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SELF-CARE AMONG FILIPINOS IN THE UNITED STATES

WHO HAVE HYPERTENSION

A Dissertation

Submitted to the School of Nursing

Duquesne University

In partial fulfillment of the requirements for

the degree of Doctor of Philosophy

By

Emerson E. Ea

August 2016

SELF-CARE AMONG FILIPINOS IN THE UNITED STATES

WHO HAVE HYPERTENSION

By

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Approved July 5, 2016

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ABSTRACT

SELF-CARE AMONG FILIPINOS IN THE UNITED STATES

WHO HAVE HYPERTENSION

By

Emerson E. Ea

August 2016

Dissertation supervised by Dr. Alison Colbert

Hypertension (HTN) is a leading risk factor in the development of cardiovascular disease (CVD) and stroke—two major causes of mortality and morbidity in the United States (US)—across all racial and ethnic groups, including Filipino immigrants. The results of early and recent studies that explored HTN among Filipinos in the US have consistently revealed a prevalence rate that is highest among Asian Americans. There is also evidence in the literature that indicates this population's sub-optimal control and management of HTN when compared with other Asian American subgroups. Despite this reported alarming information about HTN for this population, there is a noticeable lack of studies on HTN among Filipinos in the US, especially those that explore the unique factors that might influence how this group experience and manage this chronic illness. The purpose of this study was to explore self-care among Filipino immigrants (n=163)

who have HTN, and its relationship to acculturation, acculturative stress, HTN self-efficacy, and patient activation using the Transactional Model of Stress and Coping (TMSC) as a theoretical framework. The study results revealed that HTN self-efficacy (β=0.27, t(116)=3.045, p=0.003) and patient activation (β=0.21, t(116)=2.292, p=.024) significantly contributed to the regression model that accounted for 29.5% of the variance in HTN self-care for this sample. Further, a test of mediation on the role of patient activation in the relationship between HTN self-care and patient activation was conducted. The results of the bias corrected estimate of the indirect effect revealed that patient activation had a mediating role between HTN self efficacy and HTN self care (B=.15; $CI_{95\%}$ = .0356, .3239) for this sample. Findings from this study highlight the importance of addressing HTN self efficacy and patient activation in improving HTN self care that would not only improve individual health outcomes but could also potentially reduce health inequity for this population.

DEDICATION

This work is dedicated to my parents, Mr. Bonifacio and Mrs. Donata Ea who have instilled upon me to give my very best in everything that I do and to always remember to stay rooted to the values and faith that I grew up with. I am also dedicating this work to my sister, Sister Rhodora Ea, Carmelite Missionary who always remind me that simplicity is the way to contentment. Finally, I share this work with Joseph Victory-Stewart, my best friend, mentor, critic, and cheerleader.

ACKNOWLEDGMENT

I extend my heartfelt gratitude to Dr. Alison Colbert, my Dissertation Chair for her wisdom, guidance, positive spirit and energy, and role modeling. Also, many thanks to Dr. Melanie Turk and Dr. Victoria Vaughan Dickson for their support and helpful feedback.

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CHAPTER ONE

INTRODUCTION

Hypertension (HTN) is a leading risk factor in the development of cardiovascular disease and stroke in the United States (US) across ethnic and racial groups, including among Filipino immigrants. Although Filipinos in the US make up the second largest group of Asian Americans, very little is known about their general health status including HTN, especially those culturally-unique factors that might influence how this group experience and manage HTN. This dissertation research aimed to address this knowledge gap by specifically exploring self-care among Filipino immigrants in the US who have HTN.

This document is divided into the following sections:

1. Chapter 2 includes the literature review that provided an overview and summary of the current literature and evidence that relates to HTN among Filipinos in the US and its implications for research, practice, and health policy.

2. Chapter 3 contains the dissertation proposal that described the research project's specific aims, research questions, background and significance, the theoretical framework, significance to nursing and innovation, preliminary studies that informed the dissertation topic, research design and methods, plans for data analyses and interpretation, study limitations and challenges and strategies to address threats to study rigor and validity, and proposed timeline.

3. Chapter 4 includes the discussion of the results of the dissertation research. The study results revealed that HTN self-efficacy (β=0.27, t(116)=3.045, p=0.003) and patient activation (β=0.21, t(116)=2.292, p=.024) significantly contributed to the regression model that accounted for 29.5% of the variance in HTN self-care for this sample of first-generation Filipino immigrants in the US. Further, a test of mediation on the role of patient activation in the relationship between HTN self-care and patient activation was conducted. The results of the bias corrected estimate of the indirect effect revealed that patient activation had a mediating role between HTN self efficacy and HTN self care (B=.15; $CI_{95\%}$= .0356, .3239) for this sample.

CHAPTER TWO

LITERATURE REVIEW:

THE STATE OF SCIENCE OF HYPERTENSION AMONG FILIPINOS IN THE

UNITED STATES: IMPLICATIONS FOR RESEARCH, PRACTICE, AND HEALTH

POLICY

Globally, hypertension—defined as having a diastolic blood pressure of $\geq$90 mm

Hg or systolic blood pressure of $\geq$140 mm Hg on 2 or more occasions—is the leading

risk factor for death and disability causing an estimated 9.4 million deaths annually (Lim

et al., 2010). In the United States (US), about 32.6% of adults 20 years or older have

hypertension, and hypertension is the leading risk factor in the development of heart

disease and stroke across all ethnic/racial groups, including Asian Americans broadly,

and Filipino Americans specifically (Lim et al., 2010; Mozaffarian et al., 2015). High

quality treatment that addresses these health inequities requires a comprehensive

understanding of how hypertension affects racial subgroups.

Asian Americans constitute 5.6% of the US population and belong to the one of

fastest growing ethnic/racial groups in the US that is projected to increase to 8% by 2050

(Shresta & Heisler, 2011; U. S. Census Bureau, 2010). About a quarter of Asian

Americans have hypertension, and it is reportedly more common among those who are

older and have lower levels of education (Aoki, Yoon, Chong, & Carroll, 2014). Several

studies indicate that the prevalence of hypertension among Asian Americans is similar,

and potentially even lower, compared to the general US population. However, there is

great variability and heterogeneity in the prevalence and management of hypertension

and other cardiovascular risk factors among the diverse subgroups that comprise the Asian American population. Many studies on cardiovascular health focusing on Asian Americans have consistently highlighted the high prevalence of hypertension among Filipino immigrants when compared with the other Asian American subgroups (Ancheta et al., 2015; Klatsky & Armstrong, 1991; Zhao et al., 2015; Stavig, Igra, Leonard, McCullough, & Oreglia, 1986; Stavig, Igra, & Leonard, 1988).

According to the 2010 US Census, Filipinos belong to the second largest group of Asian immigrants in the US. Currently numbering about 3.5 million, this number reflects a 45% increase from the 2000 census (U. S. Census Bureau, 2010). The majority of Filipinos 18 years or older are married (56.3%), foreign-born (69.1%), speak English very well (77.7%), own a home (61.8%), and live in the Western states (65.9%) (Pew Research Center Social and Demographic Trends, 2012). Almost half (47%) of Filipinos have at least a bachelor's degree, which is significantly higher than the US population (28.2%). Similarly, their median household income of $75,000 is higher that the general US population ($49, 800) (Pew Research Center Social and Demographic Trends, 2012).

As with the broader Asian American population, the number of Filipinos in the US is expected to increase (Shresta & Heisler, 2011), and as such there is a need to investigate how hypertension affects this population. In addition, understanding the factors that are associated with this chronic disease and how Filipinos manage hypertension would be key to decreasing this health inequity. Thus, the purpose of this integrative review is to provide an overview and summary of the current literature and evidence that relates to hypertension among Filipinos in the US and its implications for research, practice, and health policy. In addition, presenting the studies in a chronological

narrative format will allow the readers to examine the evolution of the state of science of hypertension among this significant group of immigrants in the US.

Search Strategies

The literature search involved accessing several databases that include PubMed, the Cumulative Index to Nursing and Allied Health Literature (CINAHL), and Excerpta Medica Database (EMBASE). As very limited literature was expected, and to widen the scope and obtain a comprehensive picture and research trend of the variables of interest, all studies that included Filipinos as a subpopulation were included regardless of the date of publication as long they address the topic of interest. The following search terms and their combinations were entered using Boolean logic: Filipinos, Filipino immigrants, Filipino Americans, hypertension, high blood pressure, heart disease, and cardiovascular disease.

The initial search yielded 129 studies; the abstracts and titles of these studies were reviewed to determine if they are suitable to be included in the study. Those articles whose abstracts were deemed to be potentially relevant were read in full to further ascertain their relevance based on the topic of interest and the purpose of the integrative review. A total of 20 studies were included in the review based on the following inclusion criteria: quantitative and qualitative research published in English and conducted in the US addressing hypertension among Filipinos in the US, and whose study participants are 18 years or older (Figure 1).

Results

The majority of studies found in the literature on hypertension among Filipinos in the US used descriptive and correlational designs. To provide a comprehensive picture of

how the prevalence of hypertension continues to pose a major health risk for this population, the studies will be presented chronologically starting from the earliest to the most recent studies found in the literature. To show the progression of the state of science of hypertension among Filipinos in the US, studies that explore the factors associated with hypertension will also be discussed chronologically. Those studies that discuss how Filipinos manage hypertension, including a qualitative study, were also included in the analysis.

Prevalence

Some of the early studies that relate to hypertension among Filipinos were conducted in 1980's and 1990's and used existing databases that had Filipinos as an Asian American subgroup. Stavig, Igra, and Leonard (1984) conducted the earliest descriptive studies on hypertension among Filipinos living in California in the 1980s. The results of these studies revealed that Filipinos have the highest prevalence of hypertension compared to other Asian American subgroups and in some cases, prevalence approaches or exceeds the Blacks in some specific age and gender categories (Stavig et al., 1984; Stavig et al., 1986). Interestingly, results of another study revealed a discrepancy between the high prevalence of hypertension and a low death rate related to hypertension-related diseases among Filipinos that the authors attributed to a possible misclassification of Filipinos as other ethnic/racial groups on the California death certificates (Stavig et al., 1986). The results of the two studies conducted in the 1990's continued to show the increased risk of hypertension among Filipinos when compared with Chinese, Japanese, and other Asian American subgroups (Klatsky & Armstrong, 1991; Klatsky et al., 1996).

This pattern of disproportionately high prevalence of hypertension among Filipinos was also evident in studies published between 2000-2010. In a study that used secondary data from the National Health Interview Surveys (NHIS) between 2003 to 2005 showed that, among Asian Americans, Filipinos were more likely to be have hypertension (OR = 1.18, 95% CI = 1.02-1.44) when compared to Caucasian Americans [11]. The results of study that used data from the 2004-2006 NHIS also revealed that Filipinos have the highest prevalence of hypertension among Asian Americans (Barnes, Adams, & Powell-Griner, 2008). A disproportionately higher incidence of hypertension among Filipinos was also noted in the results of a study that compared Filipino and White's coronary risk factors and outcomes of percutaneous coronary or cardiac surgical intervention (Ryan et al., 2000).

The more recent studies published since 2010 continue to follow the same pattern of health inequity of hypertension among Filipinos in the US. Results of two studies that specifically examined the cardiovascular health outcomes among the different Asian American women subgroups highlighted this health inequity among Filipino women. The results of a study by Ancheta et al. (2015) that examined the various cardiovascular risk factors among different Asian American subgroups revealed that at least 41% of Filipino women in the study have 4 or more cardiovascular risk factors that include hypertension, being overweight and obese, hypercholesterolemia, waist circumference $\geq$35 inches, and low high density lipoprotein (HDL) compared to the 21% Cambodian, 13% Vietnamese, and 0% Chinese American women in the study. In the other study by Appel, et al. (Appel, Huang, Ai, & Lin, 2011) that used data from the National Latino Asian American Study

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revealed that Filipino women had a hypertension prevalence rate that was higher than Vietnamese women and second to the Chinese women in the study.

The results of a study using a large sample from the data base of an ambulatory care setting in Northern California showed that, although Asian Americans as a group had a lower prevalence rate of hypertension compared with Non-Hispanic Whites, Filipinos had a higher prevalence rate of hypertension than Non-Hispanic Whites, Mexicans, and Non-Hispanic Black men (Zhao, 2015). This pattern of health inequity continues to be demonstrated in studies indicating that Filipinos have the highest prevalence and the fastest rate of developing hypertension among several Asian American subgroups (Davis, Juarez, & Hodges, 2013; Wu, Hsieh, Wang, Yao, & Oakley, 2011).

The results of these studies have consistently revealed overtime that this population possesses a disproportionately higher burden of hypertension compared with Whites and other Asian and Pacific Islander groups and in some cases, exceeds that of African Americans, with hypertension prevalence rates ranging from 15.7% to 79%. Although the results of these studies could not provide specific information if this prevalence is increasing or decreasing for this population, there is ample data that support that this health inequity endures and continues to pose as a major health threat among Filipinos in the US. To better understand why this health disparity persists and to show the progression of the state of science of hypertension for this population, it is equally important to explore the factors that contribute to hypertension, and to identify those factors that might be unique to the Filipino population.

Factors Associated with Hypertension among Filipinos in the US

Some of the earliest studies conducted in the 1980s also explored the factors associated with hypertension among Asian Americans, with Filipino Americans as a subgroup (Stavig et al., 1984; Stavig et al., 1988). The results of these studies identified age, body mass index (BMI), alcohol intake, education, and indicators of support (such as having close friends and number of years having known best friend, frequency of dining outside, and religious affiliation) to be associated with hypertension among Asian Americans. However, these results are inconclusive and do not provide specific information about Filipinos owing to the descriptive nature of the studies and because they did not separate the different Asian American subgroups.

There was sparse literature noted between late 1990s and the later part of 2000s that explored the factors associated with hypertension among Filipinos in the US. De Castro, Gee, and Takeuchi published results of two studies in 2008 De Castro, Gee, & Takeuchi, 2008; De Castro, Gee, & Takeuchi, 2008) using data from the Filipino American Community Epidemiological Study (FACES) that explored the associations of several socio-demographic and work-related variables on Filipino Americans' health-related outcomes that include hypertension. The first study (De Castro, Gee, & Takeuchi, 2008) investigated the relationships among length of US residency, job stress, and chronic health condition. For this study, chronic health condition was a composite measure that represents a number of chronic illnesses including hypertension that the authors adapted from the Medical Outcomes Study. Results of the study revealed that job stress was associated with chronic health condition for all Filipino immigrants in the study regardless of length of US residency, but this relationship was strongest among new immigrants. Using the same outcome variable, chronic health disease, the results of the

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second study (De Castro, Gee, & Takeuchi, 2008) described the relationship between job dissatisfaction, psychological, and physical health among Filipino immigrants. Job dissatisfaction was positively associated with psychological distress (β=0.32, p <.001) and physical health conditions (β=0.42, p<.001) while controlling for gender, age, education, income, and job category suggesting that job dissatisfaction has significant implications for over-all physical health and mental well-being.

Suboptimal anti-hypertensive medication adherence among Filipinos was identified in a study conducted in Hawaii among Japanese, Korean, Filipino, Chinese, part-Hawaiian, and White patients (Taira et al., 2007). Filipinos in the study were the least adherent (48.9%) among the group when compared to Whites (58.9%), Japanese (64.6%), Chinese (58.4%), Korean (53.4%), and part-Hawaiian (53.9%) patients. The factors associated with low adherence included younger age, higher morbidity, and history of heart disease. In addition, seeing a physician of the same ethnicity as the patient was not associated with anti-hypertensive medication adherence.

There was a noticeable increase in the number of studies specifically focusing on hypertension among Filipinos published from 2010 to 2014. Aside from determining the prevalence of hypertension specific for this population, these studies also explored the factors that are associated with hypertension. Three studies were recently published that discussed the results of a National Institute of Health (NIH)-sponsored research project based in the Northeast US (Ursua, 2013; Ursua, 2014; & Ursua, 2014). One study (Ursua, 2013) explored the relationship between disease awareness, treatment, and control of hypertension among Filipinos (N=994) living in New York and New Jersey. The study results revealed that 56.9% (n=566) of the participants screened have hypertension

(defined as having been diagnosed by a health care provider, self-report of current use of a hypertensive medication, or had a mean SBP of $\geq$ 140 mmHg or $\geq$ 90 mmHg). Out of these participants who have hypertension, 72.1% (n=408) were aware of their hypertensive status, and 78.4% (n=320) of them are taking anti-hypertensive medication. Of those receiving medication, only 38.4% (n=123) have their blood pressure under control, defined as having a mean SBP of $\leq$ 140 mmHg and/or DBP of $\leq$ 90 mmHg. Logistic regression analyses revealed that older age, self-rated health status as either poor or fair, and self-report of high-cholesterol diagnosis or diabetes, and a family history of hypertension were significantly associated with hypertension awareness. Use of hypertensive medication was significantly associated with older age, having lived in the US for 15 or more years, and non-smoking status. Having health insurance coverage was the only significant factor associated with optimal control of hypertension (OR = 2.1, 95% CI = 1.2-3.6) for this sample.

The results of the second study (Ursua, 2013), which used a larger sample size (N=1,028), identified older age, male gender, living in the US for over 5 years, a BMI greater than 23.0 kg/m^2, an elevated blood glucose reading, family history, and self-report of health as predictors of hypertension among the study participants. Further, the results of this study revealed that 53% have hypertension, 39% have pre-hypertension, 75% are overweight or obese based on the World Health Organization (WHO) guidelines specific for Asians, and 55% of the sample are uninsured. Final logistic regression model revealed that age, gender, time in the US, BMI and glucose level, family of hypertension, self-rated health status, and physical activity significantly predicted hypertension status among the study participants.

The third study (N= 88) used a mixed-methods approach, and was the only study that tested an intervention, to assess the feasibility and effectiveness of the use of community health workers (CHWs) to improve the management of hypertension of Filipino immigrants in the New York and New Jersey (Ursua, 2014). The interventions included four 90-minute monthly workshops based on the National Heart, Lung, and Blood Institute curriculum delivered by trained CHWs, and follow up phone calls and in-person visits to assist participants access primary care services, ensure medication adherence and appointment keeping, social support and other health-related referrals. The results of the study revealed that there were significant decreases in systolic ($p<0.001$) and diastolic ($p<0.01$) blood pressure readings, and weight and BMI ($p<0.001$), and an increase in blood pressure control ($p=.017$) at baseline and at 4 months. There were also significant improvements in cardiovascular knowledge, weight management, diet, self-efficacy, and dietary behaviors regarding salt and sodium, and fat and cholesterol intake. In addition, the participants who were interviewed for the qualitative portion of the study positively responded to the use of CHWs who shared their culture, language, and life experiences, and helped them overcome issues that influence adherence and success to care; many participants felt empowered as a result of their participation in the program.

The results of these three aforementioned studies reveal the complex and multi-faceted, and at times, conflicting factors that are associated with hypertension for this population. These include socio-demographic, work- and immigration-related factors, self care behaviors, presence of co-morbidities, and personal- and cultural-specific factors. The socio-demographic and immigration-related factors associated with hypertension in this group include older age, gender, family history, education, years of

residency in the US, having health insurance, job stress, and job dissatisfaction. There are notable self-care behaviors identified in this review that influence awareness, management, and optimal control of hypertension among Filipino immigrants that include smoking status and level of physical activity. The presence of other co-morbidities such as obesity and increased BMI, and diabetes, and perceived psychological distress have also been found to be associated with hypertension. These factors have similarly been identified in the literature to be associated with the diagnosis, and awareness, management, and optimal control of hypertension among US adults and older adults (Mozaffarian et al., 2015) and among minority groups and immigrants (Kurian & Cardarelli, 2007; Mensah, Mokdad, Ford, Greenlund, & Croft, 2005; Rodriguez & Ferdinand, 2015).

Only one qualitative study was found that specifically addressed hypertension among Filipinos in the US. De la Cruz and Galang (2008) explored Filipino Americans' illness beliefs, practices, and perceptions related to hypertension. Study participants (N=27) described the following factors to influence the development of hypertension and influence their ability to effectively manage this chronic illness: Filipino diet that is high in fat and salt, lack of physical activity, lifestyle factors such as smoking and use of alcohol, genetics, daily stress from multiple sources such as from work and family responsibilities, and perceived discrimination. The participants also described strategies how they managed hypertension, including the use of folk remedies and complementary modalities such as acupuncture and the roles of humor and laughter, praying and going to church, and family to manage their disease. Although study participants were aware of the importance of taking medications to manage hypertension, and the lifestyle

modifications needed to manage it, they identified forgetfulness, lack of motivation, lack of access to medication, and side effects from medications, as reasons for not adhering to treatment.

In sum, the studies presented and discussed how the science of hypertension among Filipinos in the US has evolved from the early studies that aggregated Filipinos with other Asian American subgroups to the most recent studies that specifically focused on hypertension among Filipinos, especially those studies conducted in the Northeast US. However, there is still a lack of rigorous studies, including those that test evidence-based interventions shown to produce positive outcomes in managing hypertension.

Research Recommendations and Implications for Practice and Health Policy

The purpose of this integrative review was to describe the state of science of hypertension among Filipino immigrants in the US and its implications for research, practice, and health policy. A significant finding of this review is the alarmingly high prevalence of hypertension among Filipinos when compared with other racial and ethnic groups, not just Asian Americans. This trend has been consistently documented from the earliest studies in the 1980s to the most recent studies on hypertension among Filipinos.

However, these alarming statistics have not been translated into significant responses nor spurred any health policy actions and responses specific for Filipinos to address this major health threat. For example, this information should generate concern within the Filipino community and/or affiliated interest groups and organizations that champion health equity at the local and national levels to initiate actions or intensify efforts to address this health inequity such as developing initiatives to increase awareness and screening, and support programs that empower Filipinos to adopt and maintain a

heart healthy lifestyle. There is a need to make this information known, not just among Filipinos, but also to the wider community, including healthcare-related and scientific communities, and to policy makers who could support and advance health policies that could potentially impact practice to reverse this health inequity for this population.

The findings from this integrative review also highlighted some knowledge gaps that could explain why this health inequity continues to afflict this population. All the studies reviewed used cross-sectional designs, which could not determine causality of the variables of interest. Moreover, several studies used an existing database such as the FACES and NHIS, convenience sampling, aggregated Filipinos with other Asian American subgroups, and clustered hypertension with other chronic diseases, all of which further limit generalizability of study findings. Many studies also relied on self-reports to operationalize the major variables in these studies, which impacts study results' validity and reliability.

There is a need to conduct future research that utilize robust methodologies to adequately inform practice and health policy and improve our understanding of the role of culture and immigration-related factors that could influence treatment outcomes among Filipinos who have hypertension. There is also a need to conduct studies that specifically explore the roles of and relationships among self-care, health literacy, and patient engagement on hypertension-related patient outcomes specific for this population. Enabling patients, including immigrants, to take an active and engaged role in managing their conditions could lead to improved health outcomes and could potentially reduce racial and ethnic disparities in care (Cunningham, Hibbard, & Gibbons, 2011). Future studies also need to integrate a theoretical framework such as health behavior theories in

future research related to hypertension to further strengthen and explain the interrelationships among variables that influence hypertension management and outcomes.

Findings of this review also seem to suggest that the *Model Minority Myth*, an assumption that Asian Americans have better socio-economic and health outcomes when compared to other racial/ethnic groups, is wrong. This stereotype could hamper efforts to effectively identify and address many health inequities that plague the Asian American community.

There is preliminary evidence that use of CHWs to deliver culturally-tailored interventions could lead to positive treatment outcomes among Filipinos who have hypertension. However, research is needed to further explore this promising initiative using rigorous methodologies to add to a growing body of knowledge on the effectiveness of community-based interventions in supporting effective self-care by increasing knowledge, self-efficacy, and patient engagement and activation in improving health-related outcomes (Barlow, Wright, Sheasby, Turner, & Hainsworth, 2002; Chodosh, 2005; Hibbard & Greene, 2013; Lu et al., 2012; & Riegel et al., 2009).

To address these knowledge gaps would heed American Heart Association's (2011) call to improve understanding of the unique factors that influence cardiovascular health outcomes among the different Asian American subgroups. In addition, exploring these topics would also address the Department of Health and Human Services' (2011) *Action Plan to Reduce Racial and Ethnic Health Disparities* initiative to target patient-centered outcomes in diverse populations (Palanappian et al., 2010). Findings from these

studies could be used to inform health policies that specifically target the unique needs of minority populations that include Filipino immigrants.

Summary and Conclusions

This literature review illustrates a significant health equity issue that remains, for the most part, invisible due to lack of robust research, incomplete understanding of the heterogeneity of the different Asian American subgroups, and lack of attention to the unique influence of culture on hypertension management for this population. The results of this integrative review revealed an alarmingly high prevalence of hypertension among Filipino immigrants in the US. In addition, this literature review found that there are varied and multi-faceted, and at times conflicting factors that are associated with this chronic illness among this population with regard to awareness, management and treatment, and control of hypertension. However, due to the cross-sectional nature of the studies reviewed and methodologies used, the relationships among these factors are not well defined, which highlighted significant knowledge gaps. Addressing these knowledge gaps could increase our understanding of this chronic illness as experienced by this population and lead to culturally-tailored interventions and health policies to reverse the current trend of this health inequity.

Search Results (n=129):

EMBASE (12); CINAHL (37); PubMed (36); Web of Science (44)

Studies after duplicates removed: (n=97)

Studies reviewed by title and abstract: (n=97)

Accessed full text and reviewed for inclusion and exclusion criteria: (n=42)

Studies included in the literature review:

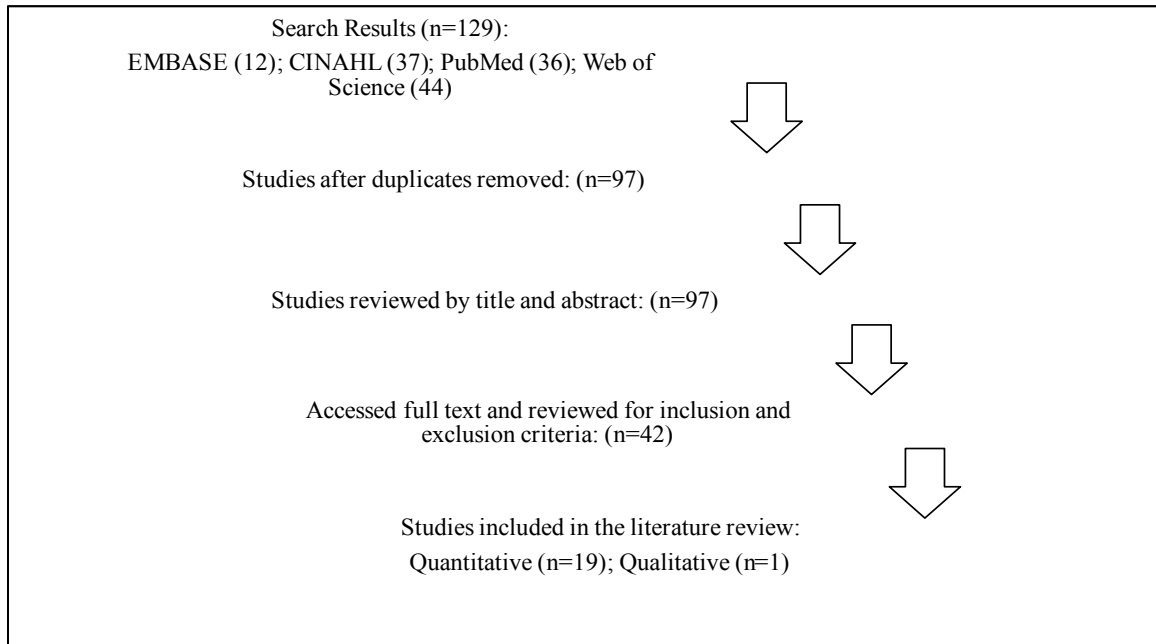Quantitative (n=19); Qualitative (n=1)

Figure 2.1. PRISMA Diagram

Table 2.1

Summary of Studies on Hypertension among Filipinos in the United States.

Authors/Year	Study Design and Methods	Key Findings
Stavig, Igra, & Leonard (1984)	Systematic multi-stage cluster sampling of Asian Americans living in California	Filipinos have the highest rates of hypertension (24.5%) compared to other Asian American subgroups that include Chinese (15.7%) and Japanese (12.5%) Americans, and Whites (20.2%), and Hispanics (15.8%).
Stavig, Igra, Leonard, McCollough, & Oreglia (1986)	Use of large secondary data from NHLBI of mortality rate in California for each three year period (1969-71 and 1979-1981)	Hypertension-related deaths are highest among Blacks, followed by Whites, and lowest for Asian and Pacific Islanders.
Klatsky & Armstrong, (1991)	Secondary data from a Northern California health care program database	Increased risk of hypertension among Filipino men (OR = 1.3, 95% CI = 1.0-1.6) and women (OR = 1.5, 95% CI = 1.2 - 1.9) when compared with Chinese, Japanese, and other Asian American subgroups.
Stavig, Igra, & Leonard (1988)	Secondary data analysis from the 1979 California Hypertension Survey	Prevalence of hypertension was second to Blacks and highest compared to other Asian and Pacific Islanders. Further analysis revealed that prevalence of hypertension among men between 18 to 49 years in the sample was highest among Filipinos (30.5%) followed by Other Asian and Pacific Islanders (28.5%), and Blacks (28.3%). The study also revealed that Filipinos' rate of uncontrolled hypertension (24.5%) was comparable to Blacks (26.1%).
Klatsky, Tekawa, & Armstrong (1996)	Secondary data analysis from the 1979 California Hypertension Survey	Filipino men and women had the highest prevalence of hypertension compared with Chinese, Japanese, and Other Asians.
Ryan, Shaw, Zapolanski,	Secondary data analysis from cardiac center data base	Higher incidence of hypertension among Filipinos (79%) than Whites (61%) (p=<0.0001).

Murphy, Valle, & Myler (2000)		
Barnes, Adams, & Powell-Griner (2008)	Secondary data of using 2004-2006 NHIS data	Filipinos have the highest prevalence of hypertension (27%) and obesity (14.1%) among Asian Americans.
Taira, Gelber, Davis, Gronley, Chung, & Seto (2007)	Secondary data analysis (n=3,812) of data from a large health plan organization in Hawaii	Filipinos in the study were the least adherent (48.9%) among the group when compared to White (58.9%), Japanese (64.6%), Chinese (58.4%), Korean (53.4%), and part-Hawaiian (53.9%) patients.
Ye, Rust, Baltrus, & Daniels (2009)	Secondary data analysis from 2003-2005 NHIS data (n=633)	Among Asian Americans, Filipinos were more likely to have hypertension (OR = 1.18, 95% CI = 1.02-1.44) when compared to Whites.
De Castro, Gee, & Takeuchi (2008)	Secondary data analysis of data from the Filipino American Community Epidemiological Study (FACES)	Job stress was associated with chronic health condition for all Filipino immigrants in the study regardless of length of US residency, but this relationship was strongest among new immigrants.
De Castro, Gee, & Takeuchi (2008)	Secondary data analysis of data from the Filipino American Community Epidemiological Study (FACES)	Job dissatisfaction was positively associated with psychological distress (B=0.32, p <.001) and physical health conditions, including hypertension (B=0.42, p<.001) while controlling for gender, age, education, income, and job category.
Appel, Huang, Ai, & Lin (2011)	Secondary data analysis from the National Latino Asian American study (n=273)	Filipino women (n=273) had a hypertension prevalence rate that was higher than Vietnamese women and second to the Chinese women. In addition, Filipino women in the study had the highest prevalence of being overweight and obesity using the BMI standards for Asians, and being a current (8.2%) or former smoke among Asian American women in the sample.

Dela Cruz & Galang (2008)	Focus group interviews (N=27)	Participants identify lifestyle factors, genetics and immigration-related stressors to contribute to the development of hypertension.
Wu, Hsieh, Wang, Lao, & Oakley (2011)	Cross-sectional survey of Asian American women in Michigan (N=388)	Filipino Americans have the highest rates of hypertension and hypercholesterolemia among other ethnic/racial groups, as well higher prevalence of being overweight and smoking among a sample of Chinese, Hmong, and Vietnamese American sample in Michigan.
Davis, Juarez, & Hodges (2013)	Secondary data analysis of data from members of a health insurance group in Hawaii between 2002-2009	Filipinos to have fastest rate of developing hypertension among Whites, Korean, Hawaiian, and Chinese Americans when compared to the White population.
Ancheta, Carlson, Battie, Borja-Hart, Cobb, & Ancheta (2014)	Cross-sectional study consisting of Asian American women in northeast Florida	At least 41% of Filipino women in the study have 4 or more cardiovascular risk factors that include hypertension, being overweight and obesity, hypercholesterolemia, waist circumference $\geq$35 inches, and low High Density Lipoprotein (HDL) compared to the 21% Cambodian, 13% Vietnamese, and 0% Chinese American women in the study.
Ursua et al. (2013)	Convenience sampling	56.9% (n=566) of the participants screened have hypertension. Older age, self-rated health status as either poor or fair, and self-report of high-cholesterol diagnosis or diabetes, and a family history of hypertension were significantly associated with hypertension awareness, while use of hypertensive medication was significantly associated with older age, having lived in the US for 15 or more years, and non-smoking status. Having health insurance coverage was the only significant factor associated with control of hypertension (OR = 2.1, 95% CI = 1.2-3.6) for this sample.
Ursua et al. (2013)	Convenience sampling	53% have hypertension, 39% have pre-hypertension, 75% are overweight or obese based on the World Health Organization guidelines specific for Asians. Older age, male gender, living in the US for over 5 years, a BMI greater than 23.0 kg/m^2, an

		elevated blood glucose reading, family history, and self-report of health as predictors of hypertension among the a sample of Filipinos in the sample.
Ursua et al. (2014)	Mixed-methods; feasibility pilot study (N=88) using convenience sampling	Significant decreases in systolic ($p<0.001$) and diastolic ($p<0.01$) blood pressure readings, and weight and BMI ($p<0.001$), and an increase in blood pressure control ($p=.017$) after implementation of a workshop based on the National Heart, Lung, and Blood Institute curriculum. There were also significant improvements in cardiovascular knowledge, weight management, diet, self-efficacy, and dietary behaviors regarding salt and sodium, and fat and cholesterol intake.
Zhao, Jose, Pu, Chung, Ancheta, Fortmann, & Panalappian (2014)	Secondary data analysis of data base of an ambulatory care setting in Northern California	Filipino men (59.9%) and women (53.2%) had a higher prevalence rate of hypertension than Non-Hispanic White men (46%) and women (39.6%), Mexican men (54.1%) and women (46.5%) and Non-Hispanic Black men.

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CHAPTER THREE

DISSERTATION PROPOSAL

Cardiovascular disease is the leading cause of death among Filipinos in the United States (US) (Ryan et al., 2000). Hypertension is the leading risk factor in the development of cardiovascular heart disease and stroke in the US across all racial and ethnic groups (Mozaffarian et al., 2015). Several studies conducted among Filipino immigrants in the US indicate that this population possesses a disproportionately high prevalence of hypertension compared with Whites and other Asian and Pacific Island groups. More specifically, results of a large study showed that 3 out of 5 Filipinos in the US have hypertension and 1 out of 5 have pre-hypertension (https://www.med.nyu.edu/asian-health/research/aspire/hypertension-among-filipinos). Issues such as medication non-adherence, poor dietary choices, physical inactivity, unique cultural-related factors and limited access to health care all appear to contribute to this health inequity to this population (De Castro, Gee, and Takeuchi, 2008; Stavig, Igra, & Leonard, 1984; Stavig, Igra, & Leonard, 1988; Taira, Gelber, Davis, Gronley, Chung, & Seto, 2007; Ursua et al., 2013; Ursua et al., 2013; Ursua et al., 2014).

However, a significant knowledge gap exists regarding self-care behaviors among Filipinos in the US who have hypertension, and about how their experience as first generation immigrants may influence their self-care and health status. As the number of Filipinos—currently the third largest group of immigrants in the US —increases (US Census Bureau, 2010), there is a critical and urgent need to explore and understand the

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unique cultural-related factors associated with this health disparity that continues to pose as a major health threat to this population.

Specific Aims

The primary purpose of this proposed dissertation research is to examine self-care among first generation Filipino immigrants in the US who have hypertension using the Transactional Model of Stress and Coping (Lazarus & Folkman, 1984). The specific aims of this proposed study are:

Specific Aim 1: To determine the levels of acculturation, acculturative stress, self-efficacy, patient activation, and self-care among first generation Filipino immigrants in the US who have hypertension.

Specific Aim 2: To determine the relationships between and among acculturation, acculturative stress, self-efficacy, patient activation, and self-care among first generation Filipino immigrants in the US who have hypertension.

Approach

To achieve the specific aims of this study, a cross-sectional correlational research design will be conducted guided by Lazarus and Folkman's (1984) Transactional Model of Stress and Coping. More specifically, this theory will be used to explain how first generation Filipino immigrants in the US who have hypertension (stressor) appraise (acculturative stress and self-efficacy), cope (patient activation), and manage (self-care) this disease condition. Specific Aim 1 will describe the population using valid and reliable instruments that measure acculturation, acculturative stress, self-efficacy, patient activation and self-care among first generation Filipino immigrants in the US who have

hypertension, and Specific Aim 2 will use bivariate and multiple regression analyses to examine the relationships these key variables have to one another.

The following research questions (RQ) and hypotheses have been identified to achieve the specific aims for this proposed dissertation research:

RQ 1: What are the levels of acculturation, acculturative stress, self-efficacy, patient activation, and self-care among first generation Filipinos in the US who have hypertension?

RQ 2: What are the relationships between and among appraisal (acculturation and acculturative stress, self-efficacy), coping (patient activation), and management (self-care) among first generation Filipino immigrants who have hypertension?

Hypothesis: There are no associations between and among acculturation, acculturative stress, self-efficacy, patient activation, and self-care among first generation Filipino immigrants who have hypertension.

RQ 3: Do appraisal (acculturation, acculturative stress and self-efficacy) and coping (patient activation) predict management (self-care) among first generation Filipino immigrants who have hypertension?

Hypothesis: Self-care is not related to acculturation, acculturative stress, self-efficacy, and patient activation among first generation Filipino immigrants who have hypertension.

Significance

Using the Transactional Model of Stress and Coping (Lazarus & Folkman, 1984) to explore the relationships between and among acculturation, acculturative stress, self-efficacy, patient activation, and self-care behaviors among first generation Filipinos in

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the US would significantly contribute to expanding nursing knowledge and enhancing nursing practice. Nurses have an obligation to explore and understand these factors in order to deliver culturally appropriate interventions that enhance and support hypertension self-care behaviors among underserved populations, including first generation Filipino immigrants who have hypertension.

To address the knowledge gap about self-care among Filipinos who have hypertension would heed American Heart Association's (Palanappian et al., 2010) call to improve understanding of the unique factors that influence cardiovascular health outcomes among the different Asian American subgroups. In addition, exploring these topics would also address the Department of Health and Human Services' (2011) *Action Plan to Reduce Racial and Ethnic Health Disparities* initiative to target patient-centered outcomes in diverse populations. Findings from these studies could be used to inform health policies that specifically target the unique needs of minority populations that include Filipino immigrants. More importantly, addressing these knowledge gaps could increase our understanding of this chronic illness as experienced by this population and lead to culturally-tailored interventions and health policies to reverse the current trend of this health disparity.

Innovation

The innovation in this proposed dissertation research lies in testing an established theory within the context of relatively newly identified stressors associated with acculturation and acculturative stress and its influence on hypertension self-care management among this under-researched immigrant population. Although this popular theory has been extensively used to guide many health and health behavior research,

there is a noticeable gap on the application of this theory to studies that relate to immigrant health, especially in managing a chronic illness. No studies have been found in the literature that explored hypertension self-care management among Filipinos guided by Lazarus' and Folkman's Transactional Model of Stress and Coping (1984). This new application of the theory would contribute to understanding the influence of culture-specific factors, self-efficacy, and patient activation on self-care management of hypertension among this group of immigrants. Results of this proposed study would further clarify and contribute to the understanding of the conflicting relationship among stress, coping, and health or health-related outcome.

Theoretical Framework

The Transactional Model of Stress and Coping (TMSC) will be used to guide this study. Developed by Lazarus and Folkman (1984) to explain how individuals cope with stressful events, this theory is made up of several key variables that include primary appraisal, secondary appraisal, coping efforts, meaning-based coping, and outcomes of coping or adaptation (Lazarus & Folkman, 1984).

The theory posits that when an individual experiences a stressful event(s), he/she initially evaluates the severity of the situation (primary appraisal) and determines his/her ability to modify and manage the situation (secondary appraisal) (Lazarus & Folkman, 1984). These appraisals or evaluations lead to actions or strategies to deal and manage the stressful event(s) (coping efforts). These coping efforts lead to either positive or negative adaptation (outcomes of coping) (Lazarus & Folkman, 1984).

For this proposed dissertation research, the stressors are operationalized as having a diagnosis of hypertension and the process of acculturation experienced by first

generation Filipino immigrants. Primary appraisal is operationalized as acculturative stress or the conflict experienced by the acculturating individual, while secondary appraisal will be operationalized as hypertension management self-efficacy which refers to the individual's belief and confidence to manage hypertension self-care behaviors. Coping will be operationalized as patient activation which refers to the individual's level of engagement to manage a health condition. The individual's level of self-care or the ability to adhere to hypertension treatment regimen will be used as the health behavior outcome of coping. As a theoretical framework (see logic model below) that attempts to explain how individuals cope and deal with different types of stressors and how these coping mechanisms lead to individualized outcomes, the Transactional Model of Stress and Coping is able to explain the relationships between and among acculturation, acculturative stress, self-efficacