMakin, 1978; Torsch & Ma, 2000).

Traditionally the Chamorro diet includes fish and plants such as taro, breadfruit, bananas, yams, cassava, and coconuts (Leon Guerrero, Paulino, Novotny, & Murphy, 2008; Pobocik, Trager, & Monson, 2008; Pollock, 1986). After World War II, the Chamorro diet altered from locally grown foods to imported foods such as Spam and corned beef (Leon Guerrero et al., 2008).

Chamorro Women

In Chamorro tradition, women have physically robust figures, indicative of health, power, and strength. Some Chamorro women are characterized as midwives or *pateras*, nursing students, and mothers (Hattori, 2006a). These women are framed as healers in the use of herbal medicine in midwifery and as *suruhanas* (traditional healers). Traditions of the Chamorro culture are still noticeable in the practices of Chamorro women of today. Chamorro women are involved in church activities, education, and cultural preservation. They participate in all levels of public and private organizations, for compensation or volunteerism. Women hold management positions such as executive officers of government agencies, and as a chief executive officer of a bank. Like any other community, Chamorro women also build their families, maintain their

household chores, maintain careers as well as contribute to the families financial stability. Literature about Chamorro women's culture and community interaction is limited.

Cancer in Guam

Cancer is a serious health concern in Guam and the second leading cause of death, accounting for 18.5% or one in every five deaths in 2011 (David et al., 2015). Posited causes are contaminants such as polychlorinated biphenyls (PCBs) in marine organisms (Denton, Concepcion, Wood, & Morrison, 2006; Robert L. Haddock, Badowski, & Bordallo, 2011; Schaible, 2010). Haddock, Badowski & Bordallo (2011), in a PCB analysis, suggested significantly higher proportions of deaths due to cancer (23%) in the Guam village of Merizo as compared to 14.1% for the rest of the island from 1978 to 1987. In the following years, the cancer deaths in Merizo rose to 27% as compared to 16.7% of the island population (Robert L. Haddock et al., 2011). The increasing presence of chlordane in Guam's aquifer as a carcinogen in drinking water sources is a possible cancer cause (Denton & Sian-Denton, 2010). Other contributing factors include areca (betel) nut chewing, tobacco, alcohol consumption, and obesity (David et al., 2013; Leon Guerrero et al., 2008; LeonGuerrero, Novotny, Wilkens, Blas, & Chong, 2014; Paulino, Leon Guerrero, & Novotny, 2011).

The significance of breast cancer illness, disability, and death nationally is reaffirmed by the U. S. Department of Health and Human Services, *Healthy People 2020* 10-year goals and objectives for disease prevention and health promotion (Healthy People 2020). *Healthy People 2020* objectives to decrease breast cancer burden are the following: Reduce the female breast cancer death rate, reduce late-stage female breast cancer, increase the proportion of women who receive a breast cancer screening and increase counseling by providers about mammograms.

Healthy People 2020's overall target for breast cancer screening rates is 81% (Healthy People 2020).

Breast cancer also is a public health problem in Guam. Breast cancer accounts for 30% of new cancer cases for women in Guam (David et al., 2015). Chamorro women have a significantly higher incidence of breast cancer (97.2 cases per 100,000 females) compared to the incidence in other ethnic-racial groups such as Filipino (76.7 cases/100,000), Micronesian (41.9 cases/100,000), and Asian (48.4 cases/100,000) (David et al., 2015). From 2003 – 2007, David et al., (2015) noted that within a one-week period in Guam, three women are diagnosed with cancer and one with breast cancer; more than half of these women are over 55 years of age. Chamorro womens' age-adjusted mortality is 21 deaths per 100,000 females, compared to Filipino, Micronesian and Asian women with less than 5 deaths/100,000 reported for each ethnic/racial group (David et al., 2015). Breast cancer is a leading cause of premature death among women in the U.S. as well as in Guam. Breast cancer in Guam accounts for 14% of cancer mortality (David et al., 2015).

Financial and Healthcare Services in Guam

Chamorro women have severe financial and healthcare barriers to breast cancer preventive care and management. Guam's cancer data indicates an increasing cancer burden in incidence and mortality in 2003-2007 and 2008-2012 (David et al., 2015). Haddock, Whippy, Talon & Montano, (2009) suggested that Chamorros as an ethnic group have less access to healthcare services such as diagnosis for cancer, which leads to cancer detection at a later stage. However, there are multiple healthcare service providers and payment methods for hospital admissions. Over the years, there has been a significant increase (200%) of the number of

participants under the Medical Indigent Program (MIP), from 6,903 to 21,853 (Guam Statistical Yearbook, 2015). MIP is a Guam Government program that serves low-income residents. Not all healthcare clinics accept MIP clients, and therefore, members resort to Regional Community Health Centers (RCHC) to seek medical care. There are two RCHCs strategically located on the island, Northern RCHC in the village of Dededo and Southern RCHC in the village of Inalåhan. The RCHCs provide multi-specialty primary care services for the indigent, uninsured, and underserved population in the community and provide preventive breast cancer screening programs. The Health Resources and Services Administration (HRSA) has designated Guam as having a primary care health professional shortage (HRSA Data Warehouse, 2016).

The island healthcare infrastructure includes three hospitals and several healthcare clinics. The hospitals are a military hospital; Guam Memorial Hospital Authority (GMHA), a government hospital; and Guam Regional Medical Center (GRMC), a private hospital. From 2009 to 2012, patients admitted at GMHA with malignant neoplasm diagnoses increased by 27%, from 387 to 492 patients (Guam Bureau of Statistics and Planning, 2014).

Guam's reports in 2008–2012, states the cost of cancer direct medical services amounted to $20,570,387 (David et al., 2015). On the national level, cancer care cost estimates in 2010 estimation were $124.57 billion; breast cancer was the cancer type with the highest cost ($16.50 billion) (Mariotto, Robin Yabroff, Shao, Feuer, & Brown, 2011). The amount accounts for Medicaid-MIP participants, who were less than 30% of the Guam's total population in 2011. This figure does not address the indirect costs of cancer such as productivity losses and premature mortality (David et al., 2015).

Breast Cancer Risk in Chamorro Women

A potential reason for the high incidence of breast cancer in Chamorro women living in Guam may pertain to risk factors for breast cancer. Modifiable risk factors for breast cancer include alcohol consumption, breastfeeding, postmenopausal obesity, and the use of combined estrogen and progestin menopausal hormones. The association of alcohol consumption is a consistent finding for breast cancer in the majority of epidemiologic studies (Singletary & Gapstur, 2001). Women who consume one alcoholic drink per day increase their breast cancer risk by 10% over women who do not drink. An additional alcoholic drink per day increase risk by another 10% (Secretan et al., 2009; Singletary & Gapstur, 2001). In the 2013 *Statistical Yearbook*, three percent of women were described as heavy drinkers in Guam (Guam Bureau of Statistics and Planning, 2014).

Compared to Filipino women, Chamorro women have significantly higher body mass indices (BMIs), and a greater proportion of Chamorro women (56%) are obese (Leon Guerrero et al., 2008; Paulino et al., 2011). An increase of 5-units in BMI increases breast cancer risk by 12%. Obese women who have been through menopause have 20% to 40% increased risk in developing breast cancer as compared to normal-weight women (Wolin, Carson, & Colditz, 2010). Obesity as a breast cancer risk factor differs among ethnic groups; however, an increased BMI along with breast cancer is observed to be strong in Asian-Pacific Islanders (Simone et al., 2016).

Strategies to reduce the risk for breast cancer include avoiding alcohol consumption, extending the period of breastfeeding to one year or greater, avoiding weight gain and obesity by engaging in regular physical activity, and eliminating tobacco smoking (Kolahdooz et al., 2014;

Zain, Seriramulu, & Chelliah, 2016). The combined use of estrogen and progestin should be carefully evaluated when considered for treatment of menopausal symptoms. The use of estrogen plus progestin increases breast cancer incidence and mortality (Chlebowski et al., 2013). An observational clinical trial implemented by Chlebowski et al. (2013) found that estrogen and progestin, when used close to menopause, are linked with increased incidence of breast cancer.

Non-modifiable risk factors for breast cancer are female sex, family history of breast cancer, older age, early menarche, and late menopause (Kolahdooz et al., 2014; Zain et al., 2016). Breast cancer is 100 times more common in women than men. As women get older, the risk of invasive breast cancer is usually greater in women age 55 years and older as compared to women younger than 55 years. The relationship of increased age at breast cancer diagnosis is consistent with Guam's data: the incidence of breast cancer doubles in women ages 55–65 and older (David et al., 2015). Women who have first-degree relatives such as sister, mother or daughter with a breast cancer diagnosis, have a two-fold risk of developing breast cancer. Women who experience menarche earlier than age 12 or who go through menopause after age 55 have slightly higher risk of breast cancer due to longer lifetime exposure to estrogen exposure (Zain et al., 2016).

Breast Cancer Screening in Guam

Guam participates in the National Breast and Cervical Cancer Early Detection Program (NBCCEDP) supported by the Centers for Disease control and Prevention (CDC). Participants in the program are women age 40 years and older who are uninsured and underinsured. The program funds breast cancer screening but does not support continued care for unconfirmed findings and cancer treatment if needed. From 2008–2012 this program funded 2,287

mammograms, of which 20.2% yielded abnormal findings and 9.6% detected breast cancer (invasive breast cancer, ductal carcinoma in situ, and others) (Blake et al., 2015). In 2002, an estimated 60.3% of Guam's women age 40 years and older had a mammogram within the past two years (G. DPH&SS, 2012). Inclusive of the NBCCEDP program participants, the proportion in 2008 and 2010 of Guam's women who had a mammogram within the past two years remained slightly below the U.S. median percent (2008–63.8% and 2010–64.4%) (G. DPH&SS, 2012). In 2012, 72% of women in Guam age 50 years and older had a mammogram within the past two years, surpassing U.S. women but still nearly 10% lower than the Healthy People 2020 objectives of 81.1% and lower than other ethnic/racial groups other than Native Americans (David et al., 2015; Healthy People 2020).

Guam's data indicate that cancer incidence and mortality increased successively from 1998–2012, and they remain health burdens for Guam's community. The figures are alarming; further investigation is needed to decrease cancer burden, to describe the influence of women's breast cancer risk perception, knowledge, and beliefs on breast cancer screening. The social, economic, and community burden increases with increased stages of the disease. Although breast cancer is not preventable, breast cancer screening and management programs are essential to provide early detection and advanced treatment modalities.

Statement of the Problem

Guam is an island, geographically isolated in the Pacific Rim. There are multiple breast cancer screening opportunities available on Guam; however, breast cancer incidence and mortality continue to rise. Many Chamorro women are obese and have modifiable and non-modifiable breast cancer risk. Dietary intake is altered, from natural fruits and vegetables, and

fish to processed foods such as Spam, corned beef, and rice. There are carcinogenic contaminates throughout the island, in the land, air, and sea. Among Chamorros, both men and women, heavy alcohol consumption increased from 6.5% in 2010 to 9.0% in 2011, and heavy alcohol intake also increased in women for the same period from 2.2% to 3.6% (Guam Bureau of Statistics and Planning, 2014). There is a knowledge gap regarding the views and understanding of Chamorro women in Guam regarding breast cancer risk perception, knowledge, attitude, beliefs, and breast cancer screening behaviors. Breast cancer, risk perception among Chamorro women in Guam is unclear. Early detection has been shown to reduce breast cancer morbidity and mortality (American Cancer Society, 2015). Chamorro women may have inaccurate risk perceptions about breast cancer and breast cancer screening. We do not know if their breast cancer risk perception, knowledge, attitudes, cultural beliefs, the risk at a late stage and decreased treatment options influence their breast cancer screening behavior. Thus, it was vital and necessary to perform this research in this cultural group, Chamorro women in Guam.

Significance of the Study

This study is significant because it provided a rich and valuable broad insight of information concerning Chamorro women's perspectives of breast cancer risk perception, knowledge, attitude, beliefs and how these influence breast cancer screening behaviors. To date, there is no literature that describes Chamorro women's perspectives, in everyday language, of the meaning of breast cancer risk perception, knowledge, attitudes, beliefs and their relationship to breast cancer screening. Gaps in knowledge affirmed the critical urgency to study these phenomena. The study also contributed rich data toward a diverse, culturally competent body of nursing knowledge, practitioners and researchers in describing these women's voice regarding

breast cancer screening behaviors and risk perception to enhance breast cancer screening and affect early diagnosis for breast cancer in Chamorro women in Guam.

Purpose of the Study and Research Questions

The purpose of this descriptive qualitative study was to examine the perspectives of Chamorro women's breast cancer screening risk perception, knowledge, attitudes, cultural beliefs and screening behaviors. The research questions were the following:

For women living in Guam,

1. What are their current breast cancer-related screening risk perceptions, knowledge, attitudes, cultural beliefs and breast cancer-screening behaviors?
2. What motivates women to engage in breast cancer screening?
3. What are their perceived benefits and barriers to breast cancer screening?

Philosophical Worldview and Theoretical Perspectives

Scientific inquiry is a process model applied to human systems of inquiry (Reed & Shearer, 2012). The personal factors that influence the process of inquiry are worldviews, a philosophical orientation about the world and the nature of research. Worldviews are the researcher's philosophical assumptions about the nature of human being, knowledge, and truth, and the nature of nursing science (Reed & Shearer, 2012). Researchers and participants in a study have different realities in a study (Creswell, 2014).

