A COMPARATIVE CASE STUDY OF RESOURCE STRUCTURES (INFORMATION AND SERVICE) FOR KOREAN AMERICAN WOMEN'S BREAST CANCER SCREENINGS IN ATLANTA AND CHICAGO METROPOLITAN AREAS

by

JUN HOE KIM

(Under the Direction of Larry G. Nackerud)

ABSTRACT

The purpose of the three studies in this dissertation is to provide the foundation of the research study "A Comparative Case Study of Resource Structures for Korean American Women's Breast Cancer Screenings in Atlanta and Chicago Metropolitan Areas" for further analysis on the current information and service systems for Korean American women's breast cancer screenings and their screening status in Atlanta and Chicago metropolitan areas. In Study One, through reviewing previous research studies on Korean American women's breast cancer screening, it was found that theoretical approaches were biased toward the Health Belief Model. This study attempts to bridge the gap between micro and macro perspectives by extending HBM with habitus, a concept of Pierre Bourdieu. In Study Two, exploratory statistical analysis was performed to examine the factors influencing Korean American women's breast cancer screening

practice, with a sample of 274 Korean American women, from 40 to 65 years of age. Data were collected through a self-administrated survey in Atlanta and Chicago metropolitan areas to confirm the revised framework of Study One. In addition to that, the functionality of two different types of response items about the status of breast cancer screening is examined using binary and Likert five-point scales. Compared with the findings of research studies before 2014, the rate of Korean American women with health insurance in both regions has increased but the rate of Korean American women having a mammogram in the past two years was still low, especially in Chicago. The response items using a Likert five-point scale had significant relations with more factors than binary response items. In Study Three, the scale of information and service resources, medical dependency on S. Korea, social barriers, and breast cancer screening behavior pattern was developed to explain the Korean American women's breast cancer screening practice through the extended Health Belief Model within the social structures, and their reliability and construct validity were tested. After the deleting, summating, and redefining process, the sensitivity of the new variables was checked through logistic regression, resulting in significant results. Eventually, the findings will provide a critical foundation for future research studies.

KEY WORDS: Breast cancer screening, Routine mammogram, Habitus, Health belief model (HBM), Information and service asymmetry, Quasi-public goods, Non-profit organization (NPO), Atlanta, Chicago, Scale, Response items, Korean American women, Affordable Care Act

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DEDICATION

I dedicate this dissertation to God, who raised me up to hold out my hand to people in need, Min Jun Suh (2004 - 2013), who is my nephew and was a real warrior against his cancer, and all people who are still fighting against cancer.

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CHAPTER 1

INTRODUCTION

Purpose of the Study

A series of three research manuscripts of this dissertation were written as a part of the research study “A Comparative Case Study of Resource Structures for Korean American Women’s Breast Cancer Screenings in Atlanta and Chicago Metropolitan Areas.”This comparative research study aimed to review the current structures of the information and service resources of breast cancer screenings for Korean American women in Atlanta and Chicago metropolitan areas and the status of their breast cancer screenings in the extended health belief model (HBM), comparing cases of the two areas (Champion, 1999; Goodrick, 2014). In other words, the information and service resource structures of breast cancer screenings and the dynamics among their components surrounding Korean American women as social agents (Grenfell, 2008) were the focus of the overall research study.

To approach the complicated phenomenon in multi-dimensional perspectives, theoretical concepts from the diverse disciplines of sociology, psychology, economics, and public health were adapted for this study. Especially, this research study could show researchers in social work how they can contribute to the theoretical development and practical understanding of issues in the research barren fields of social work, such as health as an applied social science, without their own theory. This was one of the major messages that the author wanted to send to scholars of social work through all the research articles and this will be discussed more in Chapter 5. Furthermore, to collect data in diverse dimensions mixed research methods were employed:

survey and interview were utilized for this research study. However, the parts of the research study with qualitative data analysis and statistical path analysis among the factors and breast cancer screening behavior were not included in the following three studies for the doctoral dissertation requirement of the University of Georgia. Regarding regional selection, Korean Americans in both areas how similarities in terms of population size and residential location (U.S. Census Bureau, 2010). Meanwhile, the target areas are geographically far enough from each other to develop their own unique breast cancer screening and care system.

In the first of the three studies in this dissertation, the theoretical framework was developed and discussed by reviewing previous literature and comparing with their theoretical foundation. Based on the theoretical approaches of Study One, the purpose of Study Two was to explore the correlation between factors and Korean American women's breast cancer screening of two different regions with empirical data, collected through surveys. Through Study three, the scale for additional constructs to extend the conceptual framework of HBM were addressed, which were developed to measure individual's resource accessibility and preference for breast cancer screening and the degrees of barriers and their reliability, construct validity, and sensitivity were tested statistically and discussed.

Breast Cancer Screening and Korean American Women's issues

Breast cancer is one of the leading cancers and causes to death among women in the U.S., and this applies to Korean American Women as well (ACS, 2015; McCracken et al., 2007). Evidence supports that screening for breast cancer by regular mammograms can reduce mortality from breast cancer by 20-30% in certain groups when compared with that in unscreened women of the same age (Baum & Schipper, 2002). Hence, early stage detection of breast cancer requires

obtaining regular tests, and women over 45 years of age should have a mammograms at least every 1 or 2 years (ACA, 2015).

Since the initiative of the Breast and Cervical Cancer Mortality Prevention Act of 1990 in the U.S., free or affordable screening programs in the 50 states have been funded through the National Breast and Cervical Cancer Early Detection Program (NBCCEDP) and diverse community programs for breast cancer screening promotion have been developed and operated in multidimensional social sectors (Benard, Sariya, Roland, Yabroff, & Miller, 2011; CDC, 2012; Rapkin et al., 2006). In the case of Illinois, the Illinois Breast and Cervical Cancer program has been offering free mammograms and care services to eligible women of Illinois working with working with 33 local agencies including local hospitals and non-profit community organizations since 1995 (IDPH, 2015). Susan G. Komen – Chicago initiated their fundraising and community support programs as a private foundation to support research projects on breast cancer and free breast cancer screening, diagnostics, treatment and community outreach in 1997 and currently granted over $ 1 million to 14 local organizations (Susan G. Komen Chicagoland Area, 2015). Since 2006, social workers of Korean American Community Services have provided free navigation and escort service to Korean American women for free mammograms, Pap smear tests and follow-up services, partnering with other community agencies beyond community outreach education programs about breast cancer early detection. In 2012, they served around 350 Korean American women a year only for the navigation and escort services for free mammograms (Korean American Community Services, 2012).

In other words, routine mammograms have been confirmed as the most significant factor in a general perspective of breast cancer early detection (Simon, 2015) and diverse efforts have been made to promote routine mammograms of women including Korean American women in various

social sectors. Despite these efforts, the rate of routine mammograms of Asian American women is still low and the rate of Korean American women is the lowest comparing with other Asian groups such as Chinese, Filipino, Japanese and Vietnamese (CDC, 2012; Ryu, Crespi, &Maxwell, 2013).

Conclusively, it is essential to review and assess the academic and practical efforts and systems to promote a routine mammogram for Korean American women for breast cancer early detection and the status of Korean American women's breast cancer screening and to fill the gap between theory and practice, reestablishing the role of social work as an applied social science. However, through the review of previous research articles on Korean American women's breast cancer screening barriers preventing understanding the causes and issues of Korean American women's less breast cancer screening were identified, namely, theoretical, research tool, and geographical biases.

Theoretical Bias

First of all, theoretical bias might be one of the major barriers obstructing approaches of various perspectives on the issues of Korean American women's breast cancer screening. Most of the research articles about Korea American women's breast cancer screening were produced in the public health or nursing disciplines, based on theories in individual context such as health belief model (HBM), the transtheoretical model (TTM), the theory of planned behavior (TPB), social support theory, the PRECEDE model and social cognitive theory (Kim & Menon, 2009; Lee, 2015;Pasick & Burke, 2008). Among them, HBM has been the most dominant theory and model in the research fields of breast cancer screening (Lee, 2015; Pasick & Burke, 2008).

Lee (2015) reviewed and analyzed 22 research articles in the U.S. from the electric databases MEDLINE and the Cumulative Index to Nursing and Allied Health Literature (CINAHL),

related to cultural factors and breast and cervical cancer screening among Korean American women. She found that only 1 of the 22 manuscripts had been completed by authors from the social work discipline, while the rest of them were done by people in the Public Health or Nursing fields. Fourteen of the manuscripts had adapted Health Belief Model (HBM) to their theoretical frameworks or revised it in combination with HBM and other theories. This phenomenon was not found only in the research fields of women's breast cancer screening but also widely in the public health and nursing fields despite the criticism on that theory and model (Pasick & Burke, 2008; Rahman, Dignan, & Shelton, 2005).

Originally, HBM was designed and developed to explain individuals' behavior change for their health in terms of disease prevention in the early 1950s and this model was composed of four constructs: susceptibility, severity, benefit, and barriers (Nancy & Becker, 1984; Carpenter, 2010). Later, self-efficacy was introduced through Bandura's social cognitive theory (Rosendtock, Strecher, & Becker, 1988), which became one of the major constructs of HBM (Champion, Skinner, & Menon, 2005). Since that time, HBM has been revised and developed with the combination of other theories such as social cognitive theory and TTM as a dominant theory and model in the public health field including women's breast cancer screening (Pasick & Burke, 2008; Carpenter, 2010). Recently research studies have investigated the correlation between breast cancer screening behavior and structural factors such as acculturation in the combination with HBM (Kim & Menon, 2009; Pasick & Burke, 2008).

Nevertheless, HBM has been criticized for its lack of explanation about the influence of environmental factors on individuals' behavior change such as cultural and social factors and this is, also, applicable to the other theories above (Pasick & Burke, 2008). HBM's connection with social factors might be understood through the internal and external characteristics of cue to

action but the concept of cue to action has not been developed and clarified beyond stimulus such as information or experience from outside (Carpenter, 2010).

As a result, this theoretical dependence on HBM in the limited research on Korean American women's breast cancer screening in limited disciplines such as Public Health and Nursing interrupted the diverse theoretical approach and development in addressing breast cancer screening issue among Korean American women. Hence, it is essential to review concepts and theories of diverse academic disciplines such as sociology and to adapt them to the theoretical framework to understand Korean American women's problems with breast cancer screening comprehensively and to overcome the theoretical limitation of HBM. These tasks and processes will show one of the ways that social work can overcome the biases of limited disciplines on social issues, bridging the gap between macro and micro perspectives as an applied social science.

Measurement Bias

The theoretical bias and inclination in the research fields has limited developing the measurements of research studies, related to Korean American women's breast cancer screening as well. As verified above, HBM has been a dominant theory and model of research studies on Korean American women's breast cancer screening and most of them focused on regular mammogram usage as a significant breast cancer screening method. Hence, the measurements of research studies, related to women's mammography screening including that for Korean American women were based mainly on HBM and its constructs and Champion's HBM scale for mammography screening has been the most popular instrument among them (Kim & Menon, 2009; Lee, 2015; Lee, Stange, & Ahluwalia, 2015; Pasick & Burke, 2008).

In Lee's (2015) review, 8 out of 14 research articles about Korean American women's breast cancer screening adopted or adapted Champion's HBM scale to their studies and 13 out of 14 articles were related to Korean American women's mammography use. Since the middle of the 1990s, the HBM scale for mammography screening has been revised and developed by Champion and her colleagues (Champion, 1999; Champion et al., 2004; Champion, Skinner, & Menon, 2005). The main constructs of Champion's HBM are perceived susceptibility, benefits, and barriers to taking a mammogram and she revised the scale of HBM scale through her research studies and later, Champion and her colleagues developed a fear and self-efficacy scale for mammography (Champion, 1999; Champion et al., 2004; Champion, Skinner, & Menon, 2005).

Eventually through research studies targeting the mammogram usage of diverse populations, the reliability and validity of Champion's HBM scale have been tested and the scale was developed as one prevalent instrument to measure the status of women's mammogram reception (Champion, 1999; Champion, et al., 2004; Champion, Skinner, & Menon, 2005; Pasick & Burke, 2008). Hence the clarity of Champion's HBM scale, tested through research studies for more than 10 years, might provide more flexibility and comparability to researchers in combining and integrating with other theories or theoretical concepts such as social cognitive theory, TTM and acculturation (Champion, 1999; Pasick & Burke, 2008).

In Champion's research study on the revised scale for mammography screening in 1999, the reliability and predictive validity of her revised scale was tested in combination with four different stages of TTM for mammography screening. In the research study of Kim and Menon (2009), Champion's HBM scale for Korean American women's mammogram usage was utilized with the knowledge and acculturation scale, based on TTM. Especially in HBM's conceptual

relation to belief, the status of immigrants' acculturation has been recognized as an important factor measuring the status of their mammogram reception. The Suinn-Lew Asian Self-Identity Acculturation Scale has been the most popular acculturation scale for research studies on Korean American women's breast cancer screening with Champion's HBM scale (Lee, 2015; Kim & Menon, 2009).

Conclusively, heavy reliance on certain theories such as HBM in studying Korean American women's breast cancer screening has narrowed the range of developing theories in diverse perspectives and the trend has restricted instrument development, based on the diverse theories to measure the status of Korean American women's mammography screening as well. Surely, the intensive attention on Champion's HBM scale and its revision and development through research studies targeting diverse groups of people during a considerable period of time could increase the reliability and validity of the scale. On the other hand, the unbalanced theoretical and instrumental development in the research field of Korean American women's breast cancer screening might have been a barrier to understanding the problems of Korean American women's breast cancer screening comprehensively.

Geographical Bias

When reviewing the previous literature on Korean American women's breast cancer screening, it was found that there had been geographical bias in term of the target population for a research study. In order to verify the statement above, the literature was searched through the GALILEO databases of the University of Georgia Libraries by using the keywords "*breast cancer*" and "*Korean American women*" together between January of 2014 and December of 2015. There was no restriction on publication date but the research articles were limited to those written in English and their topic should include at least one of the following issues: Korean

American women's breast cancer incidence or their screening. After screening and sorting out the articles based on the guideline, 58 manuscripts were selected and determined to be appropriate for this literature review. Their publication date was between 1998 and 2015 but two of them did not have accurate information about the location of data collection and one of them was not applicable due to its research method. In the end, the locations of 55 articles were reviewed to analyze the geographical proportion of the research articles on Korean American women' breast cancer and screening.

Among the total articles, 27 (49.1%) used data from California; 9 (16.4%), Maryland; 5 (9.1%), Illinois; 5 (9.1%), Northeastern areas of the U.S.; 3 (5.5%), Michigan and 6 (11%) other areas. This phenomenon might happen due to the size of the Korean population of each state in the U.S.; among the major states where Korean Americans live, California had the largest Korean population in 2010 (U.S. Census Bureau, 2012). However, the number of research studies on Korean American women's breast cancer screening is not necessarily related to the size of Korean American population of each state since the size of the Korean population in Maryland was smaller than in New York, New Jersey, Texas, Virginia and Illinois in 2000 and 2010 (U.S. Census Bureau, 2000, 2010). Rather, the number of research studies on Korean American women's breast cancer might have a significant relationship with the local governments', Korean communities' and researchers' interests, namely the perceptional and institutional situation of each state regarding Korean American women's breast cancer.

For example, the California Health Interview Survey (CHIS) performed biannually since 2001 is the largest among state health surveys in the U.S. (UCLA Center for Health Policy Research, 2012). This survey database contains diverse and sufficient information about people's health including Korean Americans in California and has been a critical foundation for diverse

heath research studies including Korean American women's breast cancer screening (Chawla, Breen, Liu, Lee, & Kagawa-Singer, 2015; Pourat, Kagawa-Singer, Breen, & Sripipatana, 2010 ; UCLA Center for Health Policy Research, 2012). As previously mentioned, in the case of Illinois, the strong community partnership among public agencies and community based institutions such as hospitals and their effort through the Illinois Breast and Cervical Cancer Program and diverse state funding programs such as Illinois Ticket for the Cure instant lottery ticket might have affected social awareness of the breast cancer early detection(IDPH, 2015). Key researchers such as Kim, Menon and Lee, who conducted a series of research projects about Korean American women's breast cancer and screening in Illinois, may have also contributed to a greater social awareness of early detection (Eun, Lee, Kim, & Fogg, 2009; Kim & Menon, 2009; Kim, Menon, Wang, & Szalac, 2010; Lee et al., 2014).

Conclusively, the frequency and status of research studies, conducted on Korean American women's breast cancer and screening in each state were different and this might be caused by not only the size of the Korean population of the states but also their cognitional and institutional environment related to the issues. Hence, the trend of research studies on Korean American women's breast cancer and screening in certain geographical locations without considering or comparing the situation in other states could not provide a comprehensive understanding about the matters of Korean American women's breast cancer screening.

The Current Studies

The purpose of the three current studies in this dissertation is to extend ways to understand the issues of Korean American women's breast cancer screening theoretically and instrumentally with two different samples of two different areas. These three studies may serve as a critical

foundation for further studies to analyze the problems of Korean American women's breast cancer screening comprehensively.

In Study One, Chapter 2, the major perspectives and theories of pervious research studies on Korean American women's breast cancer screening are addressed and their theoretical limitation are discussed. Especially, through revising and extending conceptual framework of HBM with a concept of Habitus (Grenfell, 2008) from sociology, an attempt is made to understand Korean American women's behaviors regarding breast cancer screening in not only the individuals' internal structure but also external structure: social structure. Information and service asymmetry of breast cancer screening as quasi-public goods (Anheier& Ben-Ner, 2003) in the social context is discussed in bridging individual perception and practice for breast cancer screening.

In Study Two, Chapter 3, factors of Korean American women's behavior patterns for breast cancer screening are explored with empirical data, collected from two different areas, Atlanta and Chicago through surveys on Korean American women's breast cancer screening. Hence, the chapter provides detailed information about the research procedure including data collection. Furthermore, the relation between factors and breast cancer screening practices is assessed through descriptive statistical analysis, bivariate analysis and Chi-square test on the survey data, collected from Korean American women aged 40 to 65 in the Atlanta and Chicago areas. In this chapter the sensibility and functionality of two different types of response items (binary and five point Likert type scale) by characteristic factors are reviewed.

In Study Three, Chapter 4, three constructs are developed to bridge individuals' breast cancer screening behavior, based on HBM to social structure concepts theoretically and those constructs are composed of items on a five point Liket type scale. The latent variables are information and service resource choice pattern, medical dependency on S. Korea and degree of barriers. Those

resource constructs contain individual's both internal and external characteristics as rational choice and structural chance. Their reliability and construct validity are tested and retested through logistic regression analysis by breast cancer screening behavior pattern items of five-point type scale, which are compared with binary response items in Chapter 3, and their reliability and construct validity are tested in Chapter 4 as well.

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CHAPTER 2

HABITUS AND THE EXTENSION OF THE HEALTH BELIEF MODELFORKOREAN AMERICAN WOMEN'S BREAST CANCER SCREENINGS[1]

[1] Jun Hoe Kim and Larry G. Nackerud. To be submitted to *Social Science & Medicine.*

Abstract

The purpose of this article was to review the current research theories and perspectives on Korean American women's health behavior and examine the relationship between the social components for breast cancer screening and Korean American women's behavior based on the newly revised health belief model (HBM) with habitus theoretically. For this research, relevant literature since the late 1990s was reviewed, using the GALILEO databases of the University of Georgia Libraries and Google search engine. Previous research studies heavily rely on the HBM theoretically, which limits diverse approaches on the issues of Korean American women's breast cancer screening. Hence, the HBM was extended with habitus, a concept of Pierre Bourdieu, to bridge the gap between perspectives in the social and individual contexts. Within the revised theoretical framework, the influence of the information and service resource on individual's behavior for breast cancer screening is discussed and evaluated theoretically. Furthermore, research with empirical data is suggested to verify the revised theoretical framework in practice fields of breast cancer screening.

Introduction

This article is a part of the research "A Comparative Study of Resource Structures for Korean American Women's Breast Cancer Screenings in Atlanta and Chicago Metropolitan Areas," conducted in 2015. The research study aims to explore and examine the relationship between social resources related to breast cancer early detection for Korean American women and their perceptions and behavior patterns. In this article, theoretical approaches on Korean American women's health-related behaviors and applications for their breast cancer early detection are reviewed. This is the first effort to approach the issues theoretically in conjunction with a social structural aspect.

Breast cancer is one of the major cancers causing mortality among women in the U.S., including Korean American Women (McCracken et al., 2007). Early detection is crucial to reducing the rate of mortality from breast cancer, and previous research studies have confirmed that routine mammograms are the most significant factor in a general perspective of breast cancer early detection (Joun, Choi, Klassen & Roter, 2006). Free mammograms have been available for the underserved women in the U.S. through The National Breast and Cervical Cancer Early Detection Program (NBCCEDP) since the Breast and Cervical Cancer Mortality Prevention Act of 1990 (CDC, 2012).

Nevertheless, the rate of routine mammograms of Asian American women (including Korean Americans)over a two-year period was 64.1% in 2010, which is still low compared to other racial/ethnic groups: Black/African (73.2%), European (72.8%), and Hispanic (69.7%) (CDC, 2012). In fact, the mortality rate for European and African American women has declined slightly, whereas the mortality rate for Asian American women, including Korean Americans, has not changed significantly (CDC, 2013). Most of the research studies on breast cancer among Asian

American women, including Korean Americans, indicated that the major reason for this phenomenon is the lack of success in breast cancer early detection and treatment (Kim& Sarna, 2004; Kim, Menon, Wang, & Szalacha, 2010; Maxwell, Bastani, & Warda, 1998).

Research is therefore needed on the issues related to breast cancer early detection among Korean American women, one of the major Asian minority groups in the U.S., in terms of a theoretical and practical approach (Hoeffel, Rastogi, Kim, & Shahid, 2012). A review of existing studies shows that their theoretical foundation is mainly based on the health belief model and social support/network theory (Han, Lee, Kim, & Kim, 2009; Kim, & Sarna, 2004; Lee, 2015; Maxwell, Bastani, & Warda, 1998). The studies concentrated on Korean American women's personal factors such as negative attitude and cultural modesty toward breast cancer and early cancer detection, which might cause their limited practice of routine mammograms and health information navigation (Kim & Menon, 2009; Tang,Solomon,& McCracken, 2000). The authors of those research articles insisted that Korean American women'snegative attitudes toward mammography use could be changed through various forms of educational interventions (Champion, 1999; Kim & Menon, 2009; Kim & Sarna, 2004; Pasick & Burke, 2008). Their rationale on individuals' behavior change seems clear and logical explaining less mammography usage among Korean American women.

However, their theoretical interest is excessively attached to individuals' cognition and choice and dependence on outreach education intervention to increase Korean American women's perceptions on breast cancer and screenings, based on the health belief model and social cognition theory (Champion, 1999; Glanz & Rimer, 1997; Kim & Menon, 2009; Pasick & Burke, 2008). The importance of accessible, selective, and structured resources of information and service to the underserved Korean American women has consistently been neglected. No

study from any discipline looks at the relationships among Korean American women's behaviors and social components of structured information and service resources for breast cancer screenings such as public or private institutions including non-profit organizations.

Therefore, it is necessary to understand Korean American women's unsuccessful breast cancer screening practices as the individual's daily behavioral pattern within the social structure, which was formed during interaction with the social components as well (Lindbladh et al., 1996). This understanding can be one of the keys to explore changes in community-based breast health care systems, which have been restructured since the Affordable Care Act in 2014.

Social structural chance and individual choice are very critical concepts in understanding human decision-making behaviors; however, the application and emphasis of each concept varies depending on perspectives or disciplines (Lindblandh & Lyttkens, 2002). Nevertheless, these are not only conflicting concepts but their differences can be complementary to each other in understanding social phenomena such as breast cancer screening practice among Korean American women. Hence, the goal of this article is to propose a new conceptual frame work for Korean American women's breast cancer screenings to bridge the two different perspectives of social structure and individual choice by reviewing concepts, models, theories, and practical applications in previous research studies.

Method: Literature Review

The review of literature was conducted mainly through the GALILEO databases of the University of Georgia Libraries and Google search engine. Additional literature was found through the snowballing method, that is, finding relevant sources cited in the articles located in the initial search and then searching for those papers and repeating the process. The major literature review for this research study was performed between January 2014 and December

2015. For this review, only studies and articles about the issues of Korean American women's breast cancer and screening conducted since the late 1990s were considered. Those research studies focused on Korean American women's breast cancer prevalence and risk factors analysis and outreach education intervention development to promote routine mammogram usage among them for breast cancer early detection (Gonzalez et al., 2014; Joun et al., 2006;Kim & Menon, 2009; Kim,Yu, Chen, Kim, & Brintnall, 1998;Lee, 2015; Lee, Fogg & Sadler, 2006; Lim, Gonzalez, Wang-Letzkus, Baik, & Ashing-Giwa, 2013).

Korean American Women's Risk Factors and Conceptual Issues

The previous research studies on breast cancer risk factors or issues among Korean American women can be classified into two main categories: biomedical and deficit aspects.

The studies in the biomedical category investigated the risk factors for breast cancer and more likely employed clinical approaches focusing on gender, age, family history, obesity, and ethnicity/ race (Baum & Schipper, 2002; Bonadonna et al., 2001; Torosian, 2002).
Most of the research on breast cancer has focused on women because breast cancer has been found more often in women than men (American Cancer Society, 2014; Baum & Schipper, 2002). Such a difference between men and women in incidence rates of breast cancer can be explained by the traits of this hormone-related cancer such as estrogen level (Anderson, 1974; Bonadonna et al., 2001).

Age is another factor in determining susceptible breast cancer populations. Approximately 50% of breast cancer happens to women aged 50-64 years, and a further 30% occurs in women over the age of 70 years (Torosian, 2002). This radical change in breast cancer incidence rates for women aged 45-50 years suggests the involvement of reproductive hormones in the etiology of breast cancer such as menopause (Trichopoulos, MacMaho, & Cole, 1972).

Within populations, genetics plays a small role in determining the risk of breast cancer. However, heredity plays an important part among individuals with a strong family history or one of the genes associated with breast cancer (Baum & Schipper, 2002). The risk of breast cancer is increased 2-3 fold in women with a first-degree relative with breast cancer like a mother and daughter; the risk is also increased, but to a lesser extent, in women with a second-degree relative who is affected like an aunt and niece (Baum & Schipper, 2002).

Obesity is associated with an increased risk of breast cancer in postmenopausal women. This increased risk may be due to conversion of adrenal androgens to estrogens in adipose tissue. High consumption of animal fats has also been linked to breast cancer (Haagensen, Bodian, & Haagensen, 1981). However, there might be a misconception about the relation between and obesity and Asian population, which obesity has not been regarded as serious health problems among Asian and Korean people generally. This is one of the key points to consider for breast cancer prevention for Asian immigrants, including Korean, in the biomedical perspective. Namely, when Asian people, including Koreans, immigrate to the U.S., they might experience an unbalanced acculturation process including diet (Kim & Menon, 2009; Unger et al., 2004; Ziegler et al., 1993).Eventually, the Asian immigrants might have more opportunity to be exposed to obesity in the U.S. than before immigrating to the U.S. which might cause breast cancer. (Kim & Menon, 2009; Unger et al., 2004; Ziegler et al., 1993). This is clear when the breast cancer incidence rates among the same ethnic groups in different geographical regions of residence are compared. According to Lee, Demissie, Lu, and Rhoads (2007), breast cancer incidence rates are higher among Korean women in the U.S than those in S. Korea. In addition, the research study of Parkin (1997) showed that Chinese women living in Shanghai had two-thirds the risk of breast cancer compared with those in Hong Kong or Singapore, whereas the

rates among Chinese women in San Francisco were more than twice as high. Similarly, Japanese women in Hawaii, San Francisco, and Los Angeles had rates double those in Japan. Namely, it might be determined that obesity might be one of the risk factors of breast cancer Korean American women in relation with diet acculturation as well.

As a result, based on the bio-medical risk factors above and the prevalence of research studies on breast cancer among Korea American women, Korean American women age 40 and over were determined as one of the populations vulnerable to breast cancer. Nevertheless, the routine mammogram rates among Korean American women are still low although mammograms are considered the most effective way to decrease mortality by that disease (Kim & Sarna, 2004; Lee, Fogg, & Sadler, 2006; Maxwell, Bastani, & Warda, 1998).

In the deficit perspective, the issue of less breast cancer screening among Korean American women has been approached in relation to their perceptions and self-efficacyof breast cancer and mammogram utilization as individual determinants for their mammogram rate (Kim & Sarna, 2004;Pasick & Burke, 2007;Kim & Menon, 2009; Maxwell, Bastani, & Warda, 1998). In fact, the concept of deficit in the article was adapted from the deficit model of the special education field for the current study (Brown, 2008). In this model, the issues of a student were analyzed only in terms of the individual's incapability (Brown, 2008).This trend was found in research studies on Korean American women's breast cancer issues as well. These studies attempted to determine the risk factors or barriers within Korean American women's individual context, focusing on their low confidence and awareness on breast cancer and the significant role of routine screenings (Kim & Menon, 2009; Kim & Sarna, 2004). It was expected that their perceptions and self-efficacy could be increased through educational processes about breast cancer and screenings (Kim & Sarna, 2004; Kim, Menon, Wang, & Szalacha, 2010).

The health belief model (HBM) has been the most frequently used theory in the deficit perspective since the late 1980s in the health education and health promotion fields (Glanz & Rimer, 1997; Pasick & Burke, 2008). Especially, HBM with its culturally sensitive instruments, developed by Champion (1999), is the most commonly used or adopted model in breast cancer screening studies for underserved women including Korean American women (Juon,Kim, Shankar, & Han, 2004; Pasick & Burke, 2008; Kim & Menon, 2009).The core concept of the health belief model is that personal beliefs or perceptions on a disease and strategies are determinants to preventing the disease (Kim & Sarna, 2004; Kim, Menon, Wang, & Szalacha, 2010).

The construct of perceived seriousness concerns the individual's belief regarding the severity of a disease and it is grounded on medical information and experience in general (Champion, 1999; Glanz& Rimer, 1997; Pasick & Burke, 2008). As mentioned above, there are complicated risks for the breast cancer incidence by gender, age, family history, obesity, and race/ethnicity. However, due to Korean American women's various barriers, from language to access of information on breast cancer and screenings, it may be difficult for Korean American women to have sufficient knowledge or awareness about breast cancer and understanding about the role of a mammogram for breast cancer early detection (Eun, Lee, Kim, & Fogg, 2009; Juon et al., 2004; Kim & Sarna, 2004; Kim & Menon, 2009; Kim, Menon, Wang, & Szalacha, 2010). In other words, Korean American women's low seriousness concerning breast cancer and screenings, caused by the lack of information about them could have a significant correlation with their limited mammogram practice.

Secondly, personal susceptibility, which refers to the risk perception on a disease, could be one of the key cognitions to influence people's behavior modification for their healthier lives

(Champion, 1999; Glanz& Rimer, 1997; Pasick & Burke, 2008). If Korean American women have high perceived susceptibility to breast cancer, they might be motivated to seek methods to decrease the mortality rate by that disease, such as a routine mammogram.

Thirdly, the perceived benefit isthe personal assessment of new behavior in disease risk reduction (Champion, 1999; Glanz& Rimer, 1997; Pasick & Burke, 2008). Korean American women's awareness of the significant role of a screening for breast cancer early detection and mortality reduction can affect their mammography usage.

Lastly, the construct of perceived barriers is a personal evaluation of obstructions to changing to new healthier behavior (Champion, 1999; Glanz& Rimer, 1997; Pasick & Burke, 2008). These perceived barriers could play a significant role in Korean American women's new behavior adoption and maintenance for breast cancer screenings because these obstacles may limit Korean American women's reception of information on breast cancer and screenings, linked to their perceived seriousness, susceptibility, and benefit (Champion, 1999; Glanz& Rimer, 1997; Pasick & Burke, 2008). Eventually, Korean American women could be discouraged by the barriers, such as language seeking breast cancer screenings.

Besides, according to HBM, personal behavior can be affected by cues to action, which are things or events to lead people to change their behavior for a healthy life (Champion, 1999; Glanz& Rimer, 1997; Pasick & Burke, 2008). Hence, there are many different types of cues to action such as breast cancer cases of family or peers, media documentary reports about breast cancer, and advice from health care providers. According to Park and Park (2014), due to the recent advanced communication technologies, the Internet has become one of the primary resources for information and cues to action in breast cancer early detection.

Self-efficacy was not an original construct of HBM (Champion, Skinner, & Menon, 2005). It was included in the model later and became a very significant predictor for action in HBM (Rosenstock, Strecher, & Becker, 1988). In fact, self-efficacy was a core concept of social cognitive theory, which reverberates the strength of individuals' beliefs on their accomplishing a certain task (Bandura, 1997, 2012). A person with greater self-efficacy has greater confidence in their capability for success compared to people with low self-efficacy (Champion, Skinner, & Menon, 2005; Bandura, 1997). Namely, self-efficacy is a significant factor to explain Korean American women's motivation and achievement for their goals: Breast cancer screenings are regarded as a product that individuals experienced through observation and interaction with others in the past (Champion, Skinner, & Menon, 2005). However, these experiences and information do not affect the self-efficacy for breast cancer screenings immediately. As a learning process, all of the resources for experiences and information on breast cancer screenings are screened and weighed through cognitive assessment procedures (Bandura, 2005; Champion, 1999; Glanz & Rimer, 1997; Pasick & Burke, 2008). Essentially, self-efficacy is important in HBM but also in several behavior theories and intervention models, based on social cognitive theory (Bandura, 1997, 2005, 2012; Glanz & Rimer, 1997; Champion, 1999; Pasick & Burke, 2008).

This concept of self-efficacy can be applicable to social network/social support theory as well because self-efficacy can be enhanced through a strong social network and support, and the interaction of social relations and individual behavior may occur in various ways (Baker, Bouldin, Durham, & Lowell, 1997; Bandura, 1997, 2012; Glanz & Rimer, 1997; Israel, 1985; Pasick & Burke, 2008). Korean American women might receive information on breast cancer, screenings, and other women's cancer cases through their social network and then their perceived

seriousness, susceptibility, and benefit can be affected through those processes. In addition to that, when Korean American women have social support including formalized outreach education for breast cancer screenings, their perception on barriers would be changed significantly (Kim & Sarna, 2004; Kim & Menon, 2009)

In addition, some research studies tried to include other factors such as modesty, fear, anxiety, fatalism, and acculturation in analyzing Korean American women's perceptional transition processes for accessing breast cancer screenings as mediator or moderator (Champion et al., 2004; Kim & Menon, 2009;Lee, Chen, Jung, Baezconde-Garbanati, & Juon, 2014). There may be controversy about the ambiguity about the concepts of fear, anxiety, and fatalism and the significant effectiveness of modesty and acculturation rather than just language on breast cancer screening among women, currently emigrated from South Korea, where free or affordable mammograms are common. Nevertheless, those constructs may provide more detailed explanation of the transition process between the individual's perceptions and actual behavior of breast cancer screenings, and the discussion on acculturation can lead to considering the influence of environment or social structure on breast cancer screening among Korean American women.

Finally, those research studies provide an important theoretical and practical foundation for discussing the outreach education intervention model such as the lay health advisor (LHA) model.

Outreach Education Intervention and Lay Health Advisor Model

Based on the theoretical foundation discussed above, community-based intervention research studies have focused on outreach education intervention in different forms to increase the

awareness of breast cancer early detection or to promote routine mammograms in quantitative ways, mainly based on HBM (Kim & Menon, 2009). The discussion about the intervention to promote a routine mammogram among Korean American women was initiated in the mid-2000s.

In 2004, Kim and Sarna implemented quasi-experimental research on 141 Korean American women in Southern California to evaluate the group education intervention to improve attitude and knowledge about breast cancer screening, proving the significant effectiveness of that intervention. Juon, Choi, Klassen and Roter (2006) conducted another quasi-experimental study on 200 Korean American women in Maryland to assess the impact of community-based breast cancer education. In 2008, a different type of intervention— a print intervention to promote routine mammograms of Korean American women—was addressed by Maxwell, Jo, Chin, Lee and Bastani (2008). Finally, Han, Lee, Kim and Kim (2009) adapted the lay health advisor model into an intervention study to promote annual breast cancer screening.

The lay health advisor model was introduced into the breast cancer screening field in 1995 (Earp, Altpeter, Mayne, Viadro, & O'Malley,1995) and has become the major intervention tool to increase annual mammography use of minority groups. The definition and role of the lay health advisor (LHA) can be diversely conceptualized and described. According to Israel (1985), LHAs are lay people to whom others normally turn for advice, emotional support, and tangible aid. LHAs may serve any number of functions, including linking and negotiating agency services for people in need. Sometimes, LHAs counsel people and design the mission of health professionals, while they assist in bridging the cultural and linguistic gaps between health and human service providers and the community (Baker, Bouldin, Durham, & Lowell, 1997).

Thus, the LHA model, which is holistically and ecologically grounded on local needs and resources through the input of local community members, has considerable potential for a

positive impact. Especially, the importance of social support and networks emerged in this intervention model as well. However, like other interventions, there may still be criticisms about the LHA model, based on an individual deficit context perspective such as health belief for lack of considering the concrete relations between individual perceptions and social components for Korean American women's consistent behavioral pattern change.

Habitus and Extension of Health Belief Model (HBM)

In this section, the status of Korean American women's breast cancer screenings is reviewed through the theoretical framework, extended from the health belief model with social information and service resource components overcoming the limitations of that model. Individual attitude, including perceptions, self-efficacy, and knowledge, and behavior patterns of breast cancer screenings are conceptualized with habitus (Grenfell, 2008). The nature of information and service resources was analyzed as a part of a social system or structure, which could influence individual habitus and dynamics among their components as well.

In the perspective of habitus, individuals' health-related behavior might be a product of interaction between social structure and personal psychological structure (Lindbladh et al., 1996; Lindbladh & Lyttkens, 2002). In other words, the information and service resource structure of Korean American women's breast cancer screenings might be regarded as one of the major social determinants for their awareness of and confidence about breast cancer and the significant role of routine screenings or readiness for the screenings. This is quite similar to the theoretical approach of information and experience on perceptual constructs of the health belief model. HBM focused on the individuals' perceptions, influenced by receiving information including experience from outside (Champion, 1999; Glanz & Rimer, 1997; Pasick & Burke, 2007), whereas in the perspective of habitus, the resources of information and service and their structure

are included in the theoretical framework of HBM with perceptions and behavior expansively. Habitus, a concept developed by French sociologist Pierre Bourdieu, is useful in understanding Korean American women's low breast cancer screening rate within social structures (Grenfell, 2008). Habitus has been defined as follows:

> The concept of habitus begins from both an experiential and a sociological conundrum. Formally, Bourdieu defined *habitus* as a property of social agents (whether individuals, groups, or institutions) that comprise a structured and structuring structure. It is structured by one's past and present circumstances, such as family upbringing and educational experiences. It is a structure in that it is systematically ordered rather than random or unpatented. (Grenfell, 2008, pp. 50 - 51)

Bourdieu's concept of habitus is formed and exists through the interaction of individuals' capital and field with multiple dimensional structures such as their environments, and those relations and processes are understood in association with symbols or culture, based on dualism or pluralism (Grenfell, 2008). In this context, it could be explained that Korean American women's habitus as a perceptional and behavioral pattern may have reformed and been reformed in diverse interactions with diverse social components such as resocialization in a breast cancer screening field since they immigrated to new places and stayed in the U.S. Korean American women's habitus on breast cancer screenings might be regarded as a construct of attitude, including perceptions, self-efficacy, and knowledge of breast cancer screenings and routine mammography usage, which are obtained through or influenced by their socio-economic and cultural capital such as income, resource, language, and culture in breast cancer screening fields. Eventually the accessibility and selectivity of information and service sources for breast cancer

screenings might be very significant in transforming Korean American women's habitus of breast cancer screenings.

Lee, Fogg, and Sadler (2006) found that the status of health insurance possession was not significantly related to the breast cancer screening practice of Korean American women; however, they reported a strong relationship between the usual source of care and mammography usage. Meanwhile, a research study on the effectiveness of access and acculturation on cancer screening practice among Asian American women showed that access indicators such as health insurance and service providers were more significant as predictors than acculturation (Pourat, Kagawa-Singer, Breen, & Sripipatana, 2010).

The outcomes might be explained by linguistic and geographical factors to influence Korean American women's access to information and services for breast cancer screenings despite the number of free mammogram programs through National Breast Cervical Cancer Early Detection Program services in the U.S. (Juon, Choi, & Kim, 2000, Korean American Community Services, 2012). For example, Korean American Community Services of Chicago served about 350 Korean American women without health insurance for free mammograms through their navigation program including free language and escort services at the clinical sites (Korean American Community Services, 2012). More than 89% of the participants in the program resided in the Chicago suburbs but most of the free mammogram providers working closely with Korean American Community Services, such as Presence Saints Mary and Elizabeth Medical Center and Swedish Covenant Hospital, were close to or in downtown Chicago.

Namely, as shown in Figure 1, within the information and service structure with no language and navigation support and low geographical accessibility for breast cancer and routine screenings, Korean American women with limited capital in English fluency and personal

resources might constantly experience information and service asymmetry in breast cancer and routine screenings. In the end, Korean American women's negative habitus of breast cancer screenings such as their perceptional and behavior pattern due to the social structural barriers might lead to their low screening rate and form a part of their culture against routine mammograms. On the other hand, within the information and service structure with language and navigation support and geographical accessibility for routine breast cancer screening, Korean American women could have positive habitus on breast cancer and routine screenings through obtaining equivalent information and service regardless of the individual's capability and their habitus could structure a part of their culture in favor of routine breast cancer screenings. Korean American women's positive habitus on mammography use would generate an active pattern for a routine mammogram.

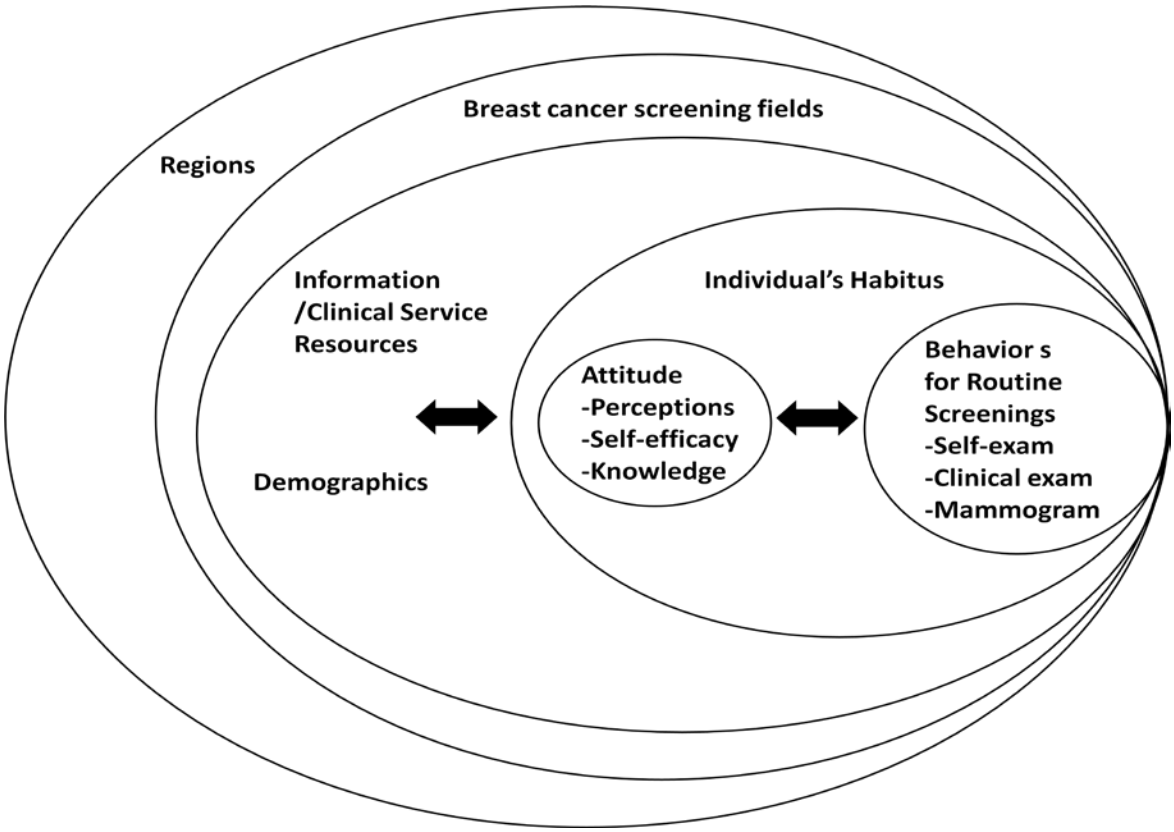

Figure 2.1. Korean American women's information/service resources and habitus of breast cancer screenings

Discussion

In this article, Korean American women's breast cancer issues and theoretical approaches and application were explored through a review of the literature. The conceptual framework on Korean American women's information and service asymmetry on breast cancer and a mammogram and their perceptions and screening practice for a routine mammogram were redesigned through bridging concepts of the health belief model and habitus theory for this study. The HBM model of linear relations between factors such as perceptions and breast cancer screening practice in the individual context was extended to the theoretical framework considering the multi dimensional interactions between information and service resources such as social factors and individual habitus, composed of the components of the HBM model in a social structural context. In addition to that, the extended framework was examined theoretically considering the relations among the diverse social components and individual perceptions and behavior in terms of accessibility and selectivity.

As a result, this raises the need for further theoretical and practical investigation on the structure of information and service resources and its components to understand the effect of Korean American women's habitus of breast cancer screenings. It is essential to understand the nature of information and service resources of breast cancer and free mammograms including support services as (quasi-)public goods and the roles of major providers such as public agencies and non-profit organizations (McGinnis, 1999). Especially, due to their non-rivalry and non-excludability as free and public information and services among the characteristics of free information and service resources as (quasi-) public goods, non-motivation and inefficiency could occur between production and distribution (Anheier & Ben-Ner, 2003). In other words, the underserved Korean American women with diverse barriers may not have accurate and enough

access to information and services for breast cancer screenings or screening providers may not be able to distribute such information and services efficiently because the appropriate and exact level of demand and provision of goods cannot be estimated and determined through the market. The problems of unequal accessibility and selectivity on information and service for having a routine mammogram among Korean American women would be generated. In this context, the role of the government can be emphasized to intervene with direct or indirect alternatives working with entities in different sectors such as non-profit or for-profit as shown in Figure 2.

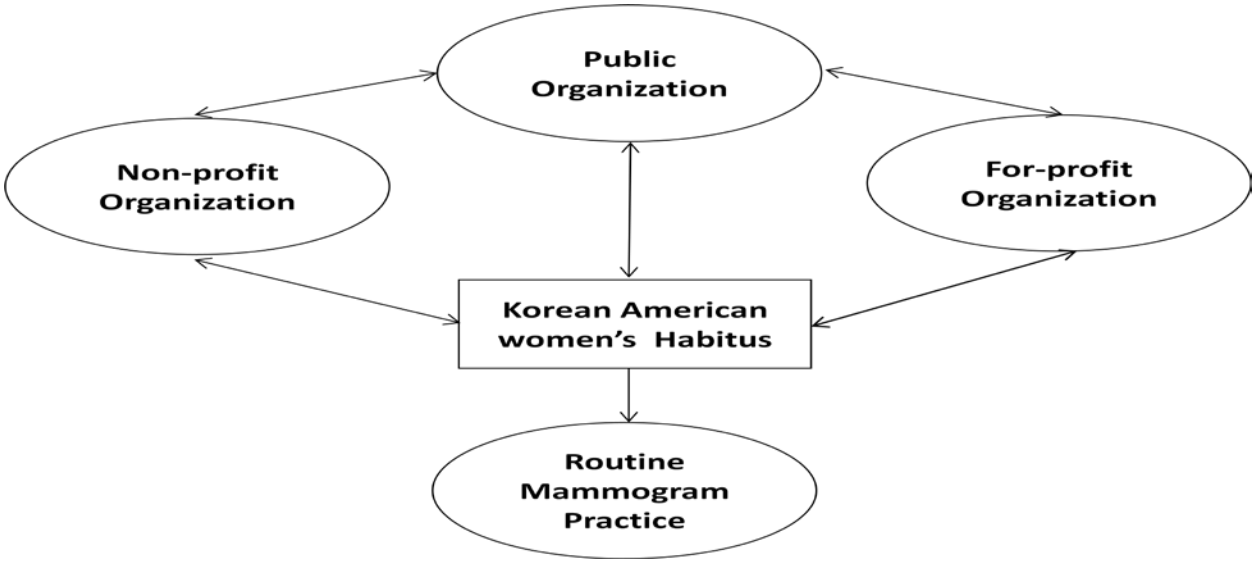

Figure 2.2. Flow of information and services of breast cancer screenings for Korean American women in the field

Hence, it is critical to analyze the composition of information and service resources and the dynamics among major entities of the structure for free breast cancer screenings in the community setting. The task would be essential in understanding the overall status and issues of the underserved Korean American women with the extended health belief model discussed above, especially after the Affordable Care Act initiative in 2014.

Finally, in order to verify the theoretical modification and extension of HBM on Korean American women's breast cancer screening, mentioned in this article, and to apply that to the

practical field, further examination through empirical inquiries is required. A research study with mixed methods such as survey and interview will be appropriate to cover diverse issues, related to Korean American women's breast cancer screening in multidimensional perspectives.

Limitations

As stated at the beginning of this article, this was the first effort to bridge the gap between social structural and individual deficit perspectives approaching the issues of Korean American women's breast cancer screening. Especially, due to theoretical bias or dependency on HBM of limited academic disciplines such as the Nursing and Public Health fields, it was difficult to discover and discuss comprehensively the diverse issues and perspectives associated with Korean American women's mammography usage. However, through extending the theoretical frame of HBM, the theory and model of Public Health and Psychology with habitus, and the concept of Sociology, it was possible to explain the individual's behavior for breast cancer screening in theoretical continuity between social and individual contexts. In addition to that, through defining information and service for routine mammograms including support services as (quasi-) public goods, a concept of Economics, it was possible to understand the nature of information and service asymmetry for breast cancer screening among Korean American women.

Nevertheless, there are still theoretical limitations of the extended HBM with habitus. First of all, the concept of "habitus" was adapted to the theoretical framework of this article instrumentally to reconcile the influences of social structure and individual perceptions on breast cancer screening practice. Originally, the concept of "habitus" was introduced with other concepts such as "capital" and "field" by Bourdieu and they are connected to one another conceptually (Grenfell, 2008). Besides, those concepts are based on culture and cultural

production (Grenfell, 2008). However, only the concept of habitus was stressed without conceptual clear explanation about capital and field in this article such as the relation between capital and social demographic factors. Especially, culture was a very important factor in understanding the concept of habitus as one of the major components of socialization, but it seemed that the conceptual framework of the extended HBM with habitus did not include the concept of culture or acculturation with clear explanations about the relations between habitus and culture.

Secondly, there is the lack or limitation of generalization in the extended frame of HBM with habitus. All of the discussions in this article focused on Korean American women's breast cancer screening only. Hence, there would be questions about whether the conceptual framework in this article could be applied only to Korean American women's breast cancer screening or also to other health behavioral issues of other minority groups. If the extended framework of HBM with habitus would be applicable only to Korean American women's routine mammograms, the theoretical utility of the framework should be limited. Hence, through empirical research studies on diverse populations with other types of health behavior, the extended framework should be tested in diverse dimensions.

Finally, the characteristics of habitus were still ambiguous in this article. As stated before, habitus was defined as structuring structure and structured structure by Bourdieu (Grenfell, 2008). Hence, habitus has both active and passive characteristics of the external environment but in the scheme of the conceptual framework of Figure 1, it seemed that the individual's habitus was composed of HBM components including screening behavior and described as passive internal structure, influenced by social structural components. In that framework, self-efficacy could be one of the key concepts to determine the activity or passivity of habitus in relation to

accessibility and selectivity of information and service resources. There should be further discussion about the relationship between the concepts of HBM and habitus.

Through the brief overview of this article, three limitations of the extended HBM framework with habitus were discussed. Those issues should be further explored through empirical research studies in the future. In spite of those theoretical problems or limitations, the implications of this article reconciling the two contradictory perspectives in social or individual contexts on social phenomenon are significant in terms of the direction of research studies about health behavior including breast cancer screening practice for theoretical development.

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CHAPTER 3

AN EXPLORATORY STUDY ON FACTORS OF KOREAN AMERICAN WOMEN'S BREAST CANCER SCREENINGS IN ATLANTA AND CHICAGO METROPOLITAN AREAS[2]

[2] Jun Hoe Kim, Yoon Joon Choi, David OCHIENG Okech, and Su-I Hou. To be submitted to *Journal of Immigrant and Minority Health*.

Abstract

The purpose of this research paper was to probe factors of Korean American women's behavior for breast cancer screenings through exploratory statistical analysis on the empirical data. Also, the functionality of two different types of response items on the status of breast cancer screening was compared. The data were collected through a self-administrated survey in 25 community sites of Atlanta and Chicago metropolitan area and the cases of 274 Korean American women, from 40 to 65 years of age, were validated. The rate of the insured Korean American women was higher in the regions of Atlanta (86.7%) and Chicago (88.7%) metropolitan areas than that reported in research studies before 2014. The proportion of people with health insurance through the Marketplace of the Affordable Care Act (ACA) was larger than other groups with different type of health insurance. However, the rates of Korean American women's mammogram reception in the past two years in the two regions were significantly different, with the rate in the Chicago area (52.4%) being lower than that in the Atlanta area (69.3%). The Likert five-point scale response items showed significant relationships with more factors than did two binary response items, especially, with income level, type of health insurance, and regular health check-up. Therefore, further research is needed to verify their influence on Korean American women's breast cancer screening.

Introduction

This research article was written as a part of a research study titled “A Comparative Study of Resource Structures for Korean American Women’s Breast Cancer Screenings in Atlanta and Chicago Metropolitan Areas.” The goal of the research study is to investigate the interactions among social resources, Korean American women’s perceptions and their breast cancer screening practice. To analyze the problematic issues of Korean American women’s breast cancer screening in multidimensional perspectives, empirical data collections were conducted mainly through surveys and interviews.

In the current article, factors of Korean American women’s behavior patterns for breast cancer screenings were probed through exploratory statistical analysis on the empirical data from Atlanta and Chicago Metropolitan areas. Especially, this task would provide the critical foundation for developing instruments to measure and analyze the correlation among resources, perceptions, and practices for breast cancer screenings in further research studies. In addition, this was the first time to compare the samples of two different areas remotely located from each other.

A routine mammogram has been verified as the most significant factor for early breast cancer detection from a general perspective of breast health promotion (Joun, Choi, Klassen, & Roter, 2006). The issue of Korean American women’s low rate of breast cancer screening can no longer be ignored because breast cancer is considered as one of the major diseases leading to death even among Korean American women (McCracken et al., 2007). As research articles about Korean American women’s breast cancer screening have often cited and emphasized, one of the goals of Healthy People 2010 was to increase the breast cancer screening rate of women aged 40

years and older up to 70% within 2 years and one of the goals of Healthy People 2020 is to increase the proportion of women at age 40 and over taking a mammogram within the previous 2 years to 81.1 % (Lee, Fogg, & Sadler, 2006; ODPHP, 2015).

However, the research studies by Choi et al. (2010) and by Lee, Chen, Jung, Baezconde-Garbanati, and Juon (2014) showed that, respectively, only 57.2% and 33% of Korean American women at age 40 and over reported receiving a mammogram in the past two years. These percentages are quite low considering the mammogram rate of other racial/ethnic groups in the past two years: Asian (64.1%), Black/African (73.2%), European (72.8%) and Hispanic (69.6%) (CDC, 2012). This issue is more visible in a research study by Ryu, Crespi, and Maxwell (2013) with the 2009 data from The California Health Interview Survey (CHIS), which has been conducted biannually since 2001, is the largest state health survey in the U.S. (UCLA Center for Health Policy Research, 2012). According to this research study, the rate of Korean American women having a mammogram in the past two years was the lowest among five Asian ethnic groups: Chinese (76.5%), Filipino (81.8%), Japanese (72.7%), Korean (57.5%), and Vietnamese (82.8%). This result was significantly associated with income, education, health insurance, legal status, English proficiency, and residential period in the U.S.

In other words, despite the free mammograms available for uninsured women and the community-based efforts to improve the status of Korean American women's breast cancer screening since the Breast and Cervical Cancer Mortality Prevention Act in 1990 (Benard et al., 2011), the proportion of Korean American women, age 40 and over, having a routine mammogram currently is still smaller than our expectation. This seems to be significantly related to demographic, socio-economic, cultural, and other factors (Lee et al., 2006; Choi et al., 2010; Ryu, Crespi, & Maxwell, 2013). Hence, it is essential to continue to review and evaluate the

relationship changes between risk factors and Korean American women's behavior patterns for breast cancer screening since 1990 through comprehensive empirical inquiries to assess our efforts to promote breast cancer screenings among Korean American women with diverse instruments in multi-dimensions. Especially, this task would be critical in exploring changes in the breast cancer screening field of diverse local areas before and after the Affordable Care Act initiative in 2014.

However, a review of research studies on factors of Korean American women's breast cancer screening revealed a couple of issues related to geographical and measurement biases. Those barriers could limit ways to understand the diverse problems of Korean American women's routine mammogram comprehensively.

First of all, the proportion of sampling locations in previous research articles on Korean American women's breast cancer screening was unbalanced. There was no concern about regional differences of the relations between Korean American women's breast cancer screening and factors among previous research studies. A major number of research studies were conducted in California, Maryland, Illinois, and Michigan, and research studies in California were found most frequently among them (Chawla et al., 2015; Choi et al., 2010; Lee, 2015; Lee, Chen, Jung, Baezconde-Garbanati, Juon, 2013; Lee et al., 2006; Yu, et al., 2003; Ryu et al., 2013). Actually, there were research articles on Korean American women's breast cancer, or which included that topic, of which data were collected from multiple areas (Ma, Fleisher, Gonzalez, & Edwards, 2004; Ma, Shive, Wang, & Tan, 2009;Park, 2000). However, a regional factor was not considered in those research studies and also the size of each sample from each state was not indicated.

This geographical bias of previous research studies might be caused by the awareness of each state on issues of Korean American women, breast cancer screening as well as the size of

the Korean American population. California, for example, has the largest Korean population and performs the largest state health surveys among the states of the U.S., the California Health Interview Survey (CHIS) biannually since 2001 (UCLA Center for Health Policy Research, 2012). This database even contains information about Korean American women's breast cancer and screening in California and this is very critical data resources for research studies, which might affect the awareness of California about Korean American women's breast cancer screening (Chawla, Breen, Liu, Lee, & Kagawa-Singer, 2015; Pourat, Kagawa-Singer, Breen, & Sripipatana, 2010). In Illinois, diverse community partnership programs among public and non-profit agencies have been developed such as the Illinois Breast and Cervical Cancer Program and the Illinois Ticket for the Cure instant lottery. Also, key scholars of Korean American women's breast cancer have performed their research studies actively (Eun, Lee, Kim, & Fogg, 2009; IDPH, 2015; Kim & Menon, 2009; Kim, Menon, Wang, & Szalac, 2010; Lee et al., 2014).

As a result, all of the regions and states of the U.S. might have different environments and the status of Korean American women's breast cancer screening even under the Breast and Cervical Cancer Mortality Prevention Act in 1990 (Benard et al., 2011). Nevertheless, previous research studies have been carried out targeting Korean American women only in certain areas or regions and their findings might not cover the problematic situation of other regions, related to Korean American women's breast cancer screening.

Secondly, instrumental bias was found in previous research articles assessing Korean American women's breast cancer screening behavior and this might interrupt diverse approaches on the phenomenon. Especially, the dominance of Champion's Health Belief Model (HBM) scale has strongly influenced the research field on Korean American women's breast cancer screening. According to Lee (2015), 14 out of 22 research manuscripts associated with cultural factors and

breast and cervical cancer screening among Korean American women adapted HBM theoretically and 8 out of them utilized Champion's HBM scale. This theoretical and instrumental dependency on HBM might be caused by excessive attachment on the individual's cognition rather than actual practice for breast cancer screening. For instance, the main constructs of HBM were perceived susceptibility, benefits, barriers, and self-efficacy, and their various sub-items were designed with a five-point Likert-type scale (Champion, 1999; Kim & Menon, 2009; Champion, Skinner, & Menon, 2005; Pasick & Burke, 2008). However, questionnaires to measure breast cancer screening practices were simply composed of only binary response items (yes or no) in most of the previous research studies (Eun et al., 2009; Kim & Menon, 2009; Kim et al., 2010; Lee et al., 2014; Lee, Stange, & Ahluwalia, 2015). In the study by Lee, Fogg, and Sadler (2006), three different practices of Korean American women for breast cancer screenings such as self-exam, clinical exam, and mammogram, based on the guidelines of the American Cancer Society (ACS), were measured but still with only binary response items.

Namely, diverse scales for major constructs of HBM associated with cognition have been developed and revised intensively through diverse research tests. However, the latent variables to measure Korean American women's breast cancer screening behavior patterns in diverse dimensions have not been developed although breast cancer screening behavior are composed of behavior units such as self-exam, clinical exam, mammogram, and planning, which can be discriminated by degree.

Therefore, the goal of this study is to explore the status and the factors of breast cancer screening of Korean American women between age 40 and 65 through data collected from more

than one physical area: Atlanta and Chicago Metropolitan areas during the same period after the Affordable Care Act initiation in 2014. For a deeper understanding of Korean American women's practice pattern for breast cancer screening, new latent variables for the construct were created with a five-point Likert-type scale and tested, comparing them with binary response items. This task of the current article would provide a detailed foundation for the further discussion on the Korean American women's psychological and behavioral paths for breast cancer screenings in social and individual contexts.

Methods

Site selection

For this research study, the Atlanta and Chicago Metropolitan areas were chosen. The reason for selecting these two areas is that the size of the Korean American population in each state is similar: Georgia, 52,341, 0.5%; and Illinois, 61,469, 0.5% (U.S. Census Bureau, 2010). Also, most of the Korean people are populated in the northeast suburbs of Atlanta and the northwest suburbs of Chicago. In addition to that, geographically those areas in the North (Chicago) and the South (Atlanta) are so far from each other that there would be a high possibility of their developing their own unique breast cancer screening and care system for the target population with less influence on each other.

Sample and Procedures

This field survey was designed and implemented to collect data on Korean American women's behavior and their resources for breast cancer screenings in multiple community sites of northeast Atlanta and northwest Chicago suburban areas. After approved by the Institutional Review Board of the University of Georgia, paper-based surveys were administrated to Korean American women between 40 and 65 years of age from the Atlanta and Chicago Metropolitan areas

who were not covered by their age based public coverage such as Medicare or Medicaid in 25 community sites, such as small groups, churches, a temple, Korean super markets of Atlanta and Chicago metropolitan areas between June and August 2015. The researcher stayed from June 14th till July 1st, 2015, in Chicago for data collection; however, as the researcher lived in commuting distance from Atlanta, numerous day-trips could be made for data collection in that area. Originally, 297 cases were collected but 23 cases were excluded from the data for this research study because of eligibility issues, related to age, gender, and non-response. The remaining274cases were valid: Chicago (120) and Atlanta (154).

Twenty-five survey sites were identified, based on lists in the Korean yellow pages of Chicago and Atlanta, and community members were contacted to introduce the survey event and to obtain their approval on the survey events. Nine community institutions declined a request for the survey event or did not respond. In the case of the survey event in religious sites, at least one week before the events, a statement to advertise the survey event was posted in their bulletin or orally announced by reverends of those sites at the end of a religious event such as the worship service. During the survey event, lasting approximately two to six hours, the researcher outreached Korean American women for their participation in the survey. A consent cover letter in Korean including the research project summary and confidential protocols with no signature was provided to participants in person with a brief oral explanation as well. After completing the survey form, all participants received a gift ($1 value) and five people among them, selected through free raffles, received a $20gift card by mail as an additional incentive.

Measures

All questionnaires of the survey form were printed in both Korean and English and were reviewed by the researcher's dissertation committee members and by Korean and English bilingual

Ph.D. students of the University of Georgia before data collection. For this part of the research, a standardized instrument measuring the status of breast cancer screening (6 items) as dependent variables, socio-demographic characteristics (10 items), acculturation related to demographic characteristics (4 items), and health related to demographic characteristics (7 items) as factors were adapted and developed from previous studies (Chawla et al., 2015; Choi et al., 2010; Lee et al., 2006; Kim & Menon, 2009; Ryu et al., 2013). Other data about attitude, acculturation, knowledge, medical dependency on South Korea, and resources for breast cancer screenings were collected for the research through the surveys as well but the analysis and discussion of them were not included in the current article.

Socio-demographic characteristics consisted of region (Atlanta or Chicago), year of birth, age, zip code, resident city, marital status (Not married or married), household income (under $15,000, $15,001-35,000, $35,001-50,000, 50,001-65,000, more than $65,000), education (less than high school, high school graduate/GED, college graduate, master degree/over), occupation (self-employed, full-time, part-time, student, unemployed, retired) and legal status (U.S. citizen, permanent resident, other). Acculturation items were best self-description of racial/ethnic identity (Korean, Korean American/American, other), birth in the U.S (yes or no), years of staying in the U.S. (Thru 10, 11 thru 20, 21 thru 30, over 30) and English fluency (very well/well, moderate, a little/not at all). Health-related items included health insurance possession (yes or no), type of health insurance (Medicare/Medicaid, Obama-care health plans: Health Insurance Marketplace, private insurance: not a part of Affordable Care Act/others, Korean National Health Insurance Service/private, none), status of menopause (yes: over, on-going, no: not yet), regular health check-up (yes or no), diagnosed with breast cancer in the past (yes or no), taking estrogen pill (yes or no), and exercise frequency (3 + time/week, 1-2 times/week, 1-3 times/month, less

than 12 times/year). Regarding categories of type of health insurance, multi-insurances, one of original response categories was treated as a missing value because its frequency was too small to be analyzed and could not belong to any other category.

Finally, the status of breast cancer screening was measured by items with two different types of response items: binary and five-point Likert-type scales. Model 1 of questions with binary items included having mammograms in the past (yes or no) and having mammograms within the past two years (yes or no). Model 2 of questions with a five-point Likert-type scale (agree strongly, agree somewhat, moderate, disagree somewhat, disagree strongly) included the following statements: “I do a breast cancer self-exam at least once a month,” “I have a clinical breast exam at least once every two years,” “I have a mammogram at least once every two years,” and “I know the schedule for my next breast cancer screening.” Recently, there are controversial issues regarding the new breast cancer screening guide of ACA in 2015, because clinical breast exam was not recommended any longer with self-exam (ACA, 2015). However, some people and health care providers still are doing those methods for breast cancer early detection in the combination with mammogram and they could be ways to measure people’s behavior for breast cancer screening in multiple dimensions. Hence, in model 2, by questions in four different behavioral dimensions, the status of Korean American women’s patterns for breast cancer screening was measured.

Data Analysis

For statistical data analysis, the Statistical Package for Social Sciences (SPSS 20.0) was utilized. Descriptive statistics, Chi-square analyses, and bi-variate analyses were performed to describe variables and to assess the effect of factors on Korean American women’s breast cancer screening patterns comparing two different types of response items to each other, model 1 and

model 2. Also conducted were a series of Kurskal-Wallis H tests including all factors, mentioned above, on breast cancer screening behavior patterns of model 2: performing a self-breast cancer exam, having a clinical breast exam within the past two years, having a mammogram within the past two years, being aware of the future schedule for the next mammogram. Finally, a bi-variate correlation analysis was performed to assess the correlations among the items of model 2.

Results

Sample Characteristics by Region

The total valid cases through survey were 274 (Atlanta, 150; Chicago, 124), with 96.6% and 83.2% of participants from suburban areas of Atlanta and Chicago regions, respectively. In Table 1, 2, and 3, the characteristics of the sample are displayed by region: Atlanta and Chicago Metropolitan areas. Through these brief descriptive analyses, the differences between the two samples of the two different regions were assessed. As mentioned above, the range of participants' age was from age 40 to 65 and the mean ages of women in Atlanta and Chicago were 51.47 and 53.6, respectively, $\chi^2(4,\ N = 274) = 12.766,\ p = .012$, Cramer's V = .216. The major groups of participants of both regions were married (Atlanta, 85.2%, Chicago, 86.2%). The income level of participants by regions was significantly different, $\chi^2(4,\ N = 272) = 11.555,\ p = .021$, Cramer's V = .215 with 59.8% and 40.7% of the respondents from Atlanta and Chicago, respectively, making more than $50,000 annually. Regarding education level, 78.1% and 66.6% of the participants from Atlanta and Chicago regions, respectively, received college or higher education. Also, respectively, 72.4% and 73.3% of participants from Atlanta and Chicago had at least a part-time job. The majority of women were citizens or permanent residents (Atlanta, 94%, Chicago, 93.3%).

Table 3.1
Socio-Demographic Characteristics of Korean American Women by Region (N = 274)

		Region			
		Atlanta		Chicago	
Characteristics		*n*	(%)	*n*	(%)
Age	($\bar{X}$, SD)	(51.47, 6.74)		(53.61, 9.20)	
(*n* = 274)	40 thru 45	35	23.3	13	10.5
p = .012*	46 thru 50	34	22.7	27	21.8
	51 thru 55	44	29.3	36	29.0
	56 thru 60	19	12.7	32	25.8
	61 thru 65	18	12.0	16	12.9
		150		124	
Marital status	Not married	22	14.8	17	13.8
(*n* = 272)	Married	127	85.2	106	86.2
p = .825		149		123	
Annual household gross income	Under $15,000	8	5.8	16	14.2
(*n*= 272)	$15,001 ~ $35,000	27	19.7	33	29.2
p = .021*	$35,001 ~ $50,000	20	14.6	18	15.9
	$50,001 ~ $65,000	25	18.2	12	10.6
	More than $65,000	57	41.6	34	30.1
		137		113	
Education	Less than high school	2	1.4	8	6.7
(*n* = 266)	High School	30	20.5	32	26.7
p = .067	graduate/GED				
	College graduate	100	68.5	70	58.3
	Masters degree/ over	14	9.6	10	8.3
		146		120	
Occupation	Self-employed	50	34.0	37	29.8
(*n* = 271)	Full-time	36	25.5	31	25.0
p = .859	Part-time	19	12.9	23	18.5
	Student	1	.7	1	.8
	Unemployed	33	22.4	25	43.1
	Retired	8	5.4	7	5.6
		147		124	
Legal status	U.S. Citizen	89	59.3	75	62.5
(*n* = 270)	Permanent Resident	52	34.7	37	30.8
p = .797	Other	9	6.0	8	6.7
		150		120	

* $p < .05$.

According to the acculturation-related characteristics, shown in Table 3.2, the major portion of women identified themselves as Korean racially or ethnically (Atlanta, 85.9%, Chicago, 80.6%), with 99.3% and 98.4% of the participants from Atlanta and Chicago reporting that they were not born in the U.S. The mean years of the Atlanta and Chicago participants' stay in the U.S. were 20.60 and 20.59, respectively. Regarding English fluency, 39.6 % and 54% of the Atlanta and Chicago participants, respectively, reported that they spoke English a little or not at all.

Table 3.2
Acculturation Characteristics of Korean American Women by Region

		Region			
		Atlanta		Chicago	
Characteristics		*n*	(%)	*n*	(%)
Best description of racial/ethnic ID	Korean	128	85.9	100	80.6
(*n* =273)	Korean-American /American	21	14.1	24	19.4
p = .243		149		124	
Born in the U.S.*	Yes	1	.7	2	1.6
(*n* =272)	No	149	99.3	120	98.4
		150		122	
Years of staying in the U.S.	($\bar{X}$, *SD*)	(20.60, 9.20)		(20.59, 9.75)	
(*n* =267)	Thru 10	20	13.6	27	22.5
p = .058	11 thru 20	62	42.2	33	27.5
	21 thru 30	42	28.6	40	33.3
	Over 30	23	15.6	20	16.7
		147		120	
English fluency	Not at all/A little	59	39.6	67	54.0
(*n* =273)	Moderate	58	38.9	36	29.0
p = .058	Well/ Very well	32	21.5	21	16.9
		149		124	

*Not applicable for Chi-square test, because 2 cells (50%) have expected less than 5.

Table 3.3
Health Status Characteristics of Korean American Women by Region

		Region			
		Atlanta		Chicago	
Characteristics		*n*	(%)	*n*	(%)
Health Insurance	Yes	130	86.7	110	88.7
(*n* = 274)	No	20	13.3	14	11.3
p = .610		150		124	
Type of Insurance	Medicare/Medicaid	1	.7	19	15.8
(*n* =269)	Marketplace(ACA)	66	45.2	37	30.8
p = .000***	Employer	36	24.7	33	27.5
	Private(non-ACA) /others	15	10.3	13	10.8
	Korean NHI Service/private	8	5.5	4	3.3
	None	20	13.7	14	11.7
		146		120	
Status of menopause	Yes, over	70	47.0	74	60.2
(*n* =272)	On-going	24	16.1	20	16.3
p = .048*	No, not yet	55	36.9	29	23.6
		149		123	
Regular health check-up	Yes	114	77.0	81	66.9
(*n* =269)	No	34	23.0	40	33.1
p = .065		148		121	
Taking estrogen pill	Yes	5	3.3	5	4.0
(*n* =274)	No	145	96.7	119	96.0
p = .759		150		124	
Diagnosed with breast cancer in	Yes	43	29.3	35	28.9
the past	No	104	70.7	86	71.1
(*n* =268)		147		121	
p = .953					
Exercise frequency	3 + times/week	42	28.4	33	26.8
(*n* =271)	1 -2 times/week	58	39.2	48	39.0
p = .965	1 -3 times/month	26	17.6	21	17.1
	Less than12 times/year	22	14.9	21	17.1
		148		123	

* *p*< .05. *** p < .001.

Table 3.3 shows the health related characteristics of Korean American women of the Atlanta and Chicago Metropolitan areas. In terms of health insurance possession, there was no

significant difference between the two samples of Atlanta, yes 86.7%; and Chicago, yes 88.7%. Those rates were significantly higher than about 70% of Korean Americans with health insurance in research studies, based on statistical data before 2014 (Chawla et al., 2015; Choi et al., 2010; Lee et al., 2006; Lee et al., 2013; U.S. Census Bureau, 2010; Ryu et al., 2013;Yu, Hong, & Seetoo, 2003). However regarding proportion of health coverage types, there was a significant difference among the respondents by regions, $\chi^2(5, N = 266) = 24.725$, $p = .000$, Cramer's V = .305. Especially, the proportion of people with health insurance from the Marketplace of the Affordable Care Act (ACA) was the largest among the groups by type of insurance in both regions (Atlanta, 45.2%; Chicago, 30.8%). As a result, these statistics might reflect the increase in the number of Korean American women insured through the Health Insurance Marketplace mainly after enactment of the ACA in 2014 and more Korean American women of Atlanta might possess health insurance of ACA than people in Chicago. There might be a significant difference between the two regions in terms of the proportion of the people's insurance type even though there was no significant difference between the two regions regarding insurance possession. This was a very important finding as well, because this factor could affect the status of people's breast cancer screenings in both areas and this could be one of the main points to start inspecting how people, their communities, and public agencies confronted and managed the issues related to breast cancer screening under that circumstance.

More than half of the respondents reported that their menopause was in process or over, $\chi^2(2, N = 272) = 6.093$, $p = .048$, Cramer's V = .150. Respectively, 77% and 66.9% of the Atlanta and Chicago participants reported having regular health check-ups but they were not significantly different. Less than 5% of the participants from each region were taking estrogen pills. Finally, it was very surprising that the proportions of women reporting their diagnosis of

breast cancer in the past were 29.3% (Atlanta) and 28.9% (Chicago). This issue will be discussed later.

Breast Cancer Screening Behavior by Regions and Type of Response Items

Tables 3.4 and 3.5 demonstrated the breast cancer screening behaviors of the Korean American women of the two regions by each different type of response items, model 1 and Model 2. In Table 4, participants were asked to respond to binary response items: yes or no on having mammograms in the past and within the past two years. More women from Atlanta reported having mammograms in the past (86.7%) ($\chi^2(1, N = 274) = 6.099$, $p = .014$, Cramer's V = .149) and within the past two years (69.3%) ($\chi^2(1, N = 274) = 8.216$, $p = .004$,Cramer's V = .173) than Chicago participants, 75% and 52.4%, respectively. These were interesting findings because, according to previous studies by Choi et. al (2010) and Ryu, Crespi, and Maxwell (2013), the mammogram rate of Korean American women in the past 2 years of California was 59.4 % in 2005 and 57.5 % in 2009. In other words, the mammogram rate of Korean participants (69.3%) was higher in the Atlanta area after the Affordable Care Act in 2014 than in California in 2005 and 2009 but the mammogram rate in the past 2 years in the Chicago area in 2015 was lower. However, there was no significant difference between the Atlanta and Chicago areas in terms of health insurance possession as stated above, and a higher rate of Korean participants (88.7%) in the Chicago area had health insurance than in California in 2005 (69.2%) and 2009 (67.2%). Even comparing the case of the Chicago region with the results of a previous research study on Korean American women in Cook County (Chicago, IL) in 2004 (Lee et al., 2006), although the rate of participants with health insurance in 2015 was higher than in 2004 (77.2%), fewer people reported their mammogram reception in the past 2 years in 2015 (52.4%) than in 2004 (61%).

However, the results (Table 3.5) of statistical analyses on questions with five-point Likert-type scales about Korean American women's behavior patterns for breast cancer screening by region did not show any significant difference between the two samples.

Nevertheless, differences in respondents' behavior for breast cancer screenings were found in the use of clinical exams and mammograms, and awareness of next schedule for breast cancer screening (see Table 3.5). Of the Atlanta participants, 88.3% of women of Atlanta were more likely to have a clinical breast exam, compared with only 37.4% in Chicago. More than half of the Atlanta women (56.4%) reported that they were likely to have a mammogram at least once every two years whereas 48.8% of women of Chicago did so. With the statement about knowing the schedule for next breast cancer screening, 44.6% of women of Atlanta expressed their agreement, whereas only 33% of participants of Chicago agreed.

Table 3.4
Breast Cancer Screening Behavior - Binary Items by Region

		Region			
Item		Atlanta		Chicago	
		n	(%)	*n*	(%)
Mammograms in the past	Yes	130	86.7	93	75.0
(*n* = 274)	No	20	13.3	31	25.0
p = .014*					
	Total	150		124	
Mammograms in the past two years	Yes	104	69.3	65	52.4
(*n* = 274)	No	46	30.7	59	47.6
p = .004**					
		150		124	

* $p < .05$. ** $p < .01$.

Table 3.5
Breast Cancer Screening Behavior Patterns with Five Point Likert Type of Scales by Region

Item		Region			
		Atlanta		Chicago	
		n	(%)	*n*	(%)
I do a breast cancer self-exam at least once a month.	Disagree strongly	50	34.2	48	39.0
(*n* = 269)	Disagree somewhat	52	35.6	40	32.5
p = .593	Moderate	22	15.1	21	17.1
	Agree somewhat	15	10.3	12	9.8
	Agree strongly	7	4.8	2	1.6
		146		123	
I have a clinical breast exam at least once every two years.	Disagree strongly	34	23.0	42	34.1
(*n* = 271)	Disagree somewhat	33	22.3	25	20.3
p = .233	Moderate	9	6.1	10	8.1
	Agree somewhat	29	59.2	20	16.3
	Agree strongly	43	29.1	26	21.1
		148		123	
I have a mammogram at least once every two years.	Disagree strongly	31	20.8	28	22.8
(*n* = 272)	Disagree somewhat	23	15.4	28	22.8
p = .461	Moderate	11	7.4	7	5.7
	Agree somewhat	34	22.8	28	22.8
	Agree strongly	50	33.6	32	26.0
		149		123	
I know the schedule for my next breast cancer screening.	Disagree strongly	37	25.0	38	31.4
(*n* = 269)	Disagree somewhat	31	20.9	33	27.3
p = .273	Moderate	14	9.5	10	8.3
	Agree somewhat	32	21.6	16	13.2
	Agree strongly	34	23.0	24	19.8
		148		121	

Table 3.6 displays participants' responses on their breast cancer screening practices by two different types of response items: model 1 and model 2. Due to the characteristics of the response items (categorical and ordinal), each model was analyzed with two different statistical methods: Pearson chi-square test and Kruskal-Wallis Test.

In model 1, Korean American women's having a mammogram in the past was significantly related to the type of health insurance, $\chi^2(5, N = 266) = 20.499$, $p = .001$,Cramer's

V = .271; regular health check-up, $\chi^2(1, N = 269) = 24.999$, $p = .000$, Cramer's V = .305; and diagnosed with breast cancer in the past, $\chi^2(1, N = 268) = 11.371$, $p = .001$,Cramer's V = .206. In the same model, having a mammogram in the past two years had a significant relationship with annual household gross income, $\chi^2(4, N = 250) = 21.713$, $p = .000$,Cramer's V = .295;legal status, $\chi^2(2, N = 270) = 10.463$, $p = .005$, Cramer's V = .197; health insurance possession, $\chi^2(1, N = 274) = 5.065$, $p = .024$,Cramer's V = .136; type of health insurance, $\chi^2(5, N = 266) = 28.463$, $p = .000$, Cramer's V = .327; regular health check-up, $\chi^2(1, N = 269) = 79.107$, $p = .000$, Cramer's V = .542; diagnosed with breast cancer in the past,$\chi^2(1, N = 268) = 4.023$, $p = .045$, Cramer's V = .123; and English fluency, $\chi^2(2, N = 273) = 12.947$, $p = .003$, Cramer's V = .207.

In model 2, concerning the Korean American women's behavior patterns for their breast cancer screenings, performing a breast self-exam at least once a month had a significant association with best description of racial/ethnic identity, $\chi^2(1, N = 268) = 4.971$, $p = .026$, $\eta^2 = .019$; regular health check-up,$\chi^2(1, N = 265) = 5.052$, $p = .025$, $\eta^2 = .019$;and exercise frequency, $\chi^2(3, N = 266) = 16.150$, $p = .001$, $\eta^2 = .061$. Regarding clinical breast exam reception at least once every two years, there was a significant relationship with age, $\chi^2(4, N = 271) = 11.746$, $p = .019$,$\eta^2 = .044$; annual household gross income,$\chi^2(4, N = 247) = 14.637$, $p = .006$,$\eta^2 = .060$; legal status, $\chi^2(2, N = 267) = 6.812$, $p = .033$, $\eta^2 = .023$; best description of racial/ethnic ID,$\chi^2(1, N = 270) = 4.724$, $p = .030$,$\eta^2 = .018$; English fluency, $\chi^2(2, N = 270) = 9.636$, $p = .008$,$\eta^2 = .036$;type of health insurance, $\chi^2(5, N = 263) = 13.948$, $p = .016$, $\eta^2 = .053$; regular health check-up, $\chi^2(1, N = 266) = 46.007$, $p = .000$, $\eta^2 = .174$; diagnosed with breast cancer in the past, $\chi^2(1, N = 265) = 4.564$, $p = .033$, $\eta^2 = .017$; and exercise frequency, $\chi^2(3, N = 268) = 10.192$, $p = .017$, $\eta^2 = .038$. Having a mammogram at least biyearly was significantly related with annual household gross income, $\chi^2(4, N = 248) = 21.619$, $p = .000$, $\eta^2 = .088$; legal

status, $\chi^2(2, N = 268) = 8.780$, $p = .012$, $\eta^2 = .033$; years of staying in the U.S.,$\chi^2(3, N = 265) = 12.745$, $p = .005$, $\eta^2 = .048$; and English fluency, $\chi^2(2, N = 271) = 11.044$, $p = .004$, $\eta^2 = .041$; health insurance possession, $\chi^2(1, N = 272) = 4.793$, $p = .029$, $\eta^2 = .018$; type of health insurance, $\chi^2(5, N = 264) = 21.877$, $p = .001$, $\eta^2 = .083$; status of menopause, $\chi^2(2, N = 270) = 10.242$, $p = .006$, $\eta^2 = .038$; and regular health check-up,$\chi^2(1, N = 267) = 69.991$, $p = .000$, $\eta^2 = .263$. Finally, responses on knowing the schedule for the next breast screening, in model 2, showed a similar pattern to having a mammography biyearly in the significant relationships with annual household gross income, $\chi^2(4, N = 245) = 13.798$, $p = .008$, $\eta^2 = .057$; legal status, $\chi^2(2, N = 265) = 11.413$, $p = .003$, $\eta^2 = .023$; best description of racial/ethnic ID,$\chi^2(1, N = 268) = 6.166$, $p = .013$, $\eta^2 = .023$; years of staying in the U.S., $\chi^2(3, N = 262) = 18.019$, $p = .000$, $\eta^2 = .069$; English fluency, $\chi^2(2, N = 268) = 17.044$, $p = .000$, $\eta^2 = .064$; health insurance possession, $\chi^2(1, N = 269) = 12.348$, $p = .000$, $\eta^2 = .046$; type of health insurance, $\chi^2(5, N = 261) = 26.687$, $p = .000$, $\eta^2 = .103$; status of menopause, $\chi^2(2, N = 267) = 12.216$, $p = .002$, $\eta^2 = .046$; and regular health check-up, $\chi^2(1, N = 264) = 55.443$, $p = .000$, $\eta^2 = .211$.

Table 3.6

Korean American Women's Breast Cancer Screening Behaviors by Characteristics, with Two Types of Response Items

		Model 1 (Binary items: yes or no)		Model 2 (Five point Likert type of scales)			
	Characteristics	Mammograms in the past	Mammograms in the past two years	Breast self-exam at least once a month	Clinical breast exam at least once every two years	Mammograms at least once every two years	Schedule for my next breast screening
		Outputs of Pearson χ^2 test		Outputs of Kruskal-Wallis test			
Socio-Demographic characteristics	Age				$\chi^2(4, N = 271) = 11.746, p = .019^*, \eta^2 = .044$		
	Marital status						
	Annual house hold gross income		$\chi^2(4, N = 250) = 21.713, p = .000^{***}$, Cramer's V = .295		$\chi^2(4, N = 247) = 14.637, p = .006^{**}, \eta^2 = .060$	$\chi^2(4, N = 248) = 21.619, p = .000^{***}, \eta^2 = .088$	$\chi^2(4, N = 245) = 13.798, p = .008^{**}, \eta^2 = .057$
	Education level						
	Type of occupation						
	Legal status		$\chi^2(2, N = 270) = 10.463, p = .005^{**}$, Cramer's V = .197		$\chi^2(2, N = 267) = 6.812, p = .033^*, \eta^2 = .023$	$\chi^2(2, N = 268) = 8.780, p = .012^*, \eta^2 = .033$	$\chi^2(2, N = 265) = 11.413, p = .003^{**}, \eta^2 = .043$
Acculturation related characteristics	Best description of racial/ethnic ID			$\chi^2(1, N = 268) = 4.971, p = .026^*, \eta^2 = .019$	$\chi^2(1, N = 270) = 4.724, p = .030^* \eta^2 = .018$		$\chi^2(1, N = 268) = 6.166, p = .013^*, \eta^2 = .023$
	Years of staying in the U.S.					$\chi^2(3, N = 265) = 12.745, p = .005^{**}, \eta^2 = .048$	$\chi^2(3, N = 262) = 18.019, p = .000^{***}, \eta^2 = .069$
	English fluency		$\chi^2(2, N = 273) = 11.696, p = .003^{**}$, Cramer's V = .207		$\chi^2(2, N = 270) = 9.636, p = .008^{**} \eta^2 = .036$	$\chi^2(2, N = 271) = 11.044, p = .004^{**}, \eta^2 = .041$	$\chi^2(2, N = 268) = 17.044, p = .000^{***}, \eta^2 = .064$
	Health insurance possession		$\chi^2(1, N = 274) = 5.065, p = .024^*$, Cramer's V = .136			$\chi^2(1, N = 272) = 4.793, p = .029^*, \eta^2 = .018$	$\chi^2(1, N = 269) = 12.348, p = .000^{***}, \eta^2 = .046$
Health related characteristics	Type of health insurance	$\chi^2(5, N = 266) = 19.587, p = .001^{**}$, Cramer's V = .271	$\chi^2(5, N = 266) = 28.463, p = .000^{***}$, Cramer's V = .327		$\chi^2(5, N = 263) = 13.948, p = .016^*, \eta^2 = .053$	$\chi^2(5, N = 264) = 21.877, p = .001^{**}, \eta^2 = .083$	$\chi^2(5, N = 261) = 26.687, p = .000^{***}, \eta^2 = .103$
	Status of menopause					$\chi^2(2, N = 270) = 10.242, p = .006^{**}, \eta^2 = .038$	$\chi^2(2, N = 267) = 12.216, p = .002^{**}, \eta^2 = .046$
	Regular health check-up	$\chi^2(1, N = 269) = 24.999, p = .000^{***}$, Cramer's V = .305	$\chi^2(1, N = 269) = 79.107, p = .000^{***}$, Cramer's V = .542	$\chi^2(1, N = 265) = 5.052, p = .025^*, \eta^2 = .019$	$\chi^2(1, N = 266) = 46.007, p = .000^{***}, \eta^2 = .174$	$\chi^2(1, N = 267) = 69.991, p = .000^{***}, \eta^2 = .263$	$\chi^2(1, N = 264) = 55.443, p = .000^{***}, \eta^2 = .211$
	Diagnosed with breast cancer in the past	$\chi^2(1, N = 268) = 11.371, p = .001^{**}$, Cramer's V = .206	$\chi^2(1, N = 268) = 4.023, p = .045^*$, Cramer's V = .123		$\chi^2(1, N = 265) = 4.564, p = .033^*, \eta^2 = .017$		
	Exercise frequency			$\chi^2(3, N = 266) = 16.150, p = .001^{**}, \eta^2 = .061$	$\chi^2(3, N = 268) = 10.192, p = .017^*, \eta^2 = .038$		

* $p < .05$. ** $p < .01$. *** $p < .001$.

Discussion

This study was the first attempt to examine the empirical data on Korean American women's breast cancer screenings, which was collected from two regions, remotely located from each other in the U.S. (Atlanta and Chicago metropolitan areas) during approximately the same time period. Especially, this research study provided the opportunity to oversee the changes in Korean American women's breast cancer screenings in the two different regions after the enactment of the Affordable Care Act in 2014 and compare them to each other. In addition to that, no previous research study has utilized two different types of response items as dependent variables on the status of Korean American women's breast cancer screening practices in assessing the relationships among diverse factors and their sensibility and measurability.

In the brief overview on the characteristics of samples of the two regions, the mean age of the Chicago participants was higher than that of the Atlanta participants, whereas the Chicago participants' income level was lower than that of the Atlanta participants. It would be clear comparing it with the median household income: $50,316 of Korean American in 2010 (U.S. Census Bureau) that 59.8% of Atlanta participants reported their household gross income over $50,000 and 40.7% of Chicago did so.

In terms of two health-related characteristics, type of insurance and status of menopause, there were differences between the two regions. Those differences in menopause and type of health insurance might be explained by certain relations with age and income level. Definitely, the status of menopause has a direct biological relation with age, indicated by the Chicago sample with older participants having a bigger portion of women reporting being post-menopause.

More Korean American women in the Atlanta region had Marketplace (ACA) and private health coverage instead of public insurance, such as Medicaid and Medicare, than in the Chicago region although the proportion of people with health insurance between both regions: Atlanta (86.7%) and Chicago (88.7%) were not significantly different. The Atlanta participants' household gross income level was higher than Chicago as well. Consequently, the differences between the two regions in breast cancer screening practices, shown in Tables 3.4 and 3.5, might be inferred to have strong associations with income level and type of health insurance, based on the findings in this research article. The inferences could be verified in Table 3.6, which presents these very significant findings.

At the beginning of this research article, it was emphasized that free and affordable mammograms have been available for women in the U.S. through The National Breast and Cervical Cancer Early Detection Program (NBCCEDP) since the Breast and Cervical Cancer Mortality Prevention Act of 1990 in the U.S. (CDC, 2012; Benard et al., 2011). This meant that all women in the U.S. should be able to have routine mammograms regardless of their income level and the status of health insurance including type whenever they want. However, the findings demonstrated differences between samples of two regions in the status of Korean American women's breast cancer screening behavior patterns. Participants in the Atlanta area were more likely to have breast cancer screening (69.3%) than those in the Chicago area (52.4%). Even though the rate of the insured participants in the Chicago area in 2015 was higher than69.2% and 67.2% in California in 2005 and 2009, respectively, and 77.2% in Cook County, IL, in 2004, their mammography usage rate was much lower in 2015 than the rates of 59.4% and 57.5% in California in 2005 and in 2009, respectively, and 61% in Cook County, IL (Choi et. al, 2010; Lee et al., 2006; Ryu et al., 2013). As a result, comparing each case of Atlanta and Chicago areas

with the findings of previous research studies, the status of health insurance possession did not show the consistent relations with mammography usage within the past 2 years (Choi et. al (2010); Lee et al., 2006; Ryu et al., 2013). Meanwhile, type of health insurance kept showing significant relations with most of variables including region. These results were similar with the findings of a research study by Juon, Kim, Sharada, and Han (2004) regarding the relations a routine mammogram practice and the status of employment and insurance. Therefore, it would be necessary to perform further analysis on the influence of income level and the status of health insurance including type on breast cancer screening practice in each region.

At the same time, it would be critical to understand these differences between the samples of the Atlanta and Chicago regions. Of course, the regional differences might be caused by sampling bias because a convenience sampling method was used for the current research study. Nevertheless, the findings about the differences between samples of both regions might still imply people's distinguished need for their breast cancer screenings depending on their regional environment. Eventually, depending on the local Korean American women's need, based on their different socio-demographic, acculturation, and health-related characteristics, their information and service resources for breast cancer screening would or should be different. In other words, there might be regional differences in Korean American women's accessibility and selectivity of the information and service resources for breast cancer screening. Finally, those differences might affect the status of Korean American women's breast cancer screening behavior patterns in the Atlanta and Chicago areas.

As shown in Table 3.6, two different response models were employed to assess the relationships between Korean American women's breast cancer screening practices and the 17

factors of 3 different categories: socio-demographic (6 items), health-related (7 items), and acculturation-related (4 items) characteristics.

The question in model 1 concerning having a mammogram in the past showed a significant relationship with three health-related factors only, and the item on having a mammogram in the past two years had a significant association with two demographic items, one acculturation item, and four health items. In model 2, the self-exam item had a significant relationship with two health items and one acculturation item, and the item about having a clinical exam had a significant relationship with three items of socio-demographic characteristics, four items of health-related characteristics, and two items of acculturation characteristics. The question concerning having a mammogram had a significant relationship with two demographic variables, four health variables, and two acculturation variables. Also, the item regarding awareness of the schedule for the next breast screening demonstrated a significant relation with 9 of the 17 factors: 2 (demography), 4 (health) and 3 (acculturation). Finally, regular health check-up demonstrated the strongest relation with all items of model 1 and model 2. This was consistent with the findings of previous research studies (Lee, Chen, Jung, Baezconde-Garbanati, & Juon, 2013; Lee et al., 2006)

In sum, in model1, having mammograms in the past two years functioned better by the characteristic factors than the others, and in model 2, having a clinical exam, having mammogram, and knowing the next schedule were better than having a self-exam in Table 3.6. The items of model 2 showed more functionality in relation with diverse factors in a more multi-dimensional behavior pattern than those in model 1. To check correlation among the items of model 2, a bi-variate correlation analysis was performed. In Table 3.7, the correlations between

the item on breast cancer self-exam at least once a month and other items were much less than the correlations among others.

This was one of the core findings in terms of understanding the characteristics of behavior patterns for breast cancer screenings. As mentioned before, there are three basic methods for breast cancer screening, including a self-exam, a clinical exam, and a mammogram, and among them the efficiency of the self-exam and clinical exam has been controversial (ACS, 2015). However, in the current article, those two methods were adapted to the scale to measure the status of the breast cancer screening behavior patterns in diverse dimensions with having mammogram and knowing a schedule for a next mammogram because they were still regarded as an effective method in the link of mammography. When reviewing the results, participants' responses on the item of self-exam demonstrated much more different patterns from other practices. This might be associated with the service provider. In the case of the breast cancer self-exam, this can be done by self without a health care provider, whereas the clinical breast exam, a mammogram, and schedule for next mammogram should be implemented in relation with outside professionals. Hence, when considering measuring detailed behavior patterns for breast cancer screening in interaction with outside information and service resources together, it might be determined that only three items of model2 (a clinical exam, a mammogram, and schedule for next mammogram) would be more valid in measuring the status of behavior patterns for breast cancer screening.

Table 3.7
Correlations between Bivariate Items of Breast Cancer Screening Behavior Patterns

	Brest cancer self-exam at least once a month	Clinical breast exam at least once every two years	Mammogram at least once every two years	Schedule for my next mammogram
Brest cancer self-exam at least once a month	1.000	-	-	-
Clinical breast exam at least once every two years	.281	1.000	-	-
Mammogram at least once every two years	.210	.758	1.000	-
Schedule for my next mammogram	.203	.639	.767	1.000

In conclusion, the issues of the low rate of mammography usage among Korean American women have been a problem because early detection is a key to reduce the mortality rate by breast cancer, which is one of the most common forms of cancer (McCracken et al., 2007). Particularly since 1990, although all women have been able to have free mammograms regardless of health insurance possession through The National Breast and Cervical Cancer Early Detection Program, (CDC, 2012), the rate has still been low. Hence, it is critical to continue to perform research studies on that matter among Korean American women. However, looking through previous research articles on Korean American women's breast cancer screening, two bias issues were raised and discussed after the literature review, which were related to sampling and measurement.

In order to extend our understanding of the status of Korean American women's breast cancer screening behavior patterns in the Atlanta and Chicago metropolitan areas while overcoming the limitations of previous research studies, data collections through survey were conducted in both areas and, in the current article, the data was explored focusing on participants' socio-demographic, acculturation, and health-related characteristics of both regions. As a result, it was estimated that the income level and the status of health insurance including type as characteristic factors could be

responsible for the differences in breast cancer screening practices between Korean American women groups mainly in the Atlanta and Chicago regions. As shown in Table 3.6, legal status, English fluency, health insurance possession, and regular health check-up had a significant relationship with the overall participants' breast cancer screening behavior patterns.

Meanwhile, the function of the two different types of response items in models 1 and 2 on the factors was checked by adapting them and comparing their outputs. The items of model 2 might provide more detailed information about the status of Korean American women's breast cancer screening behavior patterns than binary response items, model 1. Through retest with a bi-variate correlation analysis on four items of model 2, it was found that three items (having a clinical exam, having a mammogram, and knowing the schedule for the next breast cancer screening) had close relations with one another excluding the item of self-exam. These would be critical findings for developing a scale to measure the status of breast cancer screening behavior patterns.

However, there is still more work to be done for further analysis on the dynamics with other factors in social and individual contexts such as resources, attitude, acculturation, and knowledge in relation to income level and status of health insurance in the Atlanta and Chicago metropolitan areas. In addition, the reliability and validity of the items of model 2 measuring the breast cancer screening behavior patterns should be confirmed through further statistical analysis as well.

Limitations

The current study contains several limitations in sampling, construct, and statistical analysis. First, there is a limitation of generalization with the findings of this study. As stated before, the data collection through survey was performed in Atlanta and Chicago metropolitan areas, where a large Korean population resides in the Midwest and Southeast of the U.S., to overcome the geographical bias, reported in previous research articles. Nevertheless, the samples

of this research study might not represent Korean American women even in the rural parts of Illinois and Georgia and other states of the Midwest and Southeast of the U.S. because Korean American women might be exposed to different environments of diverse areas and states in terms of community resources including health care. In addition to that, this study focused on a certain population, Korean American women, from age 40 to 65 and the survey outreach events were organized only at community sites, where a researcher had relatively easy access. Namely, although there were efforts to minimize sampling bias through survey events in 25 diverse sites of the Atlanta and Chicago metropolitan areas, due to time and resource limitations, the researcher had limited and unbalanced accessibility to community sites in both regions for the survey. Most of the survey outreach events for data collection were organized in religious sites such as Korean churches and temples in the Atlanta area, whereas around half of the surveys were collected from general community sites such as a community organization and supermarkets in the Chicago area. Eventually, the limitations of non-probability sampling methods still existed in this research study (Rubin & Babbie, 2011).

Secondly, there was still the lack of constructs to understand Korean American women's behavior patterns for breast cancer screening comprehensively. In this research article, demographic, acculturation and health related characteristics of the samples of Atlanta and Chicago were explored in relations to two types of response items on breast cancer screening behavior patterns. It was inferred that there might be significant relations between some factors such as income level, type of health insurance, and region and the breast cancer screening behavior patterns in this research article. However, the explanation by those inferences did not still provide enough rationale about the differences among Korean American women's behavior patterns for breast cancer screening. As discussed above, there might be different accessibility

and selectivity among the people on information and service resources depending on their income level, type of health insurance, and region. As a result, those mediating or moderating factors influenced the different behavior patterns for breast cancer screening among Korean American women with characteristic variables. Hence, there is a need to develop more constructs and their sub-items to measure Korean American women's status such as their accessibility and selectivity on information and service resources, which affect Korean American women's breast cancer screening together. Furthermore, there might be a measurement error of diagnosis with breast cancer in the past because the rate of participants' agreement response, "yes" on their diagnosis of breast cancer in the past (Atlanta: 29.3%, Chicago: 28.9%) were higher than the general lifetime risk estimate (12.3%) of being diagnosed with breast cancer among women in the U.S. (ACS, 2015). However, there was not enough data and information to support the results but one possible assumption is related to the linguistic confusion between diagnosis (진단) and medical examination (진찰) in Korean translation among participants. However, there was not any direct clues for that.

Thirdly, there is still a need to conduct further statistical analysis and modification on the items of model 2 of breast cancer screening behavior patterns. In this research article, two different response items of model 1 and model 2 as measurements of breast cancer screening behavior patterns were reviewed and compared to each other in relation to characteristic factors. It was estimated that the functionality of model 2 was better than that of model 1 in terms of measuring the behavior patterns for breast cancer screening in various dimensions. Finally, it was determined that self-exam was less correlated to other items through binary correlation analysis. Nevertheless, it is still necessary to confirm the reliability and validity of the items of model 2.

The tasks should be done with Cronbach alpha correlation test, factor analysis, and logistic regression.

Despite the limitations above, this research study still has significant implications for promoting routine mammography usage among Korean American women. First, through analyzing samples from two different regions, there was an attempt to overcome possible geographical bias. Especially, comparing them with findings of previous research studies, the changes among Korean American women after ACA in 2014 could be checked. Secondly, the role of health insurance possession should be reconsidered because although in this study the rate of the insured participants in the Chicago area was similar to that in the Atlanta area or higher than the findings of previous studies, the rate of having a mammogram in the past two years in the Chicago area was lower than others. In fact, the meaning of health insurance has been controversial in terms of breast cancer early detection in the U.S. Through this research study, the importance of type of health insurance was verified rather than just health insurance possession in promoting breast cancer screening among Korean American women. Finally, through reviewing the two different types of response items, this was the first time to provide an opportunity to consider breast cancer screening behavior patterns. Most of the previous research studies focused on measuring people's cognitive spectrum on breast cancer screening only, whereas this research article tried to measure the status of Korean American women's continuous behaviors in multiple dimensions.

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CHAPTER 4

SCALE OF RESOURCES AND HABITUS COMPONENTS FOR KOREAN AMERICAN WOMEN'S BREAST CANCER SCREENINGS[3]

[3] Jun Hoe Kim, David OCHIENG Okech, Yoon Joon Choi, and Su-I Hou. To be submitted to *Journal of Community Health.*

Abstract

The goal of this research article was to assess the scale of information and service resources, medical dependency on S. Korea, social barriers, and breast cancer screening behavior pattern, developed to extend the health belief model to the social context. For this research study, the survey data on 274 Korean American women, from 40 to 65 years of age in Atlanta and Chicago metropolitan areas were utilized, and the reliability and validity of the item scale of the constructs were checked through the Cronbach's Alpha coefficient test and factor analysis. After deleting and summating into the total scale of variables, the sensitivity of the redefined variables was tested on three different dichotomy outcome variables through logistic regression analysis. As a result, the new scale for information and service resources, medical dependency on S. Korea, social barriers, and breast cancer screening behavior pattern of Korean American women showed significant reliability, validity, and sensitivity. However, the reliability and the construct validity of the new scales still need to be tested on various populations.

Introduction

The purpose of this manuscript is to evaluate the scale of resources, medical dependency on South Korea, barriers, and breast cancer screening behavior patterns, developed or revised for the research "A Comparative of Resource Structures for Korean American Women's Breast Cancer Screenings in Atlanta and Chicago Metropolitan Areas." A review of previous research studies on Korean American women's breast cancer screening revealed that most of them concentrated on individuals' cognitive constructs and measurements for them due to their theoretical bias, whereas there was a lack of concern and effort to explain and to measure the relations among diverse factors and breast cancer screening behavior patterns in both individual and social context comprehensively. Hence, the current research aimed to develop and evaluate constructs and measurements regarding social structural resources and barriers and multidimensional behavior patterns for breast cancer screening, bridging them with individuals' internal concepts such as perceptions. This was the first such effort in research fields, including social work, to study Korean American women's breast cancer screening. These newly developed scales will serve as significant tools for further investigation on the overall paths among individuals' internal and external factors and their behavior patterns for breast cancer screening.

Breast cancer is one of the most common forms of cancer accountable for mortality among women, including Korean American women in the U.S. (McCracken et al., 2007). A mammogram for early detection is the most significant factor in a general perspective of breast cancer prevention and promotion, based on reports and research studies (Joun, Choi, Klassen, & Roter, 2006; Simon, 2015).The new breast cancer guidelines of the American Cancer Society

(ACS) recommended women from age 45 to 54 to have a mammogram annually (Simon, 2015). Since the Breast Cervical Cancer Mortality Prevention Act of 1990 (Public Law 101-354), free or affordable mammograms have been available for the underserved women in all states of the U.S. through National Breast and Cervical Cancer Early Detection Program (Benard, Sariya, Roland, Yabroff, & Miller, 2011; CDC, 2012). Meantime, in research fields, there have been efforts, mainly since 2000s, to understand the issues among Korean American women and to design and develop intervention programs to promote a routine mammogram (Bandura, 1997, 2012; Kim, & Sarna, 2004; Han, Lee, Kim, & Kim, 2009; Lee, 2015; Maxwell, Bastani, & Warda, 1998).

However, despite all those efforts according to Ryu, Crespi, and Maxwell (2013) the rate of routine mammograms (in the past two years) of Korean American women (57.5%) is still lower than that of other ethnic groups: Chinese, 76.5%; Filipino, 81.8%; Japanese, 72.7%; and Vietnamese, 82.8%. The findings of other research studies supported that (Choi et al., 2010; Lee, Chen, Jung, Baezconde-Garbanati, &Juon, 2014). This might cause a delay in the detection of breast cancer for Korean American women and thus increase the rate of mortality.

As a result, it is essential to reassess the whole efforts including previous research studies on breast cancer screening among Korean American women in diverse aspects. However, reviewing previous research articles on Korean American women's breast cancer screening, theoretical bias on a certain theory/model was found and this incline in research fields of Korean American women's breast cancer screening might interrupt developing diverse concepts and measurements to inspect the problems in diverse perspectives. According to Lee (2015), among 22 experiential research studies on Korean American women's breast and cervical cancer in association with culture, 11 were conducted with the theoretical ground of the Health Belief

Model (HBM) and especially the variables of eight of them were assessed with instruments, revised, and developed by Champion.

The instrument of Champion has been the most popular scale for mammogram usage among women, including Korean American women (Kim & Menon, 2009, Kim, Menon, Wang, & Szalacha, 2010; Lee, 2015), in terms of theoretical and practical approaches based on the HBM. The measurements have been further developed and revised by Champion and her colleagues since 1984 (Champion, 1999). In Champion's research study of 1999, a susceptibility, benefits, and barriers scale for mammography use was revised and the total number of scale items was 19: susceptibility (3 items), benefits (5 items), and barriers (11 items). The sample of the research study was female members, age 50 and over, of a Health Maintenance Organization and general medicine clinic. The items of the three constructs mentioned above were tested by mammography stage: pre-contemplation, contemplation, relapse – precontemplation, relapse – contemplation, and action.

Since that time, Champion and her colleagues have designed and developed a scale of more constructs to elaborate the evaluation tools for mammogram use, based on the HBM (Champion et al., 2004; Champion, Skinner, & Menon, 2005). Through their research study in 2004, Champion and her colleagues adopted the concept of fear into the theoretical framework of the HBM as mediator between attitude variables and mammography utilization among women, and developed and tested the scale. In 2005, a self-efficacy scale for mammography usage was developed and tested by Champion, Skinner and Menon. Self-efficacy was not included in the HBM at the beginning but the concept of self-efficacy became to be perceived as a significant predictor of action in the HBM (Champion, Skinner & Menon, 2005; Rosenstock, Strecher, & Becker, 1988). This was a critical concept in the social cognitive theory, which intervention

research studies adopted to promote routine mammograms among Korean American women (Bandura, 1997, 2012; Champion, 1999; Pasick & Burke, 2008; Glanz & Rimer, 1997).

In sum, since the early 2000s, research studies have been carried out to develop diverse intervention programs to promote breast cancer screenings among Korean American women, based on the HBM and social cognitive theory (Joun, Choi, Klassen & Roter, 2006; Kim &, Sarna, 2004; Kim & Menon, 2009; Lee, 2015; Maxwell, Jo, Chin, Lee & Bastani, 2008). This trend has been found often in research studies developing instruments to measure the status of Korean American women's breast cancer screening (Kim & Menon, 2009; Lee, Stange, & Ahluwalia, 2015, Lee, 2015; Pasick & Burke, 2008). Excessive theoretical attention has been given to individuals' psychological cognition for breast cancer screenings, mainly based on the HBM. This naturally might produce a negative result in that few of the research studies have been performed to understand the relationship between Korean American women's behavior for breast cancer screenings and social components for their breast cancer screenings such as information and service resources and to develop a scale for that.

Namely, the previous research studies about Korean American women's breast cancer screenings and about measurements have concentrated on individuals' internal and psychological status and their choice for their mammogram rather than their structural opportunity (e.g., accessibility and barriers) for having breast cancer screenings. Actually, Lee, Fogg, and Sadler (2006) discussed the issue of social access to health care and emphasized the need for interventions to assist Korean American women in health care access and the routinization of breast cancer screening instead of just focusing on intervention for screening. However, they did not discuss concrete components of assistance for health care access and routine mammograms and instead just provided their own recommendation for future studies.

Therefore, it is essential to develop and explore concepts and constructs to bridge between individual perceptions and service and information resources for breast cancer screenings with accessibility and selectivity as a social component. At the same time, it should be possible to measure the status of individuals' accessibility and selectivity of resources. In other words, the conceptual framework of the HBM should be extended in link with structural components in social context. Furthermore, the instruments to measure the interactions among those factors of the extended framework should be developed in relation with breast cancer screening behavior. This task could be implemented through adapting the concept of habitus (Grenfell, 2008).

The concept of habitus, developed by French sociologist Pierre Bourdieu, can be defined as individuals' internal and external structures with both characteristics of activity and passivity (Grenfell, 2008). The theoretical framework of the HBM could be extended with the application of the concept of habitus, bridging between the social and individual components for Korean American women's breast cancer screenings. The four major concepts of HBM (susceptibility, benefit, barriers, and self-efficacy), knowledge, and behavior patterns for breast cancer screenings could be conceptualized as components of habitus interacting continuously with social information and service resources such as public or private institutions, including non-profit organizations and external barriers (see Figure 4.1). Finally, those interactions might influence forming behavioral patterns for breast cancer screening.

The process of behavioral changes for breast cancer screening would occur in multidimensional methods such as breast cancer self-exam, clinical breast exam, mammography, and scheduling the next breast cancer screening. These could be measured in the behavioral spectrum of a five-point Likert-type scale instead of simple binary response items (yes or no) on

breast cancer screening practices. Especially, the scale of behavior patterns for breast cancer screening would measure the status of diverse behavioral patterns for breast cancer screening because those types of screenings are still performed as one of the useful screening methods in clinical sites in combination with mammography, despite the continuing concern regarding the effectiveness of the self-exam and clinical breast exam (ACS, 2015).

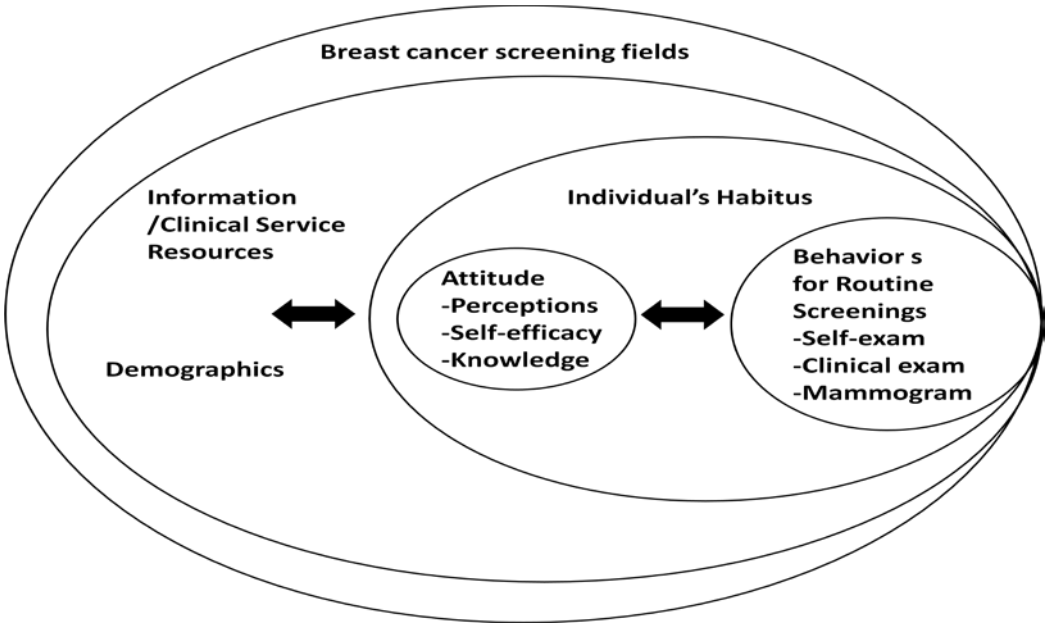

Figure 4.1. Korean American women's information/service resources and habitus of breast cancer screenings

The purpose of this research article is to enumerate the development and psychometric testing of scales developed to measure information and service resources for breast cancer screening, medical dependency on S. Korea, social barrier, and behavior patterns related to Korean American women's breast cancer screening. Based on the theoretical extension of the HBM, the conceptual definitions for the measures (information and service resources for breast cancer screening, medical dependency on S. Korea, and social barrier) were social components, interacting with individuals' habitus for having breast cancer screening. Breast cancer screening behavior pattern was a measure, which included multi-dimensional behaviors for breast cancer screening. The developed scales

were examined for reliability and validity, and in the end, the sensitivity of the scales was tested with the hypotheses below.

1. Cronbach alpha for information and service resources for breast cancer screening, medical dependency on S. Korea, social barrier, and breast cancer screening behavior pattern scale will be above .70.
2. The correlation between an item and the summated score for all other items will be above .50
3. The items will have a correlation of .40 or greater on one dimension in factor analysis.
4. The scale of information and service resources for breast cancer screening, medical dependency on S. Korea, social barrier, and breast cancer screening behavior pattern will show sensitivity to change over time.

Methods

Participants and Characteristics

After approval was obtained from the Institutional Review Board of the University of Georgia, 297 Korean American women from age 40 to 65 in the Atlanta and Chicago Metropolitan areas participated in the paper-based surveys through outreach activities at 25 community sites between June and August 2015. Only 274 cases were validated, based on eligibility categories of the research, related to age, gender, and non-response. The mean age of participants was 52.44 (*SD* = 6.60). 85.7% of participants were married. The annual household gross income level of more than 46% of the participants was higher than $50,000. With regard to education, 70.8% had graduated from college. Also, 72.3 % engaged in at least part-time jobs, and 93.7% were at least permanent residents. Furthermore, 83.5% described themselves as Korean instead of Korean American or American, and 98.9 % were born outside of the U.S.

Participants' mean years of staying in the U.S. was 20.6, and 87.6% possessed health insurance.

This rate of health insurance possession among the participants was significantly high comparing to the rate of the insured Korean American women (around 70%) in previous research studies before 2014 (Chawla et al., 2015; Lee et al., 2006; Choi et al., 2010; Lee et al., 2013; Ryu et al., 2013; U.S. Census Brureau, 2010; Yu, Hong, & Seetoo, 2003). The proportion of health insurance of the Marketplace of the Affordable Care Act (ACA) was the largest among types of insurance, possessed by participants. Hence, it was estimated that the major increase in the number of the insured might be due to those who purchased their insurance through the Marketplace of the ACA. However, in spite of the outstanding increase of the insured Korean American women, only 61.7% of the participants reported that they had had a mammogram in the past two years (see Table 4.4). This rate was lower or similar to the findings of previous research articles (California in 2005, 69.2%, and in 2009, 67.2%; and Cook County, IL, in 2004, 61%) (Choi et al., 2010; Lee et al., 2006; Ryu, Crespi, & Maxwell, 2013). Hence, it might be critical to conduct a further inquiry on the relationships between type of health insurance and breast cancer screening behavior pattern.

Table 4.1
Socio-Demographic Characteristics of Korean American Women (N = 274)

Characteristics		*n*	(%)
Region	Atlanta	150	54.7
(*n* = 274)	Chicago	124	45.3
Age	($\bar{X}$, SD)	(52.44, 6.60)	
(*n* = 274)	40 thru 45	48	17.5
	46 thru 50	61	22.3
	51 thru 55	80	29.2
	56 thru 60	51	18.6
	61 thru 65	34	12.4
Marital status	Not married	39	14.3
(*n* = 272)	Married	233	85.7
Annual household gross income	Under $15,000	24	8.8
(*n*= 250)	$15,001 ~ $35,000	60	21.9
	$35,001 ~ $50,000	38	13.9
	$50,001 ~ $65,000	37	13.5
	More than $65,000	91	33.2
Education	Less than high school	10	3.6
(*n* = 266)	High School graduate/GED	62	22.6
	College graduate	170	62.0
	Masters degree/ over	24	8.8
Occupation	Self-employed	87	31.8
(*n* = 271)	Full-time	67	24.5
	Part-time	42	15.3
	Student	2	0.7
	Unemployed	58	21.2
	Retired	15	5.5
Legal status	U.S. Citizen	164	59.9
(*n* = 270)	Permanent Resident	89	32.5
	Other	17	6.2

Table 4.2
Acculturation Characteristics of Korean American Women

Characteristics		*n*	(%)
Best description of racial/ethnic ID (*n* =273)	Korean	228	83.2
	Korean-American /American	45	16.4
Born in the U.S. (*n* =272)	Yes	269	98.2
	No	3	1.1
Years of staying in the U.S. (*n* =267)	($\bar{X}$, *SD*)	(20.60, 9.43)	
	Thru 10	47	17.2
	11 thru 20	95	34.7
	21 thru 30	82	29.9
	Over 30	43	15.7
English fluency (*n* =273)	Not at all/A little	126	46.0
	Moderate	94	34.3
	Well/ Very well	53	19.3

Table 4.3
Health Status Characteristics of Korean American Women

Characteristics		*n*	(%)
Health Insurance (*n* = 274)	Yes	240	87.6
	No	34	12.4
Type of Insurance (*n* =266)	Medicare/Medicaid	20	7.3
	Marketplace(ACA)	103	37.6
	Employer	69	25.2
	Private(non-ACA) /others	28	10.2
	Korean NHI Service/private	12	4.4
	None	34	12.4
Status of menopause (*n* =272)	Yes, over	144	52.6
	On-going	44	16.1
	No, not yet	84	30.7
Regular health check-up (*n* =269)	Yes	195	71.2
	No	74	27.0
Exercise frequency (*n* =271)	3 + times/week	75	27.4
	1 -2 times/week	106	38.7
	1 -3 times/month	47	17.2
	Less than12 times/year	43	15.7

Table 4.4
Breast Cancer Screening Behavior - Binary Response Items

Item		*n*	(%)
Mammograms in the past	Yes	223	81.4
(*n* = 274)	No	51	18.6
Mammograms in the past two years	Yes	169	61.7
(*n* = 274)	No	105	38.3

Instrument

For the research study, "A Comparative of Resource Structures for Korean American Women's Breast Cancer Screenings in Atlanta and Chicago Metropolitan Areas," a diverse standardized instrument measuring various constructs such as attitude, knowledge on breast cancer and screenings, and acculturation was adapted and revised from previous research studies (Champion, 1999; Champion, Skinner, & Menon, 2005; Comprehensive Cancer Control Collaborative of North Carolina, 1997; Kim & Menon, 2009; Lee, Fogg, & Sadler, 2006; Suinn, Lew, Rickard-Figueroa, & Vigil, 1987). The questionnaire items with higher reliability and validity among the items of constructs previously tested were selected and adopted for the research study. Hence, they were not discussed in this article.

At the same time, a scale of more items to measure the accessibility and selectivity to "service and information resources for breast cancer screening" (7 items), "social barrier" (6 items), "medical dependency on S. Korea" (6 items), and "breast cancer screening behavior pattern" (4 items) was designed and developed newly in terms of extending the conceptual framework of the HBM. Hence, as it was critical to test the reliability and validity of the new items for the four constructs, they were tested and discussed in this research article before further investigation on the path among the factors and Korean American women's breast cancer screening behavior patterns.

The idea of self-exam, clinical exam, and mammogram as items for breast cancer screening behavior pattern were adapted from the study by Lee, Fogg and Sadler (2006), based on the recommendation by the American Cancer Society, and then later revised. In addition, the item “I know the schedule for my next breast cancer screening” was included because the concept of intention or plan could work as an important action predictor for breast cancer screening (Pasick & Burke, 2008).

Regarding barrier items, language, cost of a mammogram, health insurance, and legal status were verified as significant factors for breast cancer screening in the research articles (Choi et al., 2010; Lee, Fogg, & Sadler, 2006; Ryu, Crespi, & Maxwell, 2013; Kim, 2015) and in the cases of Korean American Community Services (KACS) in 2012. According to the internal report of KACS, more than 89% of the participants in their navigation program for free mammograms were from Chicago suburban areas, whereas free service providers were located in Chicago mainly. Hence, long distance to a mammogram facility and busy working schedule might affect Korean American women’s breast cancer screening.

The items of information and services resources for breast cancer screening were designed and developed, based on the type of KACS partners and their outreach methods for free mammograms (KACS, 2012).KACS’ breast cancer early detection program was composed of three parts, community promotion, community outreach education, and mammogram navigation. For community promotion, KACS worked with local Korean news media closely and their staff outreached people in community events. Regularly, KACS’s staff conducted group education sessions at community sites such as church. Finally, KACS’s staff provided navigation services to the uninsured women including Korean American women, which were consultation for need assessment, schedule arrangement, paper-work assistance, interpretation and escort services on

sites cooperating with free mammogram providers, public or non-profit hospitals and clinics, in Chicago and Evanston.

The medical dependency on South Korea could be explained by the current trend of reverse immigration and medical tourism to South Korea among Korean Americans (Korean Times, 2011; Oh, Jun, & Zhou, 2014). According to the recent data about the population of Korean Americans, the number of Korean Americans has declined even though a certain number of Koreans still immigrate to the U.S. (Min, 2011). One of the major reasons for this phenomenon may be Korean Americans' reversed immigration to South Korea, which has a better and cheaper health care systems and which is where their relatives and friends live (Korean Times, 2011). As mentioned above, while Korean Americans are having a hard time finding effective health care services in the U.S., marketers for the S. Korean private medical industry have been targeting Korean Americans aggressively (Oh, Jun, & Zhou, 2014). In fact, people from the U.S. (15.5%) were one of three major groups of foreign patients in South Korea by nationality in 2013, with the other two major groups being China (26.5%) and Russia (11.4%) (KHIDI, 2015). Hence, scale of medical dependency on South Korea might show a part of Korean American women's breast cancer screening behavior.

All responses to statements were made on a five-point Likert scale ranging from "agree strongly" to "disagree strongly."

Data Analysis

For this research, the reliability and validity of the item scales of the constructs discussed above were mainly assessed. To verify low functional items, the Cronbach's Alpha coefficients for the items were reviewed through reliability analysis with the Statistical Package for the Social Sciences (SPSS) 20.0 (Green & Salkind, 2011). Among low-functioning items, the

increase in total scale reliability (more than .10) after the deletion of the item or the correlation between an item and the summated score for all other items (less than .50) were checked as rule-of thumb (Hair, Black, Babin, & Anderson, 2009). Regarding assessing the construct validity, a series of factor analyses were performed using principal component extraction with a promax rotation. When the number of factors was decided, their eigen-value, greater than 1,was considered a main determinant factor and the loading of all items was checked at the minimal acceptable level of ± .40 (Hair et al., 2009). For factor analysis, 274 cases of this research study were appropriate because at least a sample size of 50 cases and each case with a minimum of 5 observations were required for this test (Hair et al., 2009).After that, the variables were redefined and their sensitivity was checked through logistic regression with one binary response item: "having a mammogram in the past two years". However, one of the redefined variables, "breast cancer screening behavior pattern" was analyzed because of the characteristic duplication between a variable, "breast cancer screening behavior pattern", and a response item, "having a mammogram in the past two years". Wald statistics were utilized to decide what variables have significant prediction on each dependent variable of: having a mammogram in the past two years. Overall model fit was assessed by Hosmer-Lemshow's Chi-square-based test (Hair et al., 2009). Before these tests with logistic regression analysis, the characteristic variables were tested in relation with having breast cancer screening behavior variables: "breast cancer screening behavior pattern" and binary response items, "having a mammogram" were checked using Pearson χ^2 test or Kruskal-Wallis test, or correlation as appropriate to level of measurement.

Results

Breast Cancer Screening Behavior Pattern

Reliability

The reliability of items for breast cancer screening behavior was tested and results are shown in Table 4.5 below. A Cronbach alpha correlation coefficient of .804 was obtained for the total breast cancer screening behavior scale. Examination of the correlation matrix displayed that all item correlation coefficients ranged from .257 to .714. The correlation between an item about the self-exam and the total subscale score was .257, which was lower than the suggested cut-off value of .50 (Hair et al., 2009).

Table 4.5
Reliability Testing for Breast Cancer Screening Behavior Pattern

Items		*M*	*SD*	*Alpha if Item Deleted*	*r*	R^2
BC 1	I do a breast cancer self-exam at least once a month.	2.09	1.103	.886	.257	.081
BC 2	I have a clinical breast exam at least once every two years.	2.89	1.590	.687	.743	.597
BC 3	I have a mammogram at least once every two years.	3.18	1.573	.660	.792	.709
BC 4	I know the schedule for my next breast screening.	2.80	1.535	.704	.714	.597

Overall alpha = .804; scale mean = 10.97; *SD* = 4.647

Validity

The principal components analysis with promax rotation was conducted for factor analysis of breast cancer screening behavior pattern items. Table 4.6 shows the factor loading for all four items of breast cancer screening behavior pattern. The eigen-value of one interpretable factor was 2.55, greater than 1 and was verified in Table 4.6, breast cancer screening behavior pattern, which accounted for 63.68% of the item variance. As shown in Table 4.6, breast cancer screening behavior pattern items loaded on Factor 1: Breast Cancer Screening between .399 and .919. All items loaded

on their factors at .4 or above respectively except having a self-exam. Based on the results, the communality of having a self-exam was checked as well (.160). Hence, after deleting an item, having a self-exam, the loadings of each item were recalculated, as shown in Table 4.7, and the proportion of the item variance, explained by Factor 1, increased up to 81.69%.

Table 4.6
Correlation between the Items and the Factors of Breast Cancer Screening Behavior Pattern

Items	*Factor1*
	BC Screening
Eigen-value	2.547
BC 1	.399
BC 2	.883
BC 3	.919
BC 4	.873

Table 4.7
After Deleting BC 1, Correlation between the Items and the Factors of Breast Cancer Screening Behavior Pattern

Items	*Factor1*
	BC Screening
Eigen-value	2.451
BC 2	.885
BC 3	.936
BC 4	.889

Information and Service Resources for Breast Cancer Screening

Reliability

A total coefficient of Cronbach alpha correlation of scale of information and service resources for breast cancer screening was .831, as shown in Table 4.8. All item correlation coefficients ranged from .182 to .639 in the correlation matrix. The correlation between an item and the total subscale score of information and service from private hospitals or insurance companies was below .50.

Table 4.8
Reliability Testing for Information and Service Resources for Breast Cancer Screening

Items		*M*	*SD*	*Alpha if item Deleted*	*r*	R^2
Com1	I receive information on breast cancer and care services from my friends.	2.69	1.174	.811	.574	.591
Com2	I receive information on breast cancer and care services from my family members or relatives.	2.42	1.153	.811	.568	.590
Com3	I receive information on breast cancer and care services from Korean local news media.	2.68	1.198	.805	.639	.578
Com4	I receive information on breast cancer and care services from Korean language websites.	2.24	1.108	.806	.637	.499
Com5	I receive information on breast cancer and care services from religious groups such as church.	2.40	1.114	.814	.542	.465
NPO 1	I receive information on breast cancer and care services from non-profit organizations.	2.28	1.131	.807	.621	.610
NPO 2	I receive services through (from) non-profit organizations for breast screening and care.	2.10	1.201	.817	.504	.502
FPO 1	I receive information on breast cancer and care services from private hospitals or insurance companies.	2.80	1.356	.840	.262	.762
FPO 2	I receive services through (from) private hospitals or insurance companies for breast screening and care.	3.02	1.413	.849	.182	.758
PO 1	I receive information on breast cancer and care services from city or county public hospitals.	2.06	1.145	.809	.598	.625
PO 2	I receive services from city or county public hospitals for breast screening and care.	2.07	1.202	.812	.552	.609

Overall alpha = .831; *M* = 26.76; *SD* =8.064

Validity

Table 4.9 shows the factor loading for all items of information and service resources for breast cancer screening after factor analysis. As presented in Table 4.9, promax rotation showed that three interpretable factors—community, public and for-private— accounted for 41.93 %, 18.72% and 10.79 %, respectively, of the item variance. The eigen-values of the three factors were greater than 1 and they could be categorized into three factors: community, public, and for-profit sectors. All items loaded on their respective factors at .40 or above. All Com items loaded on Factor 1 between .432 and .984. PO items and NPO 2 loaded Factor 2 between .471 and .916. FPO loaded on

Factor 3 and all had high loadings with Factor 3 (.932 or above). All of the items did not overlap in the scales except NPO 1. Namely, after loading on a primary scale, the same item did not load at above .40 on any other scale except NPO 1. Meanwhile, NPO 1 cross-loaded on Factors 1 and 2, and, based on the rules of thumb, the item was deleted and the loadings of the rest of the items were recalculated, as presented in Table 4.10 (Hair et al., 2009). There were a few changes in the loadings of the rest of the items and three interpretable factors accounted for 40.68%, 20.26%, and 11.61%, respectively, of the item variance. A further discussion on that result of NPO 1 will be presented later.

Table 4.9
Correlations between the Items and the Factors of Information and Service Resources for Breast Cancer Screening

	Factors		
	Factor 1 Community	Factor 2 Public	Factor 3 For-Profit
Eigen-value	4.612	2.059	1.187
Com1	.874		
Com2	.984		
Com3	.776		
Com4	.664		
Com5	.637		
NPO 1	.432	.471	
NPO 2		.557	
FPO 1			.932
FPO 2			.946
PO 1		.905	
PO 2		.916	

Table 4.10
After Deleting NPO 1,Correlations between the Items and the Factors of Information and Service Resources for Breast Cancer Screening

	Factors		
	Factor 1 Community	Factor 2 Public	Factor 3 For-Profit
Eigen-value	4.068	2.026	1.161
Com1	.852		
Com2	.945		
Com3	.786		
Com4	.675		
Com5	.663		
NPO 2		.490	
FPO 1			.934
FPO 2			.956
PO 1		.904	
PO 2		.924	

Medical Dependency on South Korea

Reliability

Reliability was calculated using the Cronbach's alpha for dependency on the medical service of South Korea, which led to a coefficient of .79 on 7 items, indicating an acceptable level of stability for the instrument overall. However, the correlation between an item about the Un-Satis and the total subscale score was .167, which is lower than the suggested cut-off value of .30.

Table 4.11
Reliability Testing for Medical Dependency on South Korea

Items		*M*	*SD*	Alpha if item Deleted	*r*	R^2
Clinic 1	I have medical services during my visit to South Korea.	2.70	1.555	.722	.751	.762
Clinic 2	I have a mammogram during my visit to South Korea.	2.42	1.501	.734	.704	.745
Intent 1	I have health care insurance, which I can use in South Korea.	1.84	1.343	.791	.408	.210
Intent 2	Next time I visit South Korea, I will have medical services at a clinic or hospital.	3.20	1.607	.736	.688	.525
Belief 1	I believe the health care system of South Korea is better than that in the U.S.	3.67	1.267	.764	.570	.437
Belief 2	If I were thinking about inverse immigration to South Korea, the inexpensive and convenient medical services of South Korea could be one of the main factors that I would consider.	3.41	1.394	.796	.382	.272
Un-Satis	Reversed -I think that the breast cancer screening system for Korean American Women of Chicago or Atlanta areas, where I live, is more than adequate.	2.78	1.093	.822	.167	.054

Overall alpha = .797; *M* = 20.03; *SD* =6.596

Validity

The factor loadings for all items of medical dependency on S. Korea are shown in Table 4.12. Promax rotation identified that two factors—clinical service and belief—accounted for 46.63 % and 15.75% of the item variance. The eigen-values of the two factors were, respectively, 3.26 and 1.10, greater than 1. The items Clinic 1 & 2 and Intent 1 were grouped in Factor 1 while dependency of clinical service and belief 1 & 2 were included in Factor 2, dependency belief. All items loaded on their respective factors at .40 or above. All Clinic 1 &2 and Intent 1 loaded on Factor 1between .562 and .865. Belief 1 & 2 loaded on Factor 2 between .7.58 and .869. Intent 2 and Un-Satis were overlapped in the scales and cross-loaded on Factors 1 and 2. Hence, based on the rules of thumb, they were deleted and the loadings of the rest items were recalculated in Table

4.13 (Hair et al., 2009). There were a few changes in the loadings of the rest of the items and two interpretable factors accounted for 52.77% and 20.48%, respectively, of the item variance.

Table 4.12
Correlations between the Items and the Factors of Medical Dependency on South Korea

	Factors	
	Factor 1 Clinical Service	Factor 2 Belief
Eigen-value	3.264	1.103
Clinic 1	.801	
Clinic 2	.865	
Intent 1	.562	
Intent 2	.508	.460
Belief 1		.758
Belief 2		.869
Un-Satis	.692	-.501

Table 4.13
After Deleting Intent 2 and Un-Satis, Correlations between the Items and the Factors of Medical Dependency on South Korea

	Factors	
	Factor 1 Clinical Service	Factor 2 Belief
Eigen-value	2.639	1.024
Clinic 1	.853	
Clinic 2	.919	
Intent 1	.725	
Belief 1		.787
Belief 2		.946

Social Barrier

Reliability

The results of the test on the reliability of items for social barrier are shown in Table 4.14. A Cronbach alpha correlation coefficient of .863 was obtained for the social barrier scale. The range of all item correlation coefficients was from .555 to .725 in examination of the correlation

matrix below. All correlations between an item and the total subscale score were higher than the suggested cut-off value of .50 (Hair et al., 2009).

Table 4.14
Reliability Testing for Social barrier

Items		*M*	*SD*	Alpha if item Deleted	*r*	R^2
Sb1	Due to English barriers, it is hard for me to have a mammogram regularly.	2.25	1.155	.847	.615	.430
Sb2	Due to the high cost of a mammogram, it is hard for me to have that regularly.	2.53	1.314	.827	.725	.617
Sb3	Due to having no health insurance, it is hard for me to have a mammogram regularly.	2.15	1.245	.828	.718	.614
Sb4	Due to my legal status, it is hard for me to have that regularly.	1.69	1.015	.837	.681	.503
Sb5	Due to my busy work schedule, it is hard for me to have that regularly	2.09	1.174	.858	.555	.462
Sb6	Due to the long distance to travel to a facility for a mammogram, it is hard for me to have that regularly.	1.85	1.032	.840	.663	.539

Overall alpha = .863; *M* = 12.57; *SD* =5.364

Validity

The factor analysis was conducted through the principal components extraction method with promax rotation on the scale of social barrier and Table 4.15 shows the factor loading for all six items of social barrier. The eigen-value of one acceptable factor was 3.58, social barrier, which accounted for 59.78% of the item variance. As shown in Table 4.15, the items of social barrier loaded on Factor 1 between .689 and .824. All items loaded on their factors at .4 or above respectively.

Table 4.15
Correlations between the Items and the Factors of Social Barriers

	Factors
	Social Barrier
Eigen-value	3.587
Sb1	.732
Sb2	.824
Sb3	.822
Sb4	.792
Sb5	.689
Sb6	.771

Discussion

In this article, theoretical and instrumental biases in the research field of Korean American women's breast cancer screening were overseen and the need for developing new measurements in diverse aspects discussed. Also, a new scale for information and service resources for breast cancer screening, dependency on medical service of S. Korea, social barrier, and breast cancer screening behavior pattern was developed and tested to verify theoretical extension of the HBM. These tasks could expand the critical foundation to understand Korean American women's behavior pattern for their routine mammogram in the individual and social context comprehensively. However, there are still concerns to discuss and more steps to carry out in checking construct validity and sensitivity of the scale.

First, there was an interpretation issue in the results of testing on information and service resources for breast cancer screening. After reliability and validity of the items were checked through Cronbach's alpha measurement and factor analysis, the valid items of each construct were checked. These were then summated into one new variable and redefined as a total scale of each variable, based on the following rules of thumb: the acceptable correlation level between an item and the summated score for all other items (over .50) or the minimum loading level of ± .40, and deletion of a variable, cross-loaded on more than two or more factors (Hair et al., 2009).

Regarding items of information and service resources for breast cancer screening, shown in Table 4.10, NPO 2 was grouped into Factor 2: Public and NPO 1 was deleted due to its cross-loading on Factor 1: Community and Factor 2: Public.

However, these divisions and deletions on NPO 1 & 2 should be explained more for a better understanding of the diverse roles of the non-profit organization as community resources. For example, the Illinois Department of Public Health (IDPH) provides free mammography and care services to the underserved women of Illinois by collaborating with diverse local institutions including non-profit hospitals and community agencies (IDPH, 2015). At the same time, non-profit foundations such as Susan G. Komen-Chicago support diverse community agencies financially and technically (Susan G. Komen Chicagoland Area, 2015). Korean American Community Services, one of the major Korean community agencies in Chicago (2012), do outreach in their community working with religious groups and local newspapers to promote routine mammograms and, at the same time, for free mammogram services they partnered with public and non-profit hospitals. In other words, in spite of the diverse roles of non-profit organizations as information and service resources for the underserved Korean American women, due to their characteristics, even their unique existence and commitments to breast cancer screening were not visible in the response of participants, who could hardly see the whole information and service resource system for breast cancer screening in their communities as well. Hence, it might be very significant to understand the diverse roles of non-profit organizations as important community resources and keep this in mind in further investigation and interpretations despite their invisibility from findings. There should be further inquiries on those issues using different research methods.

Secondly, in the items of medical dependency on S. Korea, the sub-items were categorized into two factors, clinical service and belief, but the correlation between an item and the total subscale score of Un-Satis was lower than .30 in its reliability measurement in Table 4.11 and Un-Satis and Intent 2 cross-loaded on Factors 1 and 2 in Table 4.12. Hence, they were deleted for regrouping and redefining in Table 4.13.

Thirdly, when the scale of social barrier was newly designed, it was important to determine whether the instrument was different from barrier items adopted from the HBM scale (Champion, 1999), which measured a different construct. Hence, the reliability and validity of social barrier were checked and compared with items of the HBM-barrier, of which data were collected as a part of the original research study "A Comparative of Resource Structures for Korean American Women's Breast Cancer Screenings in Atlanta and Chicago Metropolitan Areas."The total coefficient of Cronbach alpha correlation of the scale of HBM barriers was .746, which was lower than the coefficient of social barrier (.863). All item correlation coefficients ranged from .381 to .653 in the correlation matrix in Table 4.16.

Table 4.16
Reliability Testing for Barriers of Attitude (Health Belief Model)

Items		*M*	*SD*	Alpha if item Deleted	*r*	R^2
Hb1	I am afraid to have a mammogram because I might find out something is wrong.	2.08	.984	.733	.417	.309
Hb2	Having a mammogram is too embarrassing.	2.04	1.014	.659	.623	.457
Hb3	Having a mammogram takes too much time.	2.34	1.012	.648	.653	.446
Hb4	Having a mammogram is too painful.	2.84	1.121	.708	.496	.293
Hb5	Having a mammogram exposes me to unnecessary radiation.	2.90	1.036	.748	.381	.208

Overall alpha = .746; *M* = 12.20; *SD* =3.642

The factor analysis of the principal component extraction was performed with promax rotation on sub-items of social barrier and HBM barriers. In Table 4.17, the results showed the

factorial difference between the construct of social barrier and HBM barriers except Sb1: English barrier. In the factor analysis on social barrier in Table 4.15, the loading value of Sb1 was greater than ±.50, meaning that the practical significance and Sb1's communality (.611) was greater than .50. However, the results of Table 4.17 demonstrate that Sb1cross-loaded on Factors 1 and 2.

Therefore, it was concluded that the construct of social barrier was different from the barriers of HBM except Sb1, which will be deleted in further analysis with the items of HBM barriers for a future research study for summating all items into one new variable and redefining it.

Table 4.17
Correlations between the Items and the Factors of Social and HBM Barriers

	Factors		
	Factor 1 Social Barrier	Factor 2 HBM 1 Barrier	Factor 3 HBM 2 Barrier
Eigen-value	4.098	2.118	1.008
Sb1	.480	.440	
Sb2	.667		
Sb3	.710		
Sb4	.769		
Sb5	.873		
Sb6	.864		
Hb1		.824	
Hb2		.749	
Hb3		.555	.512
Hb4			.761
Hb5			.755

Finally, seven variables of the four constructs above were redefined, and all items of the scale were summated and the variables in Table 13 were treated as a continuous measurement. Then, they were simultaneously entered into the logistic regression with a binary item: having a mammogram in the past two years to test their sensitivity. Table 4.18 displays the significant

results on the binary item. The odds ratio of each variable indicates the change in Korean American women's behaviors on having a mammogram in the past two years.

Table 13 shows the results of the logistic regression test with six variables on having a mammogram in the past two years. The *Cox* and *Snell* R^2 (21.9%) and Nagelkerke R^2(29.9%) express the proportion of variability in having a mammogram in the past two years that may be accounted for by community, public and for-profit resources, clinical and belief dependency on S. Korea, and social barrier. However, the values should be interpreted carefully because they are pseudo R-squares. The overall model fit was checked by the Hosmer-Lemeshow test and was acceptable because of the non-significant results of the test on the model and data ($\chi^2(8) = 9.566$, p = .297) (Hosmer, Lemeshow, & Sturdivant, 2013). The results of Wald statistics in Table 13 indicate community resources, for-profit resources, clinical dependency, belief dependency, and social barrier as significant predictors on having a mammogram in the past two years. The odds ratio for community resources, belief dependency, and social barrier indicates that, for every point a Korean American woman scores higher on these, the less likely she is to receive a mammogram. On the other hand, the higher the for-profit resources and clinical dependency, the more likely a Korean American woman is to receive a mammogram.

Table 4.18
Logistic regression of having a mammogram in the past two years on structural components

Variable	*Beta*	*SE*	*Wald*	*Sig.*	*OR*	*95%* CI
Resources of community	-.088	.043	4.153	.042*	.916	(.841, .997)
Resources of public entities						
Resources of for-profit entities	.154	.062	6.077	.014*	1.166	(1.032, 1.318)
Dependency of clinical service on S. Korea	.235	.053	19.576	.000***	1.265	(1.140, 1.404)
Dependency of belief on S. Korea	-.180	.077	5.414	.020*	.835	(.718, .972)
Social barrier	-.161	.035	21.131	.009**	.851	(.795, .912)

* $p < .05$. ** $p < .01$ *** $p < .001$.

As a result, after all statistical procedures and modifications, the reliability and construct validity of the scale for breast cancer screening behavior pattern, information and service resources for breast cancer screenings, medical dependency on S. Korea, and social barrier were confirmed. Through logistic regression tests, their sensitivity was checked again as shown in Table 4.18. On the outcome variable, the new variables showed different results at a significant level. Among the resource variables, the for-profit resource variable demonstrated reverse prediction on the outcome variable from the community variable.

Social barrier showed an inverse relationship with having a mammogram in the past two years, which had a significant relationship with each other, χ^2 (1, N = 274) = 5.065, p = .024, Cramer's V = .136. Regarding the clinical and belief dependency on S. Korea variables, the results expressed the significant prediction on having a mammogram in the past two years in opposite ways and this might imply a gap between belief and action for the outcome.

Finally, based on the findings above, it can be concluded that the new scales to measure information and service resources, medical dependency on S. Korea, social barrier, and breast cancer screening behavior pattern of Korean American women showed their significant reliability, validity, and sensitivity. Next, for a better understanding of Korean American women's breast cancer screening, it will be necessary to pursue further investigation such as finding mediators or moderators between factors and Korean American women's breast cancer screening, and analyzing interrelationships among the components of their habitus.

Limitations

This was the first attempt to develop a scale to measure social components such as information and service resources for breast cancer screening and social barrier, based on the theoretical extension of the HBM with habitus, bridging the gap between social structural and

individual deficit perspectives. Especially, these tasks were very meaningful considering the research fields of Korean American women's breast cancer screening, biased to the HBM theoretically and instrumentally. This work will provide opportunities to expand the range of understanding on the problems of Korean American women's breast cancer screening. Nevertheless, this research has limitations, which are related to sampling method, sample size, and construct validity.

First, the issue of the sampling method is associated with generalizing the findings of the current study. The sampling for this research study was implemented in Atlanta and Chicago metropolitan areas, where Korean Americans populate mainly in the Midwest and Southeast of the U.S., targeting Korean American women, from age 40 to 65. The data collection through survey outreach events was conducted at 25 different community sites, wherever a researcher could have access. Hence, the findings of this research study would have sampling bias due to the limitation of non-probability sampling.

Secondly, the issue of sample size could limit the findings of this research study. Originally, survey cases were collected from 297 Korean American women and after screening based on eligibility category of this research study, 274 cases were validated and utilized for diverse statistical analysis, such as binary logistic regression. Although there are differences in the recommendations among scholars about the sample size for logistic regression and although the sample of 274 cases in this research was not small in a general sense, the sample size was not greater than 400, as recommended by Hosmer, Lemeshow, and Sturdivant (2013). Therefore, there might be a limitation of sample size in this research study.

Thirdly, response bias might have occurred when participants were answering the questions about breast cancer screening behavior pattern with a five-point Likert-type scale

through the self-administrated survey. The major portion of participants' responses on the items of breast cancer screening behavior pattern, major proportion of them were heavily divided into "strongly disagree" and "strongly agree" in the form of "V" except for the item of having a breast cancer self-exam. Meisenberg and Williams (2008) found that individuals' extreme responses had significant relations with age, education, and income level when people answered on items with a five-point Likert-type scale. Hence, this could result in an error in measuring the status of their breast cancer screening behavior patter pattern.

Finally, construct validity issues might have occurred during the process of deleting, summating, and redefining variables, based on the results of reliability and validity tests. After reliability and validity tests on the sub-items of information and service resources for breast cancer screening, items related to the non-profit organization (NPO) were deleted or regrouped withthe public resource factor. As explained above, this might happen due to the diverse roles of NPOs in the fields of Korean American women's breast cancer screening. Nevertheless, the role of the NPO seems critical in serving the underserved Korean American women as a mediator working with the entities of public or for-profit sectors. Hence, it is necessary to find ways to visualize the NPO's role and its influence on Korean American women's breast cancer screening through further research studies.

However, despite the limitations above, this research was a meaningful and substantial step in developing a scale to measure social component items such as social resources and barriers to advance the theoretical extension of the HBM with habitus and overcoming the theoretical bias in the research field of Korean American women's breast cancer screening. Thus, the scale should be tested continuously through further follow-up research studies.

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CHAPTER 5

CONCLUSIONS

End of the Study

The goal of this research study, "A Comparative Case Study of Resource Structures for Korean American Women's Breast Cancer Screenings in Atlanta and Chicago Metropolitan Areas," was to understand the community-based system for Korean American women's routine mammograms and their status in two different areas: Atlanta and Chicago metropolitan areas. The three research articles of this dissertation were implemented as a part of the comparative case study and each research article included a series of processes to achieve the research goal stated above. However, this dissertation aimed to build a foundation, exploring theory, data, and scale development, which will be important for further investigation to be conducted in the future. At the same time, the academic stance of social work was reconsidered as an applied social science in ways adapting theories or concepts of other disciplines to understand complicated health matters such as Korean American women's less breast cancer screening.

Hence, the problematic formulations of the three research articles were in one context, the social structural issues of the breast health care system in relation to the status of Korean American women's breast cancer screening. It has been stressed that breast cancer is one of the most common cancer types among Korean American women and that early detection through a routine mammogram is a key to decrease the mortality rate by that disease (ACS, 2015; McCracken et al., 2007).

Finally, free mammograms have been available to the uninsured women including Korean American women in the U.S. and there have been diverse research studies regarding breast cancer-screening promotion among Korean American women (Benard, Sariya, Lee, 2015; Roland, Yabroff, & Miller, 2011; CDC, 2012; Rapkin et al., 2006).

However, despite all those efforts and facts above, the rate of Korean American women having a routine mammogram is still low (CDC, 2012; Ryu, Crespi, & Maxwell, 2013). As stated in Chapters 3 and 4, although the rate of the insured among participants in this research study after the Affordable Care Act (ACA) in 2014 was higher than that reported in previous studies, there were no significant differences in the rate of people's mammography usage in the past two years and this rate remains low (61.7%).

As a result, it becomes critical to reevaluate what has been done for routine mammogram promotion among Korean American women so far. However, the previous research studies about Korean American women's breast cancer screening have focused mainly on individuals' deficit such as the lack of awareness of mammograms, based on HBM (Lee, 2015). The theoretical and perspective bias in the research field has made it hard to understand Korean American women's problems comprehensively. Hence, in this research study, social structural problems of Korean American women's breast cancer screening was focused on in association with the women's behavior pattern, and the three research articles of this dissertation were parts of the inquiry.

In Study One, Chapter 2, the problems of breast cancer screening among Korean American women were addressed and the theoretical issues were discussed in approaching the problems through literature review. Previous research studies have excessive attention to individuals' cognition on having breast cancer screening, which might be caused by theoretical

bias on the health belief model (HBM). Eventually this trend of the research field make it difficult to address other problematic concerns such as Korean American women's information and service resource asymmetry, which they might experience as immigrants. It was hard to consider all the problems of the whole process that Korean American women have to pass through to receive breast cancer screening regularly. Hence, through the discussion and application of that article, the conceptual framework of the health belief model was extended to the social context adapting the habitus concept of Pierre Bourdieu. Namely a revised conceptual framework was suggested and discussed to understand Korean American women's perceptional and behavioral path for breast cancer screening within the structure of social resources and barriers. Eventually, in order to complete this theoretical revision, follow-up research studies with empirical data will be necessary.

In Study Two, Chapter 3, the descriptive and bivariate analysis and Chi-square test were carried out to explore the characteristics of the samples from Atlanta and Chicago metropolitan areas. Especially, this task was very critical in terms of overseeing the changes in Korean American women's breast cancer screening after the enactment of the ACA in 2014. The results showed significant differences between the two regions in responses on health-related characteristics such as type of health insurance and menopause status, and these differences were likely to be related to age and income level of the participants. In terms of receiving breast cancer screening, two different types of responses (i.e., binary, model 1 and Likert five-point scale, model 2) were utilized and compared to each other. Overall, the two Likert five-point scale response items of having a mammogram and knowing schedule for next screening showed significant relationships with more factors than did two binary response items. Especially, among the factors, income level, type of health insurance, and regular health check-up showed a

significant relationship with at least four among the six response items. Therefore, they could be considered in future research as strong factors influencing Korean American women's breast cancer screening.

In Study Three, Chapter 4, the scale of latent variables about "the breast cancer screening behavior pattern", "information and service resource for breast cancer screening", "medical dependency on S. Korea", and "social barrier" was developed and tested for reliability and construct validity. In Study Two, Chapter 3, the functionality of sub-items with a Likert five-point scale about breast cancer screening behavior pattern was checked. There was concern about the correlation between the breast self-exam item and others. Hence, in Chapter 4 Cronbach's alpha measurements and factor analyses were performed on all items of breast cancer screening behavior pattern and it was determined to exclude the self-exam item from the breast cancer screening behavior variables. Regarding the variables about resources, non-profit organization items were deleted or grouped into the public factor due to cross-loading and working relationships. Especially, social barriers items were examined with barrier items of the health belief model through factor analysis to check the differences between their constructs, and the results showed their constructs were different from each other overall. After factor analysis on all items, they were revised and summated into the total scale of variables. To check their sensitivity, a series of logistic regression analyses were performed with one dichotomous variable: having a mammogram in the past two years. On the outcome variable, the scale of revised variables displayed different prediction and relations significantly.

In conclusion, the three research articles were written as a part of the research study "A Comparative Case Study of Resource Structures for Korean American Women's Breast Cancer

Screenings in Atlanta and Chicago Metropolitan Areas". These three works provide the basic foundation for further investigations and analyses to understand the structural issues of Korean American women's breast cancer screening. However, the significance of each article should not be limited only by their implications and findings.

In Chapter 2, the current issues of Korean American women's breast cancer screening were reviewed theoretically and practically reassessing theoretical bias in the research fields including social work and their socio-structural causes. This chapter attempted to show how to assemble theoretical fragments to approach complicated social issues. Eventually, a newly revised conceptual framework was addressed extending the HBM with habitus and bridging the gap between micro and macro perspectives. This was the main point of the whole research study. Then, to verify that conceptual framework through statistical data analyses the empirical data were collected from two regions, remote from each other, making this research study distinguished from previous research studies. Through comparing the samples of two different regions, the regional and structural issues could be visible. In fact, in Chapter 3 regional differences were found in participants' breast cancer screening rate despite the similar rates of the insured between the regions. This could be one of the key points for further investigations. Finally, in Chapter 4, new scales were developed to measure the accessibility and selectivity of social resources and breast cancer screening behavior pattern in diverse dimensions. The scale development was another substantial task to explain Korean American women's perceptional and behavioral path for breast cancer screening in relation to social structural components, which also made this research study unique.

The processes and work explained above were complicated and unique in that they combined concepts and theories of diverse disciplines and new scales were developed. This

could be accomplished only on the foundation of a comprehensive understanding of diverse theories and practices. This would be the major contribution of the whole research study.

Limitations

The purpose of the three research articles was to understand the resource structure of breast cancer screening for Korean American women in relation to their behavior pattern through theoretical and empirical data analyses overcoming the limitations of previous research studies such as theoretical, sampling and instrumental bias. Still, the three research articles presented here have limitations as well.

In Study One, Chapter 2, the theoretical framework of the HBM was extended with habitus to connect individuals' behavior pattern to social structural components for Korean American women's breast cancer screening theoretically. This was the first attempt to bridge the gap between individual and social structural perspectives on Korean American women's breast cancer screening. However, there might be criticism of adopting the concept of habitus to the revised theoretical framework. When the concept of habitus was addressed by Pierre Bourdieu, capital and field were developed together and they were linked to one another conceptually (Grenfell, 2008). Nevertheless, in adopting habitus to the theoretical framework of the HBM in the article, there were no specific statements about capital and field.

Secondly, the sampling issue still exists in Study Two and Three and this can be related to the generality issue of the research articles. The data collections through survey were implemented in 19 diverse community sites in the Atlanta and Chicago metropolitan areas. However, due to the researcher's resource and time limitations, those sites were accessed and chosen based on the researcher's convenience as a non-probability method. Hence, there might be sampling bias in the findings of this research article. In addition to that, according to Hosmer,

Lemeshow, and Studivant (2013), the recommended sample size is greater than 400 for logistic regression, but the number of cases for this research was 274. This could be an additional limitation of this research study.

In Study Three, Chapter 4, during the process of deleting, summating, and redefining variables, the items about NPO became invisible but the roles of NPOs are very critical in promoting breast cancer early detection among Korean American women. In addition, the reliability and the construct validity of the new scales still need to be confirmed because they have not yet been tested on various populations of the diverse research studies, although the construct validity of the new scales was tested in Chapter 4.

In conclusion, despite the strong validity of the goals of the three articles, both theoretically and statistically, limitations remain. Hence, these issues should be resolved through further follow-up research studies and be kept as a reference for future research study.

Implications for Social Work

As stated previously, this was the first attempt aiming to extend the theoretical framework of the HBM with habitus to bridge the gap between individual deficit and social structural perspectives, collecting data from the target population in two regions distant from each other, and developing the scale for the social component in the research field of Korean American women's breast cancer screening including social work. Also, it was the first research to adapt and combine concepts from the diverse disciplines of sociology, psychology, economics, and public health. Hence, the three research articles may have implications for the development of the social work field.

Research, Theory & Education

The research studies of this dissertation might show one of the ways in which a researcher of social work can integrate concepts and perspectives of other disciplines to develop theories and models and to understand social workers' task in diverse fields such as health care, as one of the applied social sciences.

First of all, in the research field of social work, "health" has not been one of the dominant topics even though the importance of health has increased with remarkable researches and advanced knowledge in the fields of health (NASW, 2003) and, especially, the issues of breast cancer screening disparity among minority groups have rarely been dealt with. Out of 22 research articles about cultural factors and breast and cervical cancer screening among Korean American women, reviewed by Lee (2015) through her literature review, only one was written by scholars who had a social work background, but it was still based on only the HBM theoretically. In other words, there has been a lack of diverse theoretical approaches on diverse health topics and subjects. This phenomenon might have occurred due to the strong tradition of a social work field focusing on evidence-based clinical practices.

As an applied social science, social work could have its own role in bridging the gap between academia and practice fields, and the role of theory in social work could be a connector bridging the fragmented phenomena. Through those tasks, the overall phenomenon and problems can be explained, and the comprehensive interventions and solution can be developed on the basic causes of the problems. Nevertheless, clinical practice-oriented social work, based on evidence, focuses on narrowed and fragmented perspectives on the phenomena and problems. This academic and practical trend might be the outcome of efforts to secure the unique special field of social work. However, at the same time, this may also make it hard to see the big picture.

This kind of trend was found even in the statements on the website of Association of Oncology Social Work (2016). Hence, it could be challenging for social workers, trained and educated under that academic tradition, to build a theoretically and practically balanced foundation to become a researcher. Eventually, although it was estimated that about 145,920 of social workers in the U.S. were working in health care fields in 2014 (Bureau of Labor Statistics, 2015), only a few researchers from the social work field were focusing on health issues including Korean American women's breast cancer screening. For example, for the research project by Lee et al. (2014), social workers provided interventions to the target population and collected data at community sites, whereas principal investigators of the project from nursing analyzed the data and wrote research articles from their perspectives. Namely, even though social workers were the main service providers to promote routine mammograms among Korean American women for this project, there was no major input by them in analyzing the data and writing research articles.

Therefore, it is significant to expand the research and educational interest of social work into diverse fields such as health. Through the theoretical combination of academic and practical experiences from diverse social work fields, new paradigms or theories can be produced, which will give social workers and researchers advanced ways to understand or deal with social problems.This is one of the messages that the author wanted todeliverto readers through the manuscripts of this dissertation.

Secondly, the application of habitus theory to bridge the gap between macro and micro perspectives and theories in this dissertation was very efficient and remarkable. Due to the academic and professional characteristics of social work, scholars and researchers might deal with diverse individual issues or social problems at the micro level. However, it will not always be easy to understand those matters comprehensively and substantially only from an individual

perspective. In the opposite case, it might be difficult to do that only from social structural perspectives as well. Eventually, the concept of habitus would be useful to understand social or individual matters in multiple aspects without interrupting one another theoretically. Especially, the duplicated characteristics of habitus can provide room to explain diverse relations among factors and outcome variables instead of linear relations. Hence, it will be important to study and learn more about habitus including other concepts such as capital and field and their application in social work theories or models, thereby further developing the foundation for new social work theories.

Of course, the statements above do not mean that we should reject what social workers and researchers have done in academic and practical fields, based on evidence in terms of research, theory, and education. It might be more meaningful to discuss the limitations of evidence based on research-oriented study and practice and ways to overcome them.

Policy &Practice

One of the purposes of these research studies was to examine the changes in Korean American women's breast cancer screening since the ACA in 2014.This could be directly related to the current policy and community programs to promote breast cancer early detection among Korean American women in the Atlanta and Chicago metropolitan areas. At the same time, they could provide the validity of social structural supports and systems to solve the problems of breast cancer screening among Korean American women. Surely, this will be applicable to the breast cancer screening issues of other ethnic groups.

Free or affordable mammograms have been available for the uninsured women, aged 40 and over, in the 50 states of the U.S. through the National Breast and Cervical Cancer Early Detection Program (NBCCEDP) since the initiative of the Breast and Cervical Cancer Mortality

Prevention Act of 1990. It was expected that there might be changes in the status of women's breast cancer screening since ACA in 2014, and in Chapters 3 and 4, the rate of the insured Korean American women was reported to be higher in the regions of Atlanta and Chicago metropolitan areas in 2015 than that reported in research studies before 2014. Especially, the proportion of people with health insurance through the Marketplace of the ACA was the largest among groups by type of health insurance. However, the rates of Korean American women having a mammogram in the past two years in the two regions were significantly different, with the rate in the Chicago region being much lower than that in the Atlanta region. Namely, it seemed that there were some changes in the breast cancer screening field of both regions since ACA in 2014 but they occurred differently in both regions. Particularly, the significance of assessing the current programs and systems for breast cancer screening is related to the current issues about free mammogram programs through NBCCEDP. Since implementing ACA in 2014, the free programs have become a controversial issue in association with the budget problems of states and the reduction of their role in breast cancer screening promotion, and eventually public funding to promote breast cancer screenings has decreased(ACS CAN, 2016; Levy, Bruen, & Ku, 2012).

However, as mentioned above, even though the rate of the insured Korean American women increased since ACA in 2014, it seemed that that change did not affect the status of their routine mammograms immediately. Hence, it will be necessary to conduct further investigation on that phenomenon in terms of policy and practice and the public interventions, and the strategies to promote routine mammograms among minority groups, including Korean American women, should be redesigned, based on the results of the inspection. Nevertheless, due to theoretical, instrumental and geographical biases in the research field of Korean American

women's breast cancer screening, there was no research study about those issues and tools to assess the status of Korean American women's breast cancer screening in social structural context.

Therefore, the theoretical revision and the developed scales of the three research articles would validate the importance of evaluating the systems and programs for breast cancer screening among minority groups such as Korean American women. In this context, the implications of this dissertation are critical in developing and operating policies and practices in a breast cancer screening field. Chapter 2 discussed the reason why Korean American women's behavior for a breast cancer screening should be considered within the social structure. This could provide theoretical validity for the public intervention especially for minority groups, such as Korean American women, by public agencies or NPOs due to the characteristics of breast cancer screening promotion services. In Chapter 3, this theoretical insistence could be supported by the findings about the gap between health insurance possession and routine mammogram screenings among Korean American women in both regions through empirical data analysis. Finally, in Chapter 4, the new instruments to track paths and to measure relationships between an individual's behavior and social factors for breast cancer screening were developed and tested.

Finally, the findings of this dissertation will provide a significant foundation for future research studies, related to policy and program development to promote routine mammograms among minority groups, including Korean American women, and to increase communities' and stakeholders' attention to the current issues.

Recommendations for Future Research

Based on the limitations of these research studies of this dissertation, several recommendations can be made for future research studies. First, there should be further

theoretical discussion and explanation of Bourdieu's other concepts, "capital" and "field," in relation to the extended health belief model with habitus in that Bourdieu developed and introduced them together. Especially, the theoretical investigation and discussion on the three concepts in relation to culture might provide more insight into Korean American women's breast cancer screening behavior pattern. Secondly, future studies could be conducted in two other locations, such as New York City and L.A., with the same instruments. The findings of these future studies conducted in different regions can be compared with those of the current dissertation study and, especially, the reliability, validity, and sensitivity of the new scales in Study Three, Chapter 4, can be tested again with different samples. Finally, researchers should consider enlarging the sample size for the future study. According to Hosmer, Lemeshow, and Sturdivant (2013), the sample size should be greater than 400 cases for logistic regression.

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