Worldview seeks to respond to views of reality (ontology) and views of knowledge (epistemology) (Reed & Shearer, 2011; Trochim & Donnelly, 2008). Ontology is defined as the views of the nature of reality; it is multiple and seen in many views (Lincoln & Guba, 1985; Reed & Shearer, 2011). Epistemology is defined as the study of knowledge through subjective

experience of people and studies in the field (Creswell, 2013). Postpositivism and interpretivism are the philosophical traditions in social sciences research. Postpositivists' worldview is called the scientific method, with key tenents of measurement and objectivity of the reality that exists in the world (Creswell, 2014). Postpositivists' view is that knowledge that can only be observed and experienced developing quantitative data (Williamson, 2006). In an interpretivist field of science, knowledge is based on human interpretation, observation, and human experience to develop knowledge about the social world (Chen, Shek, & Bu, 2011). In interpretivism, there are multiple realities; knowledge is acquired and socially constructed, and meaning is captured in human interaction (Lincoln & Guba, 1985). An interpretivist researcher seeks the meaning of human behavior to understand motives and meanings of experiences. To effectively address, breast cancer screening risk perception, knowledge, attitudes, cultural beliefs, and screening behaviors of Chamorro women, the interpretivist/constructionism views of reality and views of knowledge constituted this researcher's worldviews for the study.

Constructionism

This researcher's philosophical worldview is constructionist or social constructionism where meaning and knowledge are not discovered but constructed (Crotty, 1988; Reed & Shearer, 2011). This researcher's worldview developed over a lifetime of experience in nursing and health care and education. It is this researcher's belief that the individual constructs reality, which is influenced by the environment, history, language, and culture. The tenet underlying social constructionism, is knowledge is not discovered but is constructed by the historical, cultural and social interaction between people and environment, and knowledge is built on consensus (Crotty, 1988; Lincoln & Guba, 1985; Reed & Shearer, 2011). Constructionism views

the world in multiple realities, seeking to understand the world in which people live and work (Creswell, 2014). Knowledge is generated through socialization, humans' engagement with the world that is based on their culture (Creswell, 2014; Crotty, 1988; Reed & Shearer, 2011). In constructionism, each person constructs the world through the active cognitive process in concert with history and culture (Fox, 2001; Lincoln & Guba, 1985).

As a constructionist, the researcher relies on the participants' views to construct the meaning of the situation, to listen intensely to what the women say or do. The researcher's interpretation is inspired by personal, cultural, and historical experience to make sense of or interpret the meaning. Among Chamorro women, the meaning of breast cancer risk is not clearly articulated and or constructed. The aim of inquiry is to obtain a rich, straight description of an experience or events, aiming towards consensus but still open for interpretation (Denzin & Lincoln, 2011; Neergaard, Olesen, Andersen, & Sondergaard, 2009). This study provided a comprehensive summary of events in everyday terms on how choices for breast cancer screening are constructed as they relate to risk perception, knowledge, attitudes, cultural beliefs and breast cancer screening behaviors.

Health Belief Model

In constructivism, truth or knowledge is constructed by meaning and interpretations created in the interaction among investigators and participants (Denzin & Lincoln, 2011). In constructivism, theory can be useful as a framework for structuring methods and interpreting findings (Chen et al., 2011). The Health Belief Model (HBM) is the framework that guided the interview questions to address the study purpose and research questions and guided interpretation of the findings. This researcher's constructionist worldview underpins the HBM to embrace the

rich description of women's breast cancer risk perception, knowledge, attitudes, beliefs and screening behaviors. It is an expectancy-value theory, meaning that individual behavior is determined by the value or importance of the outcome (Glanz, Rimer, & Viswanath, 2008; Simons-Morton, McLeroy, & Wendel, 2012). The HBM was developed in the 1950s by U.S. Public Health Services social psychologists Hochbaum, Rosenstock, and Kegels. The HBM is influenced by the theories of Kurt Lewin, which posit that individual perceptions of reality explain and predict preventive health behaviors (Glanz et al., 2008; Simons-Morton et al., 2012). Later the HBM was amended to include general health motivation in efforts to distinguish illness and sick role behaviors from health behaviors. The central tenet of the HBM is that beliefs about susceptibility and severity of illness, and possible preventive action predict the likelihood of action (Becker, Maiman, Kirscht, Haefner, & Drachman, 1977). The HBM has six key constructs: perceived susceptibility, perceived severity, perceived benefits of action, and perceived barriers to action, cues to action and belief, and attitudes about the seriousness of the illness.

Perceived susceptibility is a construct concerning one's perception of risk, the likelihood of developing a disease or health condition. Perceived severity refers to the belief of the seriousness of developing an illness or the degree of severity of the consequences if no action is taken. Perceived benefits are the beliefs that behaviors or actions taken will prevent or reduce susceptibility or severity of the illness. Physical, psychological, financial, and other perceived barriers may act as impediments to taking recommended behavior or action. If the level of readiness to act (susceptibility and severity) provides the drive to act, the perception of benefits, action/behavior change is likely to occur. In the HBM, perceived benefits are defined as the

belief in the value of the behavior to reduce the disease the threat. Barriers are considered as negative aspects of a health action. Cues to action are strategies to act and the confidence to change behaviors (Conner & Norman, 2005; Goodson, 2010; Simons-Morton et al., 2012). The HBM provided a framework for identifying questions regarding Chamorro women's beliefs to engage in health action to promote early breast cancer health screening. Figure 2 describes Chamorro women in the Health Belief Model.

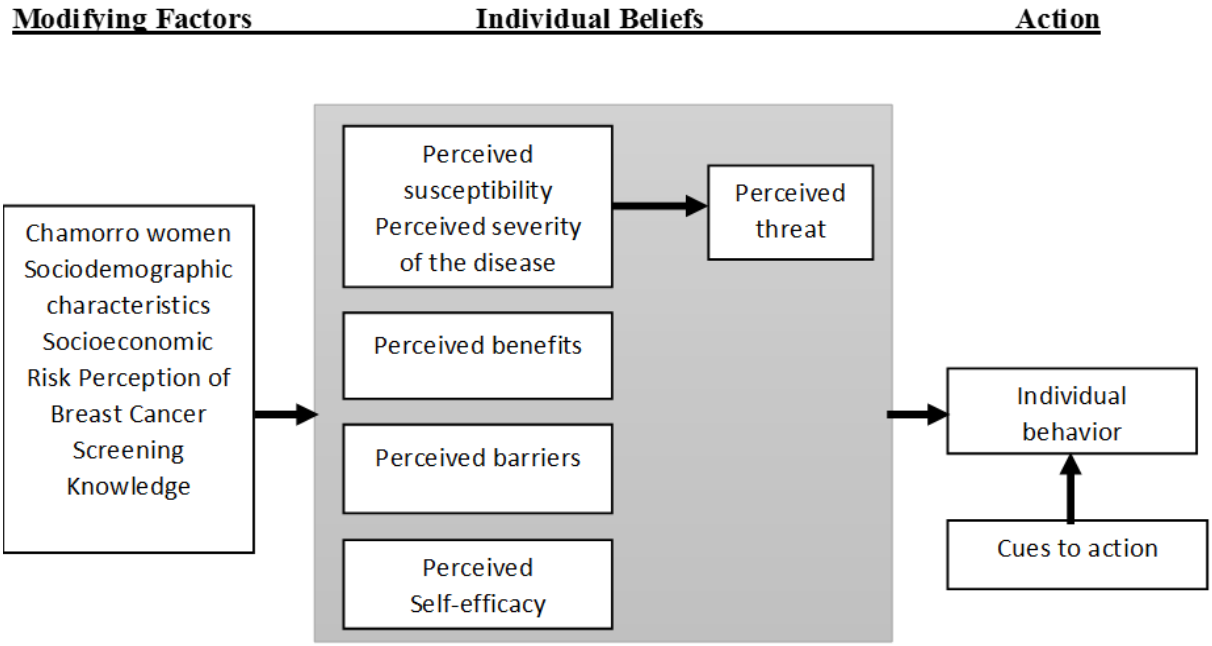

FIGURE 2. Chamorro Women Health Belief Model (Source: Champton, V. & Skinner, C. S. (2008). The health belief model. In *Health behaviors and health education: theory, research and practice*. San Francisco, CA: Jossey-Bass.)

The application of the HBM as an explanatory model informed Chamorro women's breast cancer health screening behaviors. In the HBM, moderators such as demographics (e.g., age, ethnicity, family history, and health insurance) may influence breast cancer preventive health risk perception, knowledge, attitude, beliefs, and behaviors.

Summary

This chapter included background for a proposed qualitative study to explore and summarize a rich description of Chamorro women's breast cancer risk perception, knowledge, attitude, and beliefs, cultural background, statement of the problem of breast cancer in Guam and the significance of the study. A constructionist worldview and the HBM are the frameworks for data collection.

CHAPTER 2: REVIEW OF LITERATURE

Introduction

This chapter includes a description of literature regarding perceived risk, vulnerability, or susceptibility to breast cancer among Chamorro women in Guam, specifically breast cancer screening risk perception, knowledge, attitudes, and cultural beliefs and screening behaviors. This chapter addressed procedural guidelines for the literature review, an overview of risk perception and studies that include breast cancer risk perception in Pacific Islanders or Chamorro women. The review also includes literature on knowledge, attitudes, and cultural beliefs of breast cancer and further discuss breast cancer screening behaviors such as mammography and mammography screening in Pacific Islanders or Chamorro women.

Procedure

The literature search strategy was an exhaustive review of six databases: PubMed, CINAHL, Embase, Web of Science, PsycINFO, and Scopus for articles on the main variables of the study breast cancer risk perception, knowledge, attitudes, beliefs, or screening behaviors of adult Chamorro women living in Guam. The inclusive dates for the literature search were 2011 to 2017. However, review of the literature on Chamorros and Pacific Islander women was expanded to ten years (2006) or more because of limited or no literature available on the specific area of interest. Keywords for the literature search were Pacific Islanders, Chamorro and health beliefs, knowledge, and attitudes to health, perceived risk, the perception of risk and culture. The computerized database strategy limits were set for the English language, and human studies, published in the past five years and ten years. Other limits were research published in peer-reviewed journals, and conference papers, and articles reflecting any research design or sampling

strategy were included. The search yielded 582 articles, however, no studies were found in PsycINFO and Web of Science.

Risk Perception

Overview

Risk perception or perceived risk is the probability or belief that harm will occur or one's susceptibility to a threat which the outcome is uncertain (Ferrer, Klein, Persoskie, Avishai-Yitshak, & Sheeran, 2016; Lifshitz, Nimrod, & Bachner, 2016; Weinstein et al., 2007). The greater or stronger one believes that a particular risk event is likely to occur, the greater the sense of vulnerability to that event (Lifshitz et al., 2016). Risk perception is an intuitive and instinctive response to an actual or potential threat to physical and mental well-being (Lifshitz et al., 2016; Slovic & Peters, 2006). (Lifshitz et al., 2016; Slovic & Peters, 2006). Experiental risk perception is a learned associated experience, integrated and involving concrete images and narratives that are considered gut-level reactions (Ferrer et al., 2016). Common to all these concepts is their composition of three components or processes: an affective component, a cognitive/deliberative, and an experiential component (Ferrer et al., 2016). The affective component conceptualizes risk as feelings, the affect heuristic, in which emotions such as fear or anger (positive and negative affects) influences decisions (Slovic & Peters, 2006). Emotions may be fear, anxiety, or worry about health outcomes, or "feelings of risk" (Weinstein et al., 2007). Fear occurs as uncertainty and lack of control of a situation whereas anger occurs as certainty and individual restraint of a situation. An example is a study (Chae, 2015) to determine the relationship of the three factors pertaining to cancer related risk perception (affective-cancer as fear, cognitive-cancer risk perception, and affective-cognitive as cancer worry) in cancer information, screening intentions

and avoidance of cancer information. The study showed cancer risk perceptions and cancer worry are important cancer communication and screening intentions. The study further revealed that cancer fear positively correlated to cancer information use as well as cancer information avoidance and screening intentions. The researcher noted cancer fear increases cancer information use, avoidence and screening intention (Chae, 2015). Similar results were found in a study to examine a tripartite model that distinguishes among affective, deliberative and experiential components of risk perception (TRIRISK) (Ferrer et al., 2016). Ferrer et al. (2016) described affective risk perception as a positive or negative feelings about the possibility of developing an illness or disease that reflect an emotional response to a threat. The study examined the impact of cancer diagnoses on risk perception levels on affective, deliberative, and experiential perceptions, the intensity of the relationship and behavioral intentions to prevent cancer. The results of the study suggested that the three risk components inconsistently predict intentions towards preventive behaviors; this has implications for health communications and behavior change interventions (Ferrer et al., 2016).

Terpstra (2011) revealed that both cognitive and affective processes affect behavioral intentions. Consistent with other studies (Brewer, Weinstein, Cuite, & Herrington, 2004; Lifshitz et al., 2016; Slovic & Peters, 2006), feelings of negative emotions increases risk perception, and positive feelings decreases perceived risk. Cancer-related affect and cognition thinking process in understanding through experiences and senses such as cancer worry, fear, and cancer risk perception are said to be predictors of cancer communications and preventive behaviors (Chae, 2015; Katapodi, Lee, Facione, & Dodd, 2004). Chae (2015) found cancer worry as the strongist determinant in screening intentions.

Multiple theoretical health behavior models include the perceived risk and emotional response to personal risk as central to the motivation for behavior (Bowen, Alfano, McGregor, & Andersen, 2004; Garces-Palacio & Scarinci, 2012; Weinstein et al., 2007). Perceived risk is parallel construct of perceived probability, likelihood, susceptibility or vulnerability. These are core constructs in health behavior theories such as the Health Belief Model, (Janz & Becker, 1984), Protection Motivation Theory (PMT), (Prentice-Dunn & Rogers, 1986), and Precaution Adoption Process Model, (Weinstein, Lyon, Sandman, & Cuite, 1998). Perceived risk or perceived susceptibility in these models is the belief of the probability of harm if no precaution is taken or change of behavior. For example, in the HBM and the PMT, the emphasis of risk perception or fear appraisal on the cognitive process in using existing knowledge or understanding to increase awareness and perceived susceptibility towards behavioral or attitudinal change of the person (Brewer et al., 2007; Katapodi et al., 2004; McQueen, Swank, Bastian, & Vernon, 2008).

In the HBM, attitudes, and beliefs of possible harm and severity of the harm and/or outcome if no action is taken influence the emotional response and the perception of threat, which can influence the behavior to undergo breast cancer screening. An example is a study of individuals who are at risk of developing diabetes. Individuals with elevated risk perception monitored blood glucose levels more than those who had a low perception of risk of diabetes (Lavielle & Wacher, 2014) Similarly in the PMT for the constructs of perceived threat or fear, the coping response on intentions is the ability to adopt a protective health behavior (Maddux & Rogers, 1983; Tunner, Day, & Crask, 1989).

Studies of Risk Perception and Breast Cancer

Studies of risk perception and breast cancer have been evolving since the mid-1990s. Most studies tend to focus on women with a family history and genetic risk (Meisel et al., 2015; Paalosalo-Harris & Skirton, 2016; Rutherford et al., 2016; Walker et al., 2013). Others look at the relationship of risk perception on breast cancer repeat mammography screening. Common themes for risk perception in the latter articles are breast cancer risk perception, repeat mammography, risk of breast cancer recurrence, and genetic counseling with family history of breast cancer (Haber, Ahmed, & Pekovic, 2012; Janz et al., 2017; Walker et al., 2014)

Paalosalo-Harris and Skirton (2016) in a mixed method systematic review, explored the relationship between risk perception and health-protective behaviors in individuals with a family history of breast cancer. The authors, guided by the Centre of Reviews and Dissemination method, selected 10 out of 210 studies of individuals in general with family histories of breast cancer. The reviewed studies were conducted in the U.S., Australia, Canada and the United Kingdom; all participants were women with a family history of breast cancer. The researchers posited that cancer worry interconnects with breast cancer risk perception and thus with health–protective behaviors. In the review, breast cancer risk perception did not lower breast cancer worry and that perceived susceptibility to breast cancer and a high score on the Breast Cancer Worry Scale were statistically significantly associated with demands for mammograms. The systematic review reported a clear link between breast cancer risk perception and some health protective behaviors. Breast cancer risk perception did not have an impact on health-related lifestyle changes such as quitting smoking, increasing exercise activities and making dietary changes. Paalosalo-Harris & Skirton (2016), further stated that risk perception communication

needs of individuals need further development to address the understanding and acceptance of by individuals with family history of breast cancer.

In another study, Haber et al. (2012), explored the association between family history of breast cancer and other cancers with breast cancer risk perception and repeated mammography. The study sampled 6706 (non-Hispanic White, non-Hispanic Black, and Hispanic) women ages 46 to 74 years, with no breast cancer history. Breast cancer risk perception was strongly associated with family history of breast cancer in mothers and sisters as well as with other family members. Additionally, women with a maternal history of breast cancer increased repeated mammogram as compared to those women without a maternal history of breast cancer (Haber et al., 2012).

In a 2009 nationwide survey in Korea, Park et al, examined perceived risk of breast cancer and associated risk factors and screening in Korean women. Through a random dialing telephone method, 1000 Korean women, agreed to participate in a telephone survey to respond to a 21-item questionnaire to examine breast cancer risk perception. Participants were age 40 years and over without a breast cancer diagnosis. The authors found that 9 % of participants perceived their risk as high and about 70% had lower breast cancer perceived risk than other women in their age group. Forty-four percent of participants had undergone mammography within the past year and 17% had a mammogram more than two years prior. Results of the study also showed that 25% of the women never underwent a mammogram, however, 78% of the women had intentions to get a mammogram in the future (within a year 66% or 30% between 1 or 2 years, respectively) (Park et al., 2009).

In a cross-sectional study conducted at a gynecology outpatient department of Gulhane Military Medical Academy (Ankara/Turkey) in 2003, Yavan et al. (2010) sought to identify women's *(n* = 188) breast cancer attitudes and perceived risk and knowledge related to breast self-examination (BSE) and other screening tests. The authors assessed demographic data, the status of BSE, mammography and clinical breast examination; the presence of diseases in the family, perceived risk of the illness, and feelings about breast cancer (Yavan, Akyuz, Tosun, & IyigUn, 2010). The results indicated that 50% or more participants perceived risk and fear of developing breast cancer. The rates of women who had a clinical breast examination, BSE, and mammography at least once were insignificant in the study. However as long as breast cancer risk perception increased, rates of having CBE and mammography increased ($p < .001$) (Yavan et al., 2010).

Collectively these findings illuminate the following key themes: there is a positive relationship between risk perception and breast cancer screening behaviors. The strengths of these studies are inconsistent presentations of breast cancer risk perception and its relationship to screening behaviors. The gaps in our knowledge of Chamorro women's knowledge, attitudes, cultural beliefs and screening behaviors, support the need for further research to present and understand these women's descriptions towards breast cancer screening.

Studies of Breast Cancer Risk Perception in Pacific Islanders

Accurate breast cancer risk perception and information are necessary to develop strategies for breast cancer screening and risk reduction (Fehniger et al., 2014; Paalosalo-Harris & Skirton, 2016). In a study of 1,261 multiethnic women, participants ages 40-74, (race/ethnicity: Latina, 24%; non-Latina white, 35%; Asian Pacific Islander, 19%; and African

American, 22%) with no personal history of breast cancer, were randomly selected from a general internal medicine primary care physicians clinics in urban San Francisco utilizing a Breast CARE Study (Fehniger et al., 2014). The authors assessed personal factors associated with correct breast cancer risk perception at average and high breast cancer risk and, the relationship between breast cancer concerns and accurate breast cancer risk perception. To estimate objective risk for breast cancer, the authors employed measures from the breast/ovarian cancer genetic referral screening tool, Breast Cancer Surveillance Consortium the Gail Model and, risk thresholds from the panel of experts consensus from the Breast CARE Study. Fehniger et al., (2014) found that of the 1,261 participants, over all 25% (*n*=314), (Asian Pacific Islander – 34.0% (*n=18*) were considered as high risk. Of 947 average risk, overall 14% (*n*=179), (Asian Pacific Islander – 21.3% (*n* = 39) reported at least one relative with breast cancer. The majority (72%) of average-risk women perceived themselves accurately to be at average or less than average risk for breast cancer, whereas only 18% of high-risk women accurately perceived themselves to be at increased risk. Both average and high-risk women were very concerned with breast cancer (25%); average-risk women with accurate risk perception were less likely to be concerned about breast cancer. Fehniger et al., (2014) determined that many women in the study did not accurately perceive their risk for breast cancer. Women who accurately perceived their risk had relevant breast cancer concerns (Fehniger et al., 2014).

Studies of breast cancer risk perception in Chamorro women on Guam are limited. Only one article identified in the search explored breast cancer risk perception in Chamorro women on Guam in 2006 - 2016. Balajadia, Wenzel, Huh, Sweningson, & Hubbel, (2008) sought to evaluate cancer-related knowledge, attitudes, and behaviors in Chamorro women on Guam. In

2004, these authors provided a self-administered English language survey to 266 Chamorros (men =117, women = 149) ages 50 years or older from 10 regions (villages) in Guam (Balajadia et al., 2008). The respondents viewed themselves as in excellent health and perceived cancer risks as the family history of breast cancer, smoking, chewing betel nut, and dietary factors.

There are research limitations identified in the Pacific Island studies such as self-reporting which leads to recall bias and social desirability response as potential biases (Balajadia et al., 2008; Oh, Zhou, Kreps, & Ryu, 2012). Selection bias was also reported as homogenous focus groups of women were interviewed who were not representative of the total population (men and women) (Aitaoto, Braun, Estrella, Epeluk, & Tsark, 2012; Oh et al., 2012; Wong-Kim, 2010). In addition, some studies did not address the languages spoken by the participants for translation of the survey for non-English speaking participants. The dearth of literature on this topic further supports the need for more studies of breast cancer in Chamorro women.

Knowledge and Awareness of Breast Cancer Screening

Knowledge about breast cancer screening varies by types of cancers and the country and population in which the people live (Kolahdooz et al., 2014; Torsch & Ma, 2000). A systematic review by Kolahdooz et al., (2014) explored literature in English published up to 2014 on knowledge, attitudes, and behaviors towards breast cancer screening and other cancer screening among indigenous people. The authors identified 723 publications through the search process, and yielded 33 articles. In the review when specifically addressing knowledge of breast cancer screening in Pacific Islanders, Guam, and Chamorros, the authors found seven studies on mammography, breast self-examination, and about clinical breast examination. The number of participants (n=33), ages range from 42 to 69 years, in a study (Aitaoto, Tsark, Wong,

Yamashita, & Braun, 2009) within the systematic review reported knowing about mammography was much lower in Marshallese and Chuukese Pacific Island women than Native Hawaiian women (8% *vs.* 87%). In comparison to Hawaiian women participants (73%) and Filipina women participants (50%), none of the Marshallese or Chuukese women ever had a mammogram (Kolahdooz et al., 2014). Overall, the authors ascertained that the shared factors influencing knowledge, attitude and breast cancer screening behaviors include age, the perception of the need for screening, access to screening and knowledge about cancer (Kolahdooz et al., 2014).

Balajadia et al., (2008) assessed cancer-related knowledge and attitudes held by the indigenous people of Guam as they influenced use of behaviors (breast cancer screening services). The majority of the women participants were aware of the causes of cancer, and 84% had a mammogram within the past two years. Overall, both men and women participants (95%) had heard of BSE and knew how to do it; 94.4% knew that mammography could detect breast cancer early but feared a diagnosis of breast cancer after receiving a mammogram. Participants were more likely to agree that a high-fat diet (54.5%) and family history (54.1%) increased breast cancer risk. Participants also recognized that the loss of a breast due to cancer could have a significant adverse impact on relationships.

Hubbel et al. (2006) conducted a Pacific Islands cancer control network study to assess cancer awareness in Pacific Islander populations of American Samoans, Tongans, and Chamorros. Key objectives were to increase cancer awareness and research among Pacific Islanders, including Chamorros. The infrastructure of the cancer control network community leaders and academic and technical organizations developed culturally appropriate training and

educational programs. Part of the research and training project of the network was a pilot research study, a cross-sectional face-to-face survey to assess knowledge, attitudes, and preventive cancer-related practices in a purposive sample of 266 individuals (118 men and 148 women), ages 50 years and over from 10 villages in Guam. The authors discovered participants' knowledge of breast cancer risk factors was greater than expected from all village participants surveyed. There were relatively high levels of cancer risk factor knowledge in men and women, and high levels of self-reported breast cancer screening. Because Guam is a multicultural island, Chamorro women may not use English as their primary language and or have a word for some of the cancer-related terms, which presents a disparity in knowledge about breast cancer screening. The dilemma was captured in the pilot project when a culturally sensitive and appropriate education program in Samoan, Tongan, and Chamorro languages was developed as part of the network cancer awareness brochures (Hubbell et al., 2006).

A study of Chamorro women (n=168), ages 21 to 91 years residing in San Diego, California, explored the role of sociodemographic characteristics, cancer knowledge and perceived health risk and the utilization of breast and cervical cancer screening (Sadler et al., 2010). Through a telephone administered data collection survey, Chamorro women reported their main sources of health care information were from their health care provider (Sadler et al., 2010). The authors also reported that 43% of the Chamorro women 40 years and older within the past year had undergone clinical breast examination and 74% had received a clinical breast examination in the past two years. The authors emphasized the need for health care providers to be vigilant in offering breast cancer screening during a woman's annual physical examination (Sadler et al., 2010).

Breast Cancer Attitudes

In a study among Chamorros on Guam that ascertained breast cancer attitudes, Balajadia et al. (2008), found that 76% of participants worried about cancer in their age group and 58% indicated that neglecting their health is a contributing factor to cancer. Chamorro women may also have the cultural attitude of *mamahlao* (extreme shame), which prevents them from seeking breast cancer screening (Rosario, 2010). Additionally, there is fear that the intended outcome of breast cancer screening is in fact to detect cancer (Balajadia et al.). However, Sadler et al. (2007) found that most participants (94%) disagreed with a fatalistic view about breast cancer screening; most agreed (91%) that with more information regarding breast cancer screening women have better control of the disease.

Aitaoto et al. (2012) conducted a community partnership study to develop and assess lay educators (five Chuukese, one Kosraean, two Pohnpeians, and three Marshallese); these educators initiated a cancer awareness program among Micronesian women in Hawaii. The authors found the attitudes towards mammogram screening improved from 18% to 90% after an intervention that used culturally appropriate materials and lay educators (Aitaoto et al., 2012). The authors also found that lay educators' self-esteem and skills improved and that lay educators were willing to extend their knowledge and skills to immunization and diabetes management programs and in other health programs. Additionally, the focus groups identified breast cancer as a major concern—participants were aware of U.S. nuclear weapons testing on their islands and had fatalistic views about breast cancer including the desire for death over the side effects of cancer treatment (Aitaoto, 2012).

Cultural Beliefs about Breast Cancer

Chamorros' health perceptions display the influence of Spanish Catholicism as well as the ancient Chamorro belief that ancient spirits affect health and illness, and folk practices (Cunningham, 1992; Torsch & Ma, 2000; Twaddle, Roberto, & Quintanilla, 2003). Chamorros of Guam have traditions that venerate ancestors, respect family relationships, and practice traditional healing practices. Chamorros believe that faith in God will protect them from cancer; however, in a study of (n=266), 4.6% participants said that detection of cancer is a form of punishment from God and that 32.6% would rather not know about the disease (Balajadia et al., 2008). Other authors reported that Micronesian women believe that having breast cancer is God's will and that it is associated with death (Aitaoto, 2012). These authors specifically reported that breast cancer is a leading health concern (Aitaoto, 2012).

Chamorros use traditional healing practices such as flowers, plants, and roots as well as oils and traditional healers. The *Suruhana* and *suruhanu* (traditional healer) provide medicinal remedies from indigenous plants such as Premna obtusifolia *(ahgao)* and Columbrina asiatica *(gaoso'so)* mixed as an herbal tea for coughs and colds and other herbal teas for chapped lips and diarrhea (Brinkley, 1999; Torsch & Ma, 2000). In addition, the authors stated that traditional healers also provide dietary advice as well as massage, called *matantan*.

Chamorros believe that illness can be spiritually or naturally triggered by *tataomonas* (ancient spirits of the island, people before recorded time) and that they should maintain respect for the ancient spirits. Over the years, these cultural beliefs have blended in with Western medicine (Balajadia et al., 2008; Rosario, 2010). In more recent times, Chamorros perceive that seeking preventive care, especially for cancer, has priority over feeling *mamahlao* (ashamed or

embarrassed). An example of this is a qualitative study of 15 Chamorro women living in Guam, ages 22 to 63 years, to examine cultural values of *mamahlao* on women seeking cancer preventive care (Rosario, 2010). The results revealed that women feel health care is more important than *mamohlao* or being ashamed in seeking preventive care. Chamorro women are equally concerned with health promotion and their cultural values (Rosario, 2010). Balajadia et al. (2008) study revealed that (3%) of participants, considered ancient spirits caused cancer and (8%) believed that traditional healers are able to treat cancer. In addition, 4% of the women said they would seek cancer treatment from traditional healers.

In studies of breast cancer screening behaviors among Chamorro women in Guam and Southern California, the authors identified cultural beliefs that could inform Chamorro women's breast cancer risk perceptions. These include beliefs in *taotaomonas* and *suruhanas*, and healing practices were associated with increased breast cancer screening (Balajadia et al., 2008; Tanjasiri & Sablan-Santos, 2001; Torsch & Ma, 2000). Studies indicated that in regard to cancer causation, cultural beliefs of Chamorro men and women support the notion that *taotaomona* (85.9%) do not cause cancer (Balajadia et al. 2008, Villaverde, 2015). However, these and other investigators also found that *suruhanas* or *suruhanus* do treat cancer patients (Balajadia et al., 2008; McMakin, 1978; Tanjasiri & Sablan-Santos, 2001; Torsch & Ma, 2000). For example, in their study of 266 men and women, Balajadia et al., (2008) reported that about 4% of participants considered going to a *suruhano* for cancer treatment and approximately, one-third reported visiting a traditional healer for medical care. In that study, participants believed that cancer was caused by exposure to nuclear testing radiation trade winds from the atomic explosions from the Republic of the Marshalls to Guam. Guam residents believe that they were exposed to

atmospheric fallout (downwind) of atomic radiation and runoff from the nuclear cleanup of military aircraft and ships (Skoog, 2003).

Screening Behaviors

Mammography for Breast Cancer Screening

There are different modalities available for breast cancer screening such as mammography imaging, breast ultrasonography, and magnetic resonance imaging. Mammography imaging is considered the gold standard examination in screening breast cancer, which is related to decreasing breast cancer mortality (American Cancer Society, 2015; Drukteinis, Mooney, Flowers, & Gatenby; Onega et al., 2013; Srinivasan & Parris, 2016). Since 2002, women 40 years of age or older has been recommended for annual mammography; however, in recent years there has been a lack of consensus among stakeholders regarding breast cancer screening. There is consensus on the benefits of mammography, but there are issues regarding the benefits and harm of screening, the appropriate age for screening, and screening intervals (Srinivasan & Parris, 2016). An independent panel, the United States Preventative Services Task Force (USPSTF), revised guidelines recommending biennial mammography screening beginning at the age of 50 to 74 years, and for women between ages 40 to 49 years mammography as an individual decision (USPSTF, 2016). On October 20, 2015, based on meta-analyses, randomized controlled trials (RCTs), and observational studies (Oeffinger, Fontham, Etzioni, & et al., 2015) the ACS published revised guidelines for mammographic screening in asymptomatic women. The guidelines include but are not limited to the following: Women ages 40–44 years can personally choose to begin annual screening, annual screening is recommended for women ages 45–54 years, and screening for women 55 years and older every two years. To

add further confusion, the American College of Radiology, Society of Breast Imaging, and American College of Obstetricians and Gynecologists recommended that women ages 40 years and older should have an annual mammogram (Srinivasan & Parris, 2016).

Mammography in Pacific Islander or Chamorro Women

Available literature on breast cancer screening for Pacific Islanders, including Chamorros in Guam did not address the 2015 mammography screening guidelines. Oh et al., (2012), in a 2008 Behavioral Risk Factor Surveillance System (BRFSS) secondary analysis, conducted a random digit dialing technique and multistage cluster sampling of women 18 years or older. These researchers examined racial/ethnic differences in breast cancer screening among Pacific Islanders (Native Hawaiian and other Pacific Islanders, n=345), Asian Americans (n=2600), and non-Hispanic Whites (NHWs, n=165,777), and the relationship to health perception as self-reported status of health, health risk behaviors, socio-demographic characteristics, health care access, and screening mammograms practices. Study findings showed that there was no connection of Pacific Islander women smokers and heavy alcohol usage with having had a recent mammogram. Pacific Islanders who reported better health perception were less likely to have had a recent mammogram. There was no relationship found for Pacific Islanders with having a recent mammogram and education as compared to non-Hispanic Whites and Asian Americans. Pacific Islanders with $50,000 or more annual income were less likely to have a recent mammogram as compared to Pacific Islander with a $25,000 to $50,000 annual income. For health care access, in general women in all sample subgroups were likely to have had a mammogram within the past year. Pacific Islander women with access to usual health care providers were 14 times more likely to have a mammogram as compared to two times or more

for non-Hispanic Whites and Asian Americans. The study showed a strong relationship between routine check-ups within one year to having a mammogram within one year for Pacific Islanders. Certain cancer risk factors are associated with mammography screening; Pacific Islander women revealed that smoking and alcohol consumption are risk behaviors related to mammogram screening participation within the past year. The researchers concluded that overall, Pacific Islander women are likely to be very proactive in cancer screening. The authors of the research recommended further investigation to support their findings (Oh et al., 2012).

An early descriptive analysis of a 1991 Behavioral Risk Factor Survey investigated the connection between social economic status (SES) and mammography screening behaviors in Filipino, Chamorro, Caucasian, and other Pacific Island women living in Guam. The study observed an association of increased mammography screening behaviors with higher levels of SES in Chamorro women ages 35 years and older. The researchers also observed that ethnic status affected psychological and cultural barriers in Pacific Islanders in mammography screening (T. K. Pinhey, Heathcote, & Rarick, 1994). Studies have shown that factors correlating with screening behaviors in Pacific Islanders include lower income and educational attainment, larger families, and higher poverty rates as compared to Asian Americans (Oh et al., 2012). Chamorro breast cancer screening behaviors (Balajadia et al., 2008) 83.3% reported having had a mammogram within the past two years was associated with having health insurance or having regular medical office visits. The researchers revealed a decrease in mammogram in women living in the southern part of Guam (Balajadia et al., 2008).

Studies in the review revealed factors such as SES, health insurance, and geographic proximity to health care services are associated with breast cancer screening. Some researchers observed the influence of ethnic and cultural values on breast cancer screening behaviors.

Summary

Chapter 2 contained an overview of the description of risk perception, breast cancer risk perception, knowledge, attitude, and behaviors. The review included limited studies of Pacific Islanders' risk perception, knowledge, attitude, cultural beliefs and screening behaviors. Only two studies addressed breast cancer risk perception, knowledge, attitude, cultural beliefs, and screening behaviors of Chamorro women residing in Guam. Overall, studies were heterogeneous regarding design, with difference design types represented: qualitative, quantitative, community-based research, and secondary analysis. The studies varied in methodology, specifically sampling scheme, and data collection strategies (face-to-face interviews or secondary analysis of data). Study variables measurements were not clearly identified. There were inconsistent questions and measurements regarding breast cancer risk perception, knowledge, attitudes, beliefs, and screening behaviors throughout the studies. The ages of women sampled in these studies ranged from 18 to 75 years (Aitaoto et al., 2012; Oh, et al., 2012; and Rosario, 2010). Studies of men and women sampled included the following studies: Balajadia et al. 2008 and Hubbell et al., 2006. Four studies (Balajadia et al., 2008; Hubbell et al., 2006; and Rosario, 2010 and, Torsch & Ma, 2000) were conducted in Guam, as well as secondary analysis from the BRFSS data source from Guam (Oh et al., 2012; Pinhey, Iverson, & Workman, 1994). Collectively, these observations provide further foundation for the need for additional research on breast cancer risk perception in Chamorro women.

CHAPTER 3: METHODOLOGY

Introduction

Chapter 3 describes the research methodology for the study, including the sampling strategy, procedures for data collection and analysis, and protection of human subjects.

Study Method

This study had its foundation in qualitative research. Qualitative research is a broad methodological approach that seeks to uncover the nature of the world (Creswell, 2013). Denzin and Lincoln (2011) summarized qualitative research as an interpretive practice that describes the world represented in conversations, interviews, photographs, recordings, field notes, and memos. Qualitative research is a study approach in a naturalistic setting that attempts to examine or make sense or meaning of a phenomenon (Denzin & Lincoln, 2011; Lincoln & Guba, 1985; Sandelowski, 2000). Qualitative research is an interpretive inquiry—the researcher interprets what he or she sees, hears, or understands through inquiry, which is affected by the researcher's background and prior knowledge (Creswell, 2013).

The method of choice for the research was qualitative description (Sandelowski, 2000). Qualitative description provides "a comprehensive summary of an event in the everyday terms of those events" (Sandelowski, 2000, p.336). Qualitative description may have overtones from other qualitative approaches such as phenomenology, ethnographic, grounded theory, or narrative approaches. For example, both descriptive phenomenology and qualitative description can include to describe the essence of human experience and events that are not clearly understood (Sandelowski, 2000). The researcher seeks to describe the meaning of lived experience of the participant. In contrast, qualitative description seeks to provide a rich straight-

forward description of an experience rather than an interpretive description to provide a broad insight description or understanding of a phenomenon (Neergaard et al., 2009). The overtones can be confusing and lead the researcher to erroneously claim that he or she is using qualitative description rather than interpretive description or other qualitative methods (Neergaard et al., 2009; Sandelowski, 2000). Qualitative description is less theory driven than other qualitative study approaches. For example, a qualitative study approach may include a theory or a framework to guide the collection and analyzing data. However, qualitative description affords the flexibility to discontinue using theory concepts if the direction of the study is changed (Neergaard et al., 2009; Sandelowski, 2000). Qualitative data analysis captures the depth of data collection and provides comprehensive insights and trustworthiness pertinent to the study's research questions. Qualitative content analysis is the data analysis strategy recommended for assessing information from a variety of data sources in qualitative descriptive studies (Hsieh & Shannon, 2005; Neergaard et al., 2009; Sandelowski, 2000). The overarching goal in qualitative descriptive content analysis is to describe each participant's experiences in his or her words (Sandelowski, 2000). Neergaard et al. (2009) described interpretive description data analysis as an in-depth description and understanding of the study phenomenon such as synthesizing and theorizing data rather than a simple sorting and coding of data. In qualitative description, language is the vehicle of communication for presenting the facts and meanings the participants give of those events (Sandelowski, 2000).

The aim of qualitative description analysis is neither a "thick" description, as in ethnography or theory development in grounded theory, nor interpretive meaning as in phenomenology. Description of data involves low-inference interpretation to articulate the facts

in everyday language (Sandelowski, 2000). Qualitative description analysis is a rich, straight description of an event or experience (Neergaard et al., 2009). The research seeks descriptive validity, to provide an accurate account of events by both the researcher and the participants to describe the meanings of events that the participants agree is accurate (Lincoln & Guba, 1985; Sandelowski, 2000).

An extensive literature review revealed a limited number (n = < 10) of studies addressing breast cancer screening behaviors in Chamorro women living in Guam. Recent studies of Chamorro women have addressed diet and obesity; breast cancer survivor experiences; a survey on cancer knowledge, attitudes, and preventive behavior of Chamorro women; and, breast cancer risk model for the Pacific Islanders. The significant lack of information and research regarding Chamorro women's breast cancer risk perceptions, knowledge, attitudes, cultural beliefs, and screening behaviors in this population suggested a strong need to use qualitative description. The qualitative descriptive study generated up-to-date information to help gain a rich understanding of the exploration and description of women's perspectives and views regarding breast cancer screening and allow opportunities for the researcher to ask questions relevant to the topic. A qualitative descriptive approach decreased the gaps of knowledge by providing a comprehensive summary of Chamorro women's breast cancer screening risk perception, knowledge, attitudes, cultural beliefs and screening behaviors (Neergaard et al., 2009; Sandelowski, 2000; M. Sandelowski, 2010).

Setting and Sample

The sample for this study was comprised of Chamorro women from the indigenous population of Guam. The study setting was a quiet, air-conditioned office space centrally located

convenient for all participants.

In qualitative research, purposeful sampling techniques are guided by the objectives or purpose of the study. In this study, a purposive sampling technique was warranted to seek homogeneous participants to obtain rich information relevant to Chamorro women's breast cancer screening, risk perception, knowledge, attitudes, cultural beliefs and breast cancer screening behaviors (Lincoln & Guba, 1985; Neergaard et al., 2009; M. Sandelowski, 1995). Sampling in qualitative description is an evolving process whereby data collection and data analysis occur simultaneously. Sampling terminated when no new information occurred (Lincoln & Guba, 1985).

Sample Size

The literature often discusses sample size determinations in qualitative studies without reaching consensus on a specific number of participants required for a sample. In qualitative studies, sample size depends on the study design, the quality of data, the amount of useful information from each participant, the nature of the topic, the number of interviews per participant and the available time and resources (Patton, 1990; M. Sandelowski, 1995). In qualitative methods, the sample size is determined by "data saturation" necessary for the study. Data saturation is reached when there is no new information, no new themes, no new coding is feasible, and when the research question have been answered (Creswell, 2014; Fusch & Ness, 2015). Based on qualitative descriptive studies and qualitative studies on breast cancer risk perception, the researcher estimated that a purposeful sample of up to 20 participants divided into three focus groups would be required to reach data saturation (Granger, Sandelowski, Tahshjain, Swedberg, & Ekman, 2009; M. Sandelowski, 1995; Yang, Lewis, & Wojnar, 2016).

The range of sample sizes in qualitative description studies may be as small as three to five participants up to about 20 participants to obtain broad insights and rich information for the study (Magilvy & Thomas, 2009). Sample size may refer to the number of participants but also includes the numbers of observation conducted, interviews, numbers of events sampled, artifacts, and documents (M. Sandelowski, 1995). The goal of sampling is to create a representative sample of the population to gather data that are transferable to the general population of Chamorro women in Guam (Lincoln & Guba, 1985). Participants in this study were self-proclaimed Chamorro women living in Guam. Study inclusion criteria were the following:

1) Self-proclaimed Chamorro;
2) Self-identified females, by biological sex;
3) Ages 45–65 years;
4) Ability to read, speak, and write English;
5) Never diagnosed with breast cancer;
6) Agree to participate in an audio-recorded interview in focus group.

Persons who did not consent to participate were excluded from the study.

Procedures

Recruitment of Sample

The researcher recruited study participants from an island-wide (Guam) Chamorro organization. After approval from the University of Arizona Institutional Review Board and the University of Guam Institutional Review Board, the investigator communicated with gatekeepers to help gain access to potential participants. The gatekeepers were from a Chamorro organization. The organization is a multi-generation Chamorro group for men and women, with

the mission to educate and promote Chamorro language and culture. See Appendix A for more details.

The researcher personally contacted the president of the organization followed by an official letter to introduce and present the purpose of the study, the selection criteria, and the intent to seek members interested in participating in the study. See Appendix B for more details. The researcher introduced the study at a membership meeting. The researcher provided a copy of the official letter of introduction that contained contact information, along with her mobile phone number and email address on a small card (business card size). Other face-to-face and telephone supported meetings were also options to introduce the study and recruit participants. All interview sessions had culturally appropriate nutritious snacks. An incentive of a $20.00 Cost-U-Less grocery gift certificate was given to each participant who completed the study and to the gatekeepers and participants who validated the transcribed data These costs were supported by the Frederick Lange Memorial Endowment fund, The University of Arizona Foundation.

Human Subjects Protection

Ethical issues in a study involve the assurance of confidentiality and autonomy for the participation. This study was approved by the University of Arizona Human Subjects Committee Review Board, and the University of Guam Human Subjects Committee. The consent process allowed participants time to ask questions regarding the study, consent to participate, and the option to withdraw at any point or time from the study. See Appendix C for more details. Participants were advised that informed consent is necessary to solicit their experiences and views for the study. The researcher provided a verbal and written explanation of the study to each potential participant. Each participant signed a written informed consent to participate in the

study, including audiotaped interviews, and observations. Interviews lasted 65 – 95 minutes. The researcher reassured participants about measures to protect confidentiality throughout the study; participants had the right to withdraw at any time from the study (Dempsey, Dowling, Larkin, & Murphy, 2016).

Data Collection (Surveys, Interview Procedure)

In qualitative descriptive studies, the purpose of data collection is to discover "the who, what, and where of events or experiences" (Sandelowski, 2000, p. 338). Data collection strategies in qualitative description are interview sessions with individuals or focus groups using minimally structured or semi-structured, open-ended questions, including observations and examination of documents and artifacts (Colorafi & Evans, 2016; Neergaard et al., 2009; Sandelowski, 2000).

The researcher is interested in Chamorro women's breast cancer risk perception, knowledge, attitudes, beliefs, and screening behaviors. Data sources for this qualitative descriptive study were verbal (focus groups) and observations field notes. In qualitative descriptive studies, focus groups are an acceptable method to acquire a broad insight of information to explore experiences and to explore beliefs, attitudes, and values (Sandelowski, 2000; Willis, Sullivan-Bolyai, Knafl, & Cohen, 2016).

Focus Group Procedure

In qualitative descriptive data collection, individual interviews or focus groups facilitate exploration of experiences from multiple participants (Neergaard et al.; Sandelowski, 2000). Focus groups are useful for gathering subjective perspectives from participants to obtain broad insight and information on perceptions, attitudes, values, perspectives, and beliefs (Sandelowski,

2000; Willis et al., 2016). The focus groups involved a broad insight group interview of participants selected because of their experience as Chamorro women (Krueger & Casey, 2000; Rabiee, 2004). In a focus group, members interact as a group, have a common interest and could provide a deeper understanding of feelings, attitudes, beliefs, and experiences. The Chamorro women illuminated differences between individuals within the group and generated a large amount of data in a short period to comprehensively describe their experience. Krueger, (2000) suggested that participants who share similar characteristics such as gender, ethnic and shared personal experiences are advantageous to build trust within a group. Compared to individual interviews to obtain individual data, focus groups elicit multiple views and data within a group, an approach superior to collect data from Chamorro women. For example, focus groups allow participants to express detailed feelings and opinions and enable participants to give an immediate response to questions or comments from within the group (Krueger & Casey, 2000; Rabiee, 2004; Yousefy, Yazdannik, & Mohammadi, 2015).

The researcher used the focus group approach described by Krueger, (2000, 2015) to examine Chamorro women's breast cancer screening risk perception, knowledge, attitudes, cultural beliefs, and behaviors. A sample of 20 women was initially proposed; however, data saturation was reached with 15 women when the groups generated no additional or new information and the research questions had been answered. The researcher facilitated four different focus groups ranging in size from two to five participants per group. The focus groups met on the same day and time but on different weeks. Each focus group session lasted 65 to 95 minutes. The researcher facilitated the focus group according to Krueger's (2000, 2015) guidelines and also as a member of the study cultural group, which served to enhance openness

with the group. The researcher completed reflexivity journals to minimize interviewer-interviewee and cultural bias and was responsible for the digital audio recording of the group as well as other logistics. Prior to the start of the focus group, participants completed a brief demographic survey of age, the number of years of education, health insurance, the age of menarche, weight, and height, alcohol consumption and smoking history. See Appendix D for more details. Demographic characteristics data were obtained to determine the diversity of the group.

A structured interview schedule provided systematic guidance to begin and facilitate the focus group interview session (see Appendix E for more details). Focus group sessions followed a semi-structured question guide based on the Health Belief Model constructs (see Appendix F for more details), and the gaps found in the literature review on breast cancer risk perception, knowledge, attitudes, cultural beliefs, and behaviors. Initial questions were modified depending upon participants' responses. Throughout the focus group, the researcher (facilitator) used probes to enrich participants' descriptions. Follow-up questions to the group were open-ended to allow reflection on breast cancer perceived risk, knowledge, attitudes, cultural beliefs, and screening behaviors. Field notes on observational data were simultaneously collected by the researchers to document procedures, non-verbal participant responses, and observations to minimize bias and enhance credibility and trustworthiness of the study.

Sessions were held in a quiet, air-conditioned room, centrally located on the island that was convenient for the participants. The duration was approximately 65 to 95 minutes. Sessions were audio recorded by the researcher with permission from the participants. All audio recordings were transcribed verbatim by the researcher. The researcher verified the verbatim

transcription against the audio recordings for accuracy and consistency as in member checks or respondent validation. The researcher asked one participant each from two focus groups to provide comments regarding emerging themes/categories of the responses as constructed by the participants, to enhance credibility of the data (Hadi & José Closs, 2016; Lincoln & Guba, 1985). Identifying information were removed from the transcript to ensure participants' confidentiality. Transcripts were review on an ongoing basis to determine saturation. Data saturation occurred after the interview of the fifteenth participant, and further focus groups were discontinued when responses were repeated, and no new information was gained and the research questions were answered (Creswell, 2013).

Data Analysis and Management

Qualitative content analysis is commonly used to make sense of the data collected, a systematic coding and categorizing approach to formulating categories and sub-categories (Hsieh & Shannon, 2005: Sandelowski, 2000). The researcher uploaded the written transcription, field notes and observation notes to ATLAS.ti8, which is a qualitative data analysis management tool software program. ATLAS.ti8 facilitated data organization and management, and coding of data to create categories. The researcher read, summarized, and analyzed all audiotaped, verbatim-transcribed interviews and observations. The researcher read each interview to make sense of the whole using open coding, reread to begin developing themes using group code for alike words, patterns or phrases as subcategories, and categories on the data from the participants (Sandelowski, 2000; Waltz, Strickland, & Lenz, 2010). Open coding was the researcher's first step toward gradually making sense of the data. Open coding builds concepts and sub-categories by analyzing or fracturing the data line by line, identifying, naming, categorizing and describing

the data in units. Similar codes are grouped in clusters by comparing the codes to formulate categories. Codes are applied systematically and modified when new information is received (Sandelowski, 2000). The researcher synthesized the codes to identify patterns (data reduction), by simplifying, transforming and selecting categories related to the study to build a rich description of Chamorro women's breast cancer screening risk perceptions (susceptibility, severity, benefits, barriers, and cues to action and, self-efficacy) the Health Belief Model constructs, and other related literature on knowledge, attitudes, cultural beliefs and screening behaviors (Creswell, 2013).

Once categories were developed, the researcher and dissertation committee chair initiated descriptive validity checks of the interviews and categories, then with participants as member checks. Member checks of the data provide opportunities for participants' reflections on personal experiences and create opportunities to correct or add data for the study's credibility and reflexivity to avoid potential researcher bias. This strategy allows the researcher to stay close to the data with minimal interpretation, a straight-forward description of the data (Neergaard et al., 2009; Sandelowski, 2000).

Rigor

Methodological rigor is critical in qualitative research as a way to demonstrate a study's quality and trustworthiness (Creswell, 2014; Hadi & José Closs, 2016; Lincoln & Guba, 1985). Application of trustworthiness in a qualitative inquiry maximizes the appraisal of credibility, confirmability, transferability, and dependability (Creswell, 2014; Lincoln & Guba, 1985; Rolfe, 2006).

Lincoln and Guba (1985) describe credibility as the "truth value," the confidence of the researcher in the truth that the findings present accurate descriptions of the participants' experiences as they are lived and perceived. Credibility is based on how well the study provides a comprehensive and trustworthy description based on the data. Credibility promotes descriptive and evaluative insights in providing a rich, comprehensive description of the study. Strategies to maximize credibility in this study were: 1) provision of a question guide (focus group schedule) to elicit broad insight responses, 2) a study committee chairperson to verify transcription with categories and subcategories, and 3) member checking verification with participants throughout the interview and data analysis (Lincoln & Guba, 1985; Morse, 2015). Member checks was initiated with two participants from different groups to review transcription of recordings with the option to add or reconstruct the transcript as necessary). Member checks provided opportunities to assess intentions of response or action, provided additional information, aided in correcting errors or perceptions of comments, noted agreement to any corrections, and provided an assessment of overall agreement of data.

In this qualitative study, the researcher was conscious of her own biases, experiences, and values that might influence the study (participants, data and the researcher) referred to as reflexivity (Creswell, 2013; Munhall, 2012). Reflexivity involves the continuous assessment of biases, experiences, and values that may affect the understanding and description in the research process. The researcher is aware of his or her own experiences relative to the participant. The researcher in this study is of the same ethnic background and speaks the same language as the participants. To enhance reflexivity, the researcher used an interview guide, journaling and prompts to enable interaction with participants and avoid infusing her own experiences and bias

into the discussion.

Transferability is the degree to which the findings made by the authors can be applied to other contexts, settings, or other groups and populations (Lincoln & Guba, 1985; Munhall, 2012). Lincoln and Guba (1985) maintain that transferability is the decision of the person transferring the study findings to another population or setting other than that of the original researcher. Criteria for transferability depend on the intent of the research to generalize about the subject (Sandelowski, 1986). To promote transferability, the study findings included sufficient details about settings, sample characteristics, inclusion and exclusion criteria, and data collection and analysis methods (Hadi & José Closs, 2016; Lincoln & Guba, 1985; Munhall, 2012). A comprehensive, rich, and thick description of the findings with appropriate quotations enhanced transferability (Graneheim & Lundman, 2004; Lincoln & Guba, 1985; Munhall, 2012).

Another aspect of trustworthiness is dependability (Munhall, 2012). Dependability is concerned with the stability of data over similar conditions (Lincoln & Guba, 1985). To establish dependability, the researcher created files for an audit trail for future review by peer reviewers and other investigators. Field notes were recorded within the transcription with a short description of the situation at the time it occurred within the interview. An audit trail is a collection of field notes, interview transcripts, and data analysis used in the research process in which decisions and assumptions are drawn (Diane G. Cope, 2014; Rolfe, 2006). An audit trail is a key strategy to enhance the credibility of a study.

Confirmability is the researcher's ability to demonstrate that the interpretation and findings of the study reflect participants' voice and condition of the inquiry, not the researcher's biases or viewpoints (Lincoln & Guba, 1985; Munhall, 2012). The researcher enhanced

confirmability by describing how conclusions and interpretations reflected the views of the participant, directly from the raw data, providing quotes from the participants, and member-checking with participants (Lincoln & Guba, 1985; Morse, 2015).

Summary

This chapter discussed qualitative description as the research study design for describing the topic of interest. Qualitative description research investigates and describes the experiences of participants. Sampling and setting strategies, the determinants of sample size, the human subjects' protection, and sample inclusion and exclusions were presented. Data collection, data analysis, and management were also presented in addition to strategies to enhance trustworthiness in the study.

CHAPTER 4: FINDINGS

Introduction

Chapter 4 presents the findings and analysis of this qualitative research study. The purpose of this study was to explore Chamorro women's breast cancer risk perceptions, knowledge, attitudes, and cultural beliefs about breast cancer screening. A description of the sample is presented, followed by an analysis of the categories and subcategories that emerged from data using the qualitative content analysis method.

Description of the Sample

Fifteen Chamorro women residing in Guam provided the data in this research. Fifty-three percent of the women were between the ages of 50–60 years and lived in various villages throughout the island. Ten participants had mammograms within the past year (66.6%), four within the past two years (26.6%), four more than two years ago (26.6%), and one participant did not know or was not sure when she last had a mammogram. Eleven participants had private health insurance coverage (73%), one had Medicare, one had Medicaid, one had dual insurance coverage, and one did not have health insurance was not sure when was her last mammogram. Table 1 illustrates the participants' other demographic characteristics.

The researcher interviewed the women in four different focus groups ranging in size from two to six participants. Interviews were conducted on the same days but in different weeks in a quiet, air-conditioned office space. Some of the women in the groups expressed emotions feelings during the interview because they had family and or close family members who had succumbed to breast cancer and or other forms of cancer. These women were advised that they could leave the group; however, they chose to complete the interview session and remained in

the group.

TABLE 1. *Participants' Characteristics (N=15)*

Demographics	**N (%)**
Age range, years	
45–50	5 (33%)
51–60	8 (53%)
61–65	2 (13%)
Residence	
(Central) Barrigåda, Mangilao, Mongmong, Sinahånña	6 (40%)
(North) Dededu, Tomhom, Yigu	3 (20%)
(South) Inalåhan, Malojloj, Manengon, Yo'ña	6 (40%)
Educational attainment	
High school or less	5 (33%)
Attended college but no degree	5 (33%)
College degree	3 (20%)
Graduate degree or higher	2 (13%)
Medical insurance	
Private	11 (73%)
Medicare	1 (6%)
Medicaid	1 (6%)
Dual insurance	1 (6%)
No insurance	1 (6%)
Risk Factors	
Age of first menstrual period	
Less than 11 years of age	6 (40%)
12–13 years of age	6 (40%)
Greater than 14 years of age	3 (20%)
Last mammogram	
Within the past year	6 (40%)
Within the past two years	4 (27%)
More than two years ago	4 (27%)
Don't know/not sure	1 (6%)
History of breast biopsy	
Yes	7 (13%)
No	11 (74%)
Don't know/not sure	2 (13%)
Current weight and height (BMI)	
Normal weight = BMI 8.5–24.9	1 (6.6%)
Overweight = BMI 25–29.9	4 (26.6%)

TABLE 1 – *Continued*

Risk Factors	
Obesity = BMI of 30 or greater	10 (66.6%)
Alcoholic beverage intake	
Drinks in past 30 days	8 (53%)
No drinks in past 30 days	3 (27%)
Don't know/not sure	1 (7%)
Refused to answer	2 (13%)
Smoking history	
Yes	5 (33%)
No	10 (67%)

Findings Informing the Research Questions

In accordance with the preparation phase of the method of this qualitative data analysis (Elo & Kyngäs, 2008), the researcher read each transcript several times to facilitate immersion and thus make sense of the data. Transcripts were imported into ATLAS.ti 8 software, a secure software tool that enables researchers to manage data to determine codes and develop coding schemes.

During the organizing phase, the researcher used open coding to create categories and subcategories by comparing similar codes; grouped codes based on the actual words or phrases from the participants; and clustered codes to form categories that answered the research questions.

The researcher categorized the findings of this study as breast cancer risk perception, knowledge, attitudes, cultural beliefs; and motivators, benefits, and barriers to breast cancer screening. The following data descriptions are stated in the participant's own words, which informed subcategories and categories in response to research question 1: to describe current breast cancer-related screening risk perceptions, knowledge, attitudes, cultural beliefs, and breast

cancer-screening behaviors.

Category: Risk Perception

Risk perception data are in response to women's descriptions of what they saw (perceived) as their risk for breast cancer and chances of getting breast cancer compared to other women their age and during their lifetimes. Participants' resounding response was the thought of having breast cancer. These women viewed their risk of breast cancer in the context of multiple family members who had been diagnosed with breast cancer or other types of cancers. These women also viewed their chances of getting breast cancer as greater since it is common and affects friends and colleagues who claimed they have no family history of breast cancer.

Subcategory: family members with cancer. Most participants linked their fear of having breast cancer to family histories:

> *"I know I am mindful about it because my mother's twin sister had a mastectomy when she was fairly young. I have two young relatives; my mom's first cousin in their 50s and 60s had breast cancer."*

> *" i' Santa Maria, like I said I just pray to God I don't, because we lost two family members. My mom and my brother died of cancer."*

> *"I think it will be likely; my mom had cancer. It could skip my generation and maybe go in to my children. I think that would be likely because maybe there is a gene in there somewhere."*

> *"My fears have always been a factor knowing that my grandma died of breast cancer; it is always in my head."*

> *"Cancer does not discriminate, period. And we have seen it. It happens in a family; it happened twice in my family."*

> *"I already know my mom has cancer. So, I am a daughter; I am her daughter so anytime I know that I will eventually have it."*

> *"My grandmother was diagnosed with breast cancer when she was very young when she was 40. Very young. I'm still scared of it. I mean, I passed 40. I am 54, and I'm still scared of it. I'm afraid that I may have it, because we do have a first cousin and she had*

a mammogram, and there were some problems; they found something in the cells. That is what happened to my mother and her sister, who is her mother. So now she is in the same situation as my mother."

"Always there because Mom had breast cancer. I am aware of it because my sister had a mastectomy."

Subcategory: breast cancer is serious.

"Breast cancer is a serious thing; it kills people. It makes you think; it makes you wonder."

"With the dynamics of the family and the suffering, breast cancer is serious."

"I just feared because when I took my mammogram, they were making it a big issue that I needed to take another test."

"I say serious because even if the breast cancer is removed, the cancer can come back."

Category: Knowledge

Women in this study described their knowledge of breast cancer in multiple ways and forms. A participant said she would find ways to prevent breast cancer and that more information and more wake-up calls and seminars are needed; yet another said that there is too much information about breast cancer, that it is overwhelming to read about and understand. Some stated they don't know or that knowing about breast cancer is not a priority. Other participants' specific voices follow:

Subcategory: knowing about breast cancer.

"I don't know anything about breast cancer, just from hearsay. Just like if you have lumps on your breast and then that's when [there are] signs of having breast cancer. That's all I know; that's one of the signs."

"I really don't know much about it, you know, because I've never been diagnosed unless I was and then that's when I would look into the study and more details about it."

"There is so much information as to what causes breast cancer that I kinda just left it on the back burner and count my blessing that for as long as I eat healthy foods, supposedly eat health food, and continue that, then I think I would be fine. "

"I don't know if smoking is one of them; could be anything. I have not heard of what causes breast cancer. So I have no knowledge of what really causes breast cancer."

"I'm not sure if it is high here in Guam because I don't know anything about breast cancer."

"I'm just hearing that breast cancer is so high."

"I worry the most because for one; I'm not going to deny it because I am a smoker although it is not proven that it comes from smoking. But I'm thinking that part of it is from smoking."

Category: Attitudes

The category attitude in the data was defined as the participant's behavior, feelings, emotions towards people; happenings or incidents to include positive or negative intention to follow through with screening. A participant in the study described her attitude towards breast cancer screening as preventing breast cancer by exercising more, quitting smoking, and eating less fatty meals and a lot of vegetables. Another participant said she has been proactive and took it a step further by having an "executive checkup," [comprehensive physical examination] every year and this year will request a PET (Positron Emission Tomography) scan. Further data descriptions of attitudes are described as:

Subcategory: scared of breast cancer.

"Just to see other family members lose their breast, I hope I never get to that stage, but it is scary."

"I'm looking at this nai'; it is not hopeless. We can just figure a way to do this. We can stand tall and deliver whatever needs to be delivered….it is good to open us Chamorro and for us Pacific Islanders."

"I don't want to think about it. I mean I try to keep myself healthy and active."

"I think the sooner we know, the sooner we can treat it. Early detection."

"But what I'm trying to do is to prevent things and to extend life process."

Category: Cultural Beliefs

To assists in the coding process, the general definition of a cultural belief from data is the acceptance that a statement is true or real or something exists related to the culture of Chamorros in Guam. In this context, suruhanas/suruhanos are the traditional healers and taotaomonas are the ancient people of Guam. Cultural beliefs may inform breast cancer screening behaviors among Chamorro women in Guam. Participants' described beliefs of how suruhanu/suruhana are able to treat breast cancer and the use of the medicinal plants to treat breast cancer. Included is the response to the question if taotaomona can treat and or heal breast cancer.

Subcategory: belief in suruhanas/suruhanus healing practices and taotaomona practices.

"No. I believe in the taotaomona but I don't believe they can cause breast cancer. They can make you sick and hurt you but to me, not to that extent."

"Yes I know that taotaomona can cure cancer because I know of some people that talk to the spirits and do all that weird thing and the oils and then all of a sudden the doctor goes, 'What happened; how come you don't have it no more?'"

"No, I don't think they cause breast cancer, they can cause harm."

"I haven't heard of them causing breast cancer, to heal breast cancer, I don't think so. However, I've known that they cause other things, like taotaomona can get you swollen up. Trance: [can] put someone in a trance to fall in love with them and the suruhana will have to come and break that spell."

"Aha he, sahafa? Because they are more towards the herbs and to me, the level of the suruhana that I grew up with are more like for healing for taotaomona as a whole and the other ones are like herbal medicine."

Subcategory: other beliefs.

"We tend to believe in herbs and whatever is appropriate; herbs could help us….It has gone so many years back."

*"I've been taking the general…*åmot tininu *for body cleansing."*

"I know we do have a lot of women with breast cancer. I don't know percentage wise but attending the Relay-for-Life, there are a lot of women with breast cancer."

"Breast cancer is actually very common in women and is actually like number two in Guam."

"Many of our women are affected with this disease. It could be through environmental conditions. Something in the air; something that has happened some time ago in history."

Category: Screening Behaviors

The category of screening behaviors that resonate throughout the data are expressed in different ways in these subcategories. Behaviors are expressing that they have their mammogram and pap smear at the beginning of the year and express their intention to stay healthy and regarding breast cancer screening.

Subcategory: behaviors for breast cancer screening.

"I go in and then I do my yearly at the beginning part of the year. I go through my yearly examination, mammogram, pap smear."

"Mammogram is important. I try every day. I mean every year to make sure I get my mammogram."

"Yes, I get a mammogram, it is very beneficial because they can determine the different sizes of abnormal tissues, and abnormal cells and nodules."

"Early detection, I do get my physical, get my mammogram."

"Religiously. Sometimes because of the family history."

Subcategory: healthy behaviors.

"I try to exercise, I try to go to the gym when I can, drink more water."

"Get plenty of rest, is required. Your intake, on what you eat. And exercise is important. Keeping your weight down, eat moderately."

"Overall, good health, exercise, as much as possible."

"I don't smoke because definitely, that will cause body damage. So that is not a good thing to do is to smoke."

"I'm going to continue watching what I'm eating, continue exercising, and do what I need to do for daily living to live longer."

Research question 2, what influence or the willingness of women to engage in breast cancer screening. The succeeding descriptions are characteristics of what events or phenomena that prompt breast cancer screening.

Category: Motivators

Participant responses to questions about the determination of breast cancer screening and what measures were taken to decrease the chances of breast cancer diagnosis revealed motivators to take action or no action. A participant described her motivation to breast cancer screening in the following statement:

"I need to start getting those yearly mammograms, and if it's there and it is caught early, it can be saved."

"Yah, the benefit (mammogram) is the early detection."

"If the assurance covers it, I will go for it."

"The clinic I use, either they'll call, and then the place for the mammogram will call me."

Subcategory: set up mammogram appointment.

"I haven't had a mammogram in two years….I haven't had the time to worry about that. But I think this is the time to think about it. I'm going to make an appointment for it."

"Once the doctors' give an appointment paper, we are told, they have available days and when would I like to come in. So you know I take those opportunities."

"I was involved with the Breast and Cervical cancer early detection program and I really appreciated being a participant in this program because every year they give you a reminder, it's time to get your mammogram done."

"I'm reminded to get my mammogram done. I appreciate that reminder."

"Now that I do have a primary doctor, you know at least all I need to do is to go to public health to get prior authorization for the mammogram."

Research question 3, was to describe how women perceive benefits and barriers to breast cancer screening. In the following excerpts from interviews, the Chamorro women research participants described the benefits to seek breast cancer screening and breast cancer screening despite barriers.

Category: Benefits

In the responses from the interview questions, participants were able to describe mammography appointment reminders, mammogram screening, and early detection of breast cancer as benefits of breast cancer screening. There is consensus, an agreement about the benefits of mammography

Subcategory: mammogram is important.

"Mammogram is important because we need to detect right away if there is a lump in there so we can go to the next step."

"[Mammogram] is important because it can find the nodules, the cysts. It doesn't have to be cancerous but anything that looks a mass or is questionable."

"That is why we need the constant follow-up every, every year that we do a mammogram so we can make sure that it can be detected right away."

"Mammogram is important. I try every day; I mean every year to make sure I get my mammogram."

"Mammogram is important for protection, prevention, and early detection."

Category: Barriers

Issues about barriers regarding harm of screening such as screening intervals and the appropriate age for screening and fear of breast cancer were expressed in the data.

Subcategories: it is painful.

"[Mammogram] is painful and scary for me. For one, I am big breasted, so that is one big factor that I have going there."

"I have not gone for my mammogram the last two years. I am going to do it now. Even though it is painful. I'm sure it is painful even with small, medium, or large."

"It just hurts having a mammogram. Oh, what I'm trying to do is to prevent this thing and extend life process."

Subcategory: don't have insurance.

"I don't have insurance. I haven't seen him."

"With the insurance thing, I go to my primary for my annual; then they have to refer you."

"I don't always have the money for the mammogram."

"You know I don't have the money, so I will skip it. I won't go for the mammogram. And that, I just pray I will be OK this year."

"I was told my breast was so big it was really hard to do a mammogram. They said small breast is a lot easier. Every time they tell me something or they ask a question, they always make me feel bad."

Summary

This chapter presented Chamorro women's breast cancer risk perceptions, knowledge, attitudes, cultural beliefs, and breast cancer-screening behaviors. This chapter also described the participants' motivators to engage in screening behaviors and their perceptions of the benefits and barriers to breast cancer screening.

The Chamorro women described perceived risk of having breast cancer as the perception of multiple family members' diagnoses and that breast cancer is considered to be common throughout the island and is a serious problem. The participants were also in consensus about the benefits of mammography and the need to detect breast cancer early. Their cultural beliefs are that suruhanu/suruhana cannot treat or heal breast cancer and taotaomonas cannot inflict breast cancer. Participants believe suruhanu/suruhana can treat other illness such as colds and body aches with herbal medicine. Categories and subcategories of behavior and screening behaviors

were expressed as in the role of healthy living, to eat healthy foods, and exercise and that screening behaviors are actual breast cancer screenings. Participants described their motivators as friends or a family history of breast cancer, which provoked their efforts to set up appointments for mammography despite barriers such as lack of insurance coverage and the experience of pain during a screening.

CHAPTER 5: DISCUSSION

Introduction

This study sought to describe breast cancer risk perception, knowledge, attitudes, cultural beliefs, and screening behaviors in Chamorro women in Guam and the motivators for, benefits of, and barriers to breast cancer screening. This chapter includes a description of the data in comparison to the literature, the strengths and limitations of the study, implications for nursing practice, and future nursing research. Three questions guided this study: 1.) What are Chamorro women's current breast cancer-related screening risk perceptions, knowledge, attitudes, cultural beliefs, and breast cancer-screening behaviors? 2.) What motivates these women to engage in breast cancer screening? 3.) What do they perceive as benefits and barriers to breast cancer screening?

Sample Characteristics

The participants characterized in this study age group ranged between 45-65 years of age, residing in either the central, northern, or southernmost part of the island. Some breast cancer risk factors were ascertained in participants' ages of menarche, last mammogram, current weight and height, alcoholic beverage consumption, and smoking history.

The ages of menstrual onset were between less than 11 years of age (40%) and 12 - 13 years of age (40%), indicating that the sample had a small risk of developing breast cancer. More than half (67%) participants had their mammography breast cancer screening within the past two years. In the Guam Facts and Figures 2008-2012 report, 72% of women in Guam age 50 years and older reported having a mammogram within the past two years (David et al., 2015). Thus the participants in the current sample fared slightly lower with regard to mammography, but were

within the 2-year frequency recommended the American Cancer Society, Prevention and Early Detection (Breast Cancer Screening) (ACS, 2017c). Other risk factors described in this study were current weight and height as it translated to BMI. The BMI of all participants ranged from 23 to 32, which reflects previous studies of Chamorro women who had significantly higher body mass index than Filipino women in Guam (30.4 versus 25.9) (Leon Guerrero et al., 2008; Paulino et al., 2011). Overweight and obese women, especially those who are postmenopausal, have a higher risk of breast cancer. Thus, this sample was at higher risk of breast cancer by virtue of weight. Other studies have addressed Chamorro women's increased caloric consumption as it relates to excessive weight gain, obesity, and health risks (Leon Guerrero et al., 2008; LeonGuerrero et al., 2014; Paulino et al., 2011). Although this researcher did not query participants about their caloric intake, participants did volunteer that their diets were high-calorie foods, high protein and fatty foods with very little fruits and vegetables.

More than half (53%) of the participants reported that they had alcoholic beverage intake in the past 30 days and 67% had never smoked. In epidemiologic studies, ingestion of alcoholic beverage consumption is a consistent risk factor in studies of breast cancer screening behaviors (ACS, 2017b; Guam Bureau of Statistics and Planning, 2014; Singletary & Gapstur, 2001). Women who consume three alcoholic drinks per week increase their breast cancer risk by 15%. For every additional drink the risk increases by 10 % (ACS, 2017a). Overall participants had at least one modifiable risk factor, putting them at higher risk of breast cancer.

Risk Perception

In this study, the overarching perception of risk was how the participants viewed and understood their chances of getting breast cancer. The participants perceived their breast cancer

risk predominantly in the context of the affective component of perceived risk as described in the literature by Ferrer et al. (2016): they feared breast cancer given that other members of their families had been diagnosed with breast cancer and many had succumbed to breast cancer. Most of the women shared that although there are treatments for breast cancer, the disease does not discriminate against ethnicity, family history, or health practices; that breast cancer does kill. Participants also stated that breast cancer is common in Guam and they are afraid of the disease, similarly articulated by Balajadia et al. (2008) who investigated cancer-related knowledge, attitudes and behaviors of Chamorros. Being afraid and worried about breast cancer because of family history of cancer was an emotional response to seek preventive measures: to make an appointment for a mammogram or an extended examination such as requesting an additional radiologic diagnostic workup to evaluate their breast health. Worry and fear are affective risk perceptions engendered by the possibility of developing the disease or illnesses (Ferrer et al., 2016). Cancer worry is associated with breast cancer risk perception in family histories of breast cancer (Paalosalo-Harris & Skirton, 2016). Affective risk perceptions were a robust predictor of preventive health behaviors in Ferrer et al., (2016) which was a favorable response to fear of breast cancer by the Chamorro women in this study. Cancer related affective and cognitive risk perceptions such as breast cancer worry, fear or being afraid of breast cancer described by the Chamorro women are predictors for cancer preventive behavior and communication for breast cancer screening (Chae, 2015).

Knowledge

Cancer coalition groups and health-related sources have made efforts in Guam to disseminate cancer information in public meetings, conferences, and through social media. Such

efforts to promote knowledge about breast cancer risk factors and screening are said to encourage screening behaviors such as mammography (DPH&SS, 2017; Guam Cancer Care, 2017; Perez et al., 2010). Lincoln and Guba (1985) defined knowledge as acquired and socially constructed in human interaction. In this study, although human interaction was evident in the focus groups, the participants did not clearly articulate their knowledge of breast cancer risk factors and screening practices. Some participants mentioned that they did not know anything about breast cancer causes and risk factors. Other participants said they would like to see more educational programs, the risk factors and prevention strategies including testimonies from breast cancer survivors. Despite these comments, participants strongly supported (Perez et al., 2010) early detection and having mammogram breast cancer screening.

Attitudes

Participants in the study by Balajadia et al. (2008) reported that attitudes leading to neglect of their health contributed to cancer as well as the fear of detecting breast cancer. Participants in the current study voiced attitudes toward breast cancer screening as the importance of quitting smoking, exercising more, and continuing to watch their food intake. The fear that resulted from knowing that other members of the family are afflicted with or succumbed to breast cancer also appeared to inform their attitudes on how they feel about the need to start their annual mammogram and make mammography appointments. This shift toward screening behaviors to promote a healthy lifestyle was also demonstrated in the literature (Balajadia et al., 2008; Seven, Bağcivan, Akyuz, & Bölükbaş, 2017).

Cultural Beliefs

The belief in taotaomonas of the ancient people of Guam remains in the legends and beliefs of the people of Guam. Studies have shown that Chamorros believe that illness can be provoked spiritually by taotaomonas (Balajadia et al., 2008; Rosario, 2010). In the current study participants' descriptions about cultural beliefs suggested that taotaomonas do not cause or heal breast cancer. Similarly, participants believed that the suruhanu/suruhana (traditional healers) do use herbal medicine to treat other illness not related to breast cancer. Three participants indicated they have and will continue to seek medical care from suruhanu/suruhana depending on the type of illness. Participants said they will not seek suruhanu/suruhana to treat breast cancer. In other studies however, investigators found suruhana or suruhanu do treat cancer patients (McMakin, 1978; Tanjasiri & Sablan-Santos, 2001; Torsch & Ma, 2000). Cultural beliefs such as fatalism about breast cancer was a concern; some would like to know if they had breast cancer and said they will accept it, that their belief that faith in God is to get better or die from it. This finding was reiterated in another study where Chamorros' faith in God protects from breast cancer (Balajadia et al., 2008). In a similar study to develop educational materials tailored to specific ethnic population, Micronesian women believed having breast cancer is God's will and associated with death (Aitaoto et al., 2012). In contrast, some participants in the current study indicated that with a family history of breast cancer they believed that faith in God will protect them from having breast cancer and if they do get cancer, it is God's will.

Screening Behaviors and Other Preventive Behaviors

The findings in the study showed that Chamorro women are aware of breast cancer screening and early detection, such as getting a mammogram. Throughout the discussion, some

were influenced to follow through with their mammogram appointments. Participants with family members or friends who had experienced breast cancer were diligent in keeping their mammography appointments. Making mammogram appointments was seen as difficult without health insurance and limited sources of funding. As a result, one had to prioritize the use of funds and opted not to pay for mammogram screening, which resulted in a delay in screening. This phenomenon is common among persons who lack access to screening because of cost. Other behaviors mentioned by participants were to promote lifestyle changes such as eating a balanced diet, exercising, and restricting alcohol consumption to decrease the risk of breast cancer risk. All of these are endorsed by the American Cancer Society (ACS, 2017a). Overall, Chamorro women in this study were vigilant about mammography but cost continues to be a barrier for some. Despite their self-reported risk factors of obesity and alcohol consumption, participants still viewed their lifestyle behaviors as healthy and aimed at reducing breast cancer risk.

Motivators

Participants described motivators to engage in breast cancer screening as making an appointment after hearing about/from and experiencing family members', and friends' breast cancer illness. Participants wanted to learn about breast cancer risk and screening. Knowledge about breast cancer and screening from health providers, advertisements, social media and actual breast cancer experiences were motivators to screening. Participants also expressed the need for breast cancer mammography screening after hearing the concerns of other participants within the focus group. Motivation and encouragement were also evident in receiving reminder phone calls to make mammography appointments. Typically, women could be motivated to participate in screening through their family physician and other healthcare providers, public health education

to include the use of social media, similar to what Hassan et al. found in their study (Hassan, Ho, Mariapun, & Teo, 2015). However, according to some reports, breast cancer screening behavior may not be associated with motivation (Talley, Yang, & Williams, 2016).

Benefits

Participants expressed benefits of breast cancer screening in many different ways. Women perceived the value of mammography. Benefits towards screening behaviors in this sample were knowing that cure is available and that early detection of breast cancer will result in less severe treatment management and outcomes. Breast cancer screening was more accessible with health insurance coverage such as Medicaid and participants viewed having insurance as essential for screening. Maintaining weight and exercising to stay healthy were beneficial factors associated with breast health.

Barriers

Participants' difficulties as barriers to having breast cancer screening were cost, no insurance coverage, insufficient access to screening, painful mammography procedures and the fear of a cancer diagnosis emanating from screening. In a study on ethnic disparities in cancer among Guam residents, the researchers identified Chamorros have less access to cancer services which lead to late cancer detection (Robert L Haddock, Whippy, Talon, & Montano, 2009). Barriers also include the lack of detailed knowledge about breast cancer screening and risk factors.

Study Strengths

The researcher was able to recruit women from all over the island of Guam, which added to the transferability of the findings. The use of qualitative description as a method was a

strength of this study. The study gathered depth and breadth of rich data. This method allowed participants to provide a straight description of their understanding of breast cancer risk perception, knowledge, attitudes and screening behaviors motivations, benefits and barriers. All research has issues of bias or unintended influences from the participants as well as from the researcher; however, this researcher used reflexivity journals to minimize interviewer-interviewee and cultural bias in order to enhance credibility and trustworthiness of the study. The researcher took field notes to describe concerns on breast cancer knowledge and family interaction regarding breast cancer. Data collection continued until data saturation was achieved through the interview of 15 women, when no new information was obtained.

Ensuring trustworthiness and authenticity of the findings were a priority during and after the focus group interviews. Member check was utilized by verifying accuracy with the participants during the interview and after transcription of the interview session. Dependability and confirmability were substantiated by participants and the dissertation chair reviewed the findings throughout the study.

Study Limitations

Several issues may affect the transferability of this study. There was selection bias, as the sample was homogeneous to satisfy the nature of the topic. The focus groups were comprised of Chamorro women who may not represent other women of Guam. However, since this is a qualitative descriptive study, generalizability is not the goal (Colorafi & Evans, 2016; D. G. Cope, 2014; Polit & Beck, 2010). Data were self-reported, which can lead to recall bias and social desirability responses. The interviews were conducted with four different groups ranging in size from two to five participants in a group, which may also affect social desirability

responses and recall bias. The interview questions were in the English language, but some of the responses were in the Chamorro language, which may create a language/translation, misunderstood response bias.

Despite these limitations, this study is the first of its kind for Chamorro women in Guam. This study provides valuable information to inform future research intervention and policy to affect screening behaviors to control breast cancer in Chamorro women the indigenous population of Guam.

Implications for Practice and Research

Practitioners should routinely assess the cancer status of all patients, including family history and social evaluation. If the time since the last mammogram is beyond the recommended time frame, practitioners can refer women for a mammogram and help make that appointment prior to the patient's departure from the clinical facility.

The findings in this study suggest that much work remains to be done to understand Chamorro women's breast cancer risk perceptions, knowledge, attitudes, beliefs, and screening behaviors. This notion might lead the practitioner to develop interventions to include breast cancer screening education to promote screening education in outreach programs in communities. Such programs could involve mayors in the different villages to address breast cancer screening practices, including early detection and prevention such as smoking cessation, reducing alcohol consumption, and encouraging weight loss. Culturally appropriate Chamorro and English language educational programs should also include focus on the familial risk of breast cancer. Available resources should include information in multimedia forums, including social media. The findings have implications for the development of culturally appropriate

educational programs promoting breast cancer screening. Further study is recommended to determine if a family history of breast cancer influence breast cancer screening behavior such as breast cancer mammograms in this population.

Findings in this qualitative descriptive study are rich descriptions in the words of the participants, Chamorro women in Guam, which can facilitate practitioners' understanding of breast cancer in women and their families within their social-cultural context as Chamorros. The findings suggest that future work is to promote educational interventions programs throughout the villages via town meetings and presentation and to promote policy changes to increase access to mammography, free programs for the uninsured.

Summary

This chapter discussed the findings of a qualitative descriptive study and how it is associated with current literature**.** Breast cancer is prevalent in Guam, an island community. Findings of the study included a gap of knowledge in breast cancer screening and awareness of breast cancer risk factors; participants voiced the need for a culturally appropriate, community participation educational programs on breast cancer screening and breast cancer risk factors. The overall consensus of the benefits of mammogram and the value of the need for early detection resonate throughout the interviews. Motivations for breast cancer screening were knowing of family or friends with breast cancer and their risk, reminders from their health care providers as well as having a health insurance coverage. Barriers to breast cancer screening were no health insurance coverage, painful mammograms and hurtful comments made by health care providers. Chamorro women's belief that staying healthy are forms of living a healthy life as forms of healthy breast. Cultural belief on suruhana/suruhano do not treat or cause breast cancer.

Conclusion

The research aimed to provide a straight descriptive summary on breast cancer risk perception, knowledge, attitudes, beliefs, and screening behaviors of Chamorro women and the motivators for, barriers toward, and benefits of screening. The research questions were examined through a qualitative descriptive approach in a focus group interviews with the use of a semi-structured interview questions. Findings are concerning and need immediate planning and intervention to address these issues. The conclusion of this study is not applicable to the general population but intended to provide rich descriptions from the Chamorro women, which will be useful in a larger, and generalized population to quantify such findings. Findings of this study can be useful in future studies on the impact and or implementation of women's breast cancer risk perception, knowledge, attitudes, cultural beliefs, and screening behaviors as well as the motivators for, barriers to, and benefits of breast cancer screening.

APPENDIX A:

THE UNIVERSITY OF ARIZONA INSTITUTIONAL REVIEW BOARD APPROVAL LETTER AND UNIVERSITY OF GUAM CHRS APPROVAL LETTER

UACC Scientific Review Committee
1515 N Campbell Avenue
PO Box 245024, Room 1955
Tucson AZ 85724-5024

THE UNIVERSITY OF ARIZONA. CANCER CENTER

Phone: 520- 626-1155
Fax: 520-626-9001
lgarland@uacc.arizona.edu
UACC-SRC@uacc.arizona.edu

UACC SCIENTIFIC REVIEW COMMITTEE
OUTCOME REPORT

Protocol title: Breast cancer risk perception, knowledge, attudes, beliefs and behaviors of Chamorro women in Guam

Protocol submission number: 27329

Sponsor: NA

Principal Investigator(s): Teofila Sholing Perez Cruz

Date: 5/10/2017

Findings/determination: **EXEMPT**

Comments: This study was administratively reviewed and approved by Dr. Garland, Scientific Review Committee Chair. This study is exempt from full committee review because it is a screening study and does not require research related invasive procedures.

Sincerely,

[redacted]

Linda Garland, MD
Chair, UACC Scientific Review Committee

[redacted]

UNIVERSITY OF GUAM **Committee on Human Research Subjects (CHRS)**
Unibetsedåt GUAHAN *c/o Office of the Assistant Vice President*

Date: June 9, 2017

To: Ms. Teofila P. Cruz

From: Dr. John A. Peterson, Interim [redacted] Chair
UOG Committee on Human Research Subjects (CHRS)

RE: Approval of "Breast Cancer Risk Perception, Knowledge, Attitude, Beliefs and Behaviors of Chamorro Women in Guam" - CHRS-120SU

Dear Ms. Cruz:

Your completed application for CHRS review with the accompanying documents has been received and reviewed. Your proposed study "Breast Cancer Risk Perception, Knowledge, Attitude, Beliefs and Behaviors of Chamorro Women in Guam" meets the requirements as exempt under the federal guidelines CFR 45, Part 46.

As a result, **approval for this project has been granted as of June 9, 2017.** Therefore, you may begin your project. Should the project extend beyond a 1-year period (12 months from approval), please be sure to submit an appropriate request for an extension of the study.

Should any changes in procedures or in the instrument be made, CHRS must be informed and a review of the changes must be completed before they are implemented.

APPENDIX B:

INVITATIONAL LETTER FOR RECRUITMENT

ARIZONA | COLLEGE OF NURSING

Invitational letter for recruitment

Hafa Adai Madam President,

My name is *Teofila P. Cruz*, I am a Doctoral Candidate from the University of Arizona, College of Nursing, Tucson, Arizona. I would like to invite you and members of the Pacific Island Bilingual Bicultural Association (PIBBA) to participate in my research study to describe "breast cancer risk perception, knowledge, attitudes, beliefs and screening behaviors of Chamorro women in Guam". To be able to participate you must be a Chamorro female; ages 45-65 years; able to read, speak and write English; have never been diagnosed with breast cancer; and agree to participate in an audio-recorded interview in a focus group.

Participants will be asked to complete a brief survey and participate in an interview session which will take approximately one hour and 30 minutes to complete. Information gathered as part of the survey and interview will be anonymous. All information will be held confidential and secured, uploaded into a cloud data storage and collaboration tool using "Box@UA" at the University of Arizona.

Participation in this study is voluntary. You may feel some discomfort talking about your experience during the interview. There are no direct benefits or cost to you, but your participation in this research might help in describing and understanding Chamorro women living in Guam, breast cancer risk perception, knowledge, attitudes, behaviors, and beliefs.

If you would like to know more about the research study and or interested in participating, please contact me a[redacted]r email at[redacted]

Si' Yu'uos Ma'ase,

Teofila P. Cruz, RN, MSN, Doctoral Candidate

APPENDIX C:

CONSENT FORM

ARIZONA

The University of Arizona Consent to Participate in Research

Study Title: Breast cancer risk perception, knowledge, attitudes, beliefs and behaviors of Chamorro women in Guam.

Principal Investigator: Teofila Sholing Perez Cruz

This is a consent form for research participation.

It contains important information about this study and what to expect if you decide to participate. Please consider the information carefully. Feel free to discuss the study with your friends and family and to ask questions before making your decision whether or not to participate.

Why is this study being done?

This qualitative descriptive study will obtain a straight-forward description of experiences and insights of Chamorro women in Guam ages 45 – 65, about breast cancer risk perception, knowledge, attitudes, cultural beliefs and breast cancer screening.

What will happen if I take part in this study?

You will be asked to complete responses to 12 questions regarding your background in a short (5 min) survey, and then you will participate in a group interview about breast cancer.

How long will I be in the study?

The study will take approximately one hour and thirty minutes.

How many people will take part in this study?

There are twenty (20) people in the study who will be divided into three groups. Two groups will have seven (7) people in each group, and one group will have six (6) people in the group. Each group will be interviewed separately by a trained facilitator who is a different person than the primary investigator. Each interview session will be audio-recorded by the primary investigator. The primary investigator will ask one person in each group to review the transcript of the recorded session for accuracy.

Can I stop being in the study?

Your participation is voluntary. You may refuse to participate in this study. If you decide to take part in the study, you may leave the study at any time. No matter what decision you make, there will be not penalty to you or loss of benefits to which you are entitled.

What risks or benefits can I expect from being in the study?

You may feel some discomfort talking about your experience during the interview in the group discussion. By participating in this research, the information you provide might help to describe

ARIZONA

and understand breast cancer risk perception, knowledge, attitudes, beliefs, and screening behaviors of Chamorro women.

Will my study-related information be kept confidential?

All information collected from the participants is confidential. The audio recordings of the session will be destroyed after they are checked against the verbatim transcript by the primary investigator, the facilitator, three participants, and members of the primary investigator's doctoral committee. Transcripts will be stored securely at the University of Arizona. Committee members and the researcher have access to the data for the purposes of this study. The study related circumstances where this information may be released for review are by the following groups:

- The University of Arizona Institutional Review Board
- Office for Human Research Protections or other federal, state, or international regulatory agencies

Who can answer my questions about the study?

For questions, concerns, or complaints about the study you may contact Teofila S.P. Cruz (Email: [redacted]

For questions about your rights as a participant in this study or to discuss other study-related concerns or complaints with someone who is not part of the research team, you may contact the Human Subjects Protection Program at [redacted] or online at http://rgw.arizona.edu/compliance/human-subjects-protection-program.

If you are injured because of participating in this study or for questions about a study-related injury, you may contact _____.

An Institutional Review Board responsible for human subjects' research at The University of Arizona reviewed this research project and found it to be acceptable, according to applicable state and federal regulations and University policies designed to protect the rights and welfare of participants in research.

Signing the consent form

I have read (or someone has read to me) this form, and I am aware that I am being asked to participate in a research study. I have had the opportunity to ask questions and have had them answered to my satisfaction. I voluntarily agree to participate in this study.

I am not giving up any legal rights by signing this form. I will be given a copy of this form.

ARIZONA

Printed name of subject	Signature of subject	Date

APPENDIX D:

SOCIODEMOGRAPHIC SURVEY

SOCIODEMOGRAPHIC QUESTIONNAIRE

1. What is your age?
    a. 45 – 50
    b. 51- 60
    c. 61 - 65
2. Residence of (Village)?
3. What is your highest educational preparation?
    a. Elementary school or less
    b. High school or less
    c. Attended college but no degree
    d. College degree
    e. Graduate degree or higher
4. Do you have medical insurance? If yes, please identify
    a. Yes _____
    b. No _____
    c. Other _____
5. At what age at the time of your first menstral period?
    a. Unknown
    b. Less than 11 years of age
    c. 12-13 years of age
    d. Greater than 14 years of age
    e. Refused

6. When was your last mammography?
    a. Within the past year
    b. Within the past 2 years
    c. More than two years ago
    d. Don't know/not sure
    e. Refused
7. Have you ever had a breast biopsy?
    a. Yes
    b. No
    c. Don't know/not sure
    d. Refused
8. What is your current weight?
    a. Less than 100 lbs.
    b. 100 lbs – 120 lbs
    c. 121 lbs – 140 lbs
    d. 141 lbs – 175 lbs
    e. More than 175 lbs.
9. What is your height?

10. In the past 12 months, how often did you drink any type of alcoholic beverage?

    a. _____ days per week

    b. _____days in past 30 days

    c. _____no drinks in past 30 days

    d. _____don't know/not sure

    e. _____Refused

11. Do you smoke cigarettes every day, some days, or not at all?

    a. Every day

    b. Some days

    c. Not at all

    d. Don't know/not sure

    e. Refused

12. During the past months, have you stopped smoking for one day or longer because you were trying to quit smoking?

    a. Yes

    b. No

    c. Don't know/not sure

    d. Refused

APPENDIX E:

INTERVIEW SCHEDULE

INTERVIEW SCHEDULE

Brief introduction – *Hafa Adai! Si' Yu'uos Ma'ase* on your interest to participate in this study. My name is *Teofila Perez Cruz*. I am a Doctoral Candidate at the University of Arizona, College of Nursing, Tucson, Arizona.

To facilitate taking notes, I would like to audio record our conversations. I am the only one who has access to the recordings, which will eventually be destroyed after transcription, verification, and completion of the study. This study is to describe Chamorro women's breast cancer risk perception, knowledge, attitudes, cultural beliefs and breast cancer screening behaviors. You must sign an informed consent to participate in the study. The document states that all information you provide is confidential, your participation is voluntary and you may stop participation at any time if you feel uncomfortable, and we do not intend to inflict any harm.

You were selected as a participant because you are age 45-65; read, write, and speak English; never have been diagnosed with breast cancer; and agreed to participate in an audio-recorded focus group. The interview will last no less than 60 minutes and no more than 90 minutes. There are several questions for you to answer. If we are running out of time, the faciliator may have to interrupt to push forward to complete the interview session.

The next step is completion of a short questionnaire that I will pass out to you to complete. These questions ask about some background information that will be helpful in describing the sample of participants as a whole. After you finish these questions, we will begin the focus group.

APPENDIX F:

INTERVIEW QUESTIONS

INTERVIEW QUESTIONS

Are there any other questions you would like to ask before we begin?

Knowledge Questions:

1. Tell me, what do you know about breast cancer?

   Probe:

   a. Do you think breast cancer is common in Guam?

   b. What are the risk factors for breast cancer?

   c. Do you think women who have family members with breast cancer are more likely to get breast cancer?

Perceived susceptibility questions

2. Can you tell me what do you see (perceive) as your risk for breast cancer?

   Probe:

   a. What do you think are your chances of getting breast cancer sometime during the rest of your life?

   b. What are your chances of getting breast cancer compared to other women your age?

   c. What do you need to know about your risk for breast cancer?

   d. Do you feel you will get breast cancer sometime during your life?

Perceived severity questions

3. Why do you think breast cancer is a serious disease?

   Probe:

   a. Does the thought of breast cancer scare you?

b. Do you think breast cancer is hopeless?

c. Is breast cancer more serious than other diseases?

Perceived benefits questions:

4. Tell me why do you think having a mammogram is important?

Probe:

a. What are the benefits of having a mammogram?

b. How can having a mammogram be helpful to you?

c.

Perceived barriers questions:

5. What measures have you taken to decrease the chances of a breast cancer diagnosis?

Probe:

a. How often do you see your doctor/physician?

b. Do you think it is difficult to make mammography appointments?

c. What things do you do to prevent breast cancer?

d. What makes it hard for you to get screening?

Cultural beliefs

6. Tell me are suruhano/suruhana able to treat breast cancer?

Probe:

a. Do you think medicinal plants available will help breast cancer treatment?

b. Tell me do you think taotaomona's can cause beast cancer?

c. If taotaomona's cause breast cancer, do you think taotaomon's can heal breast cancer?

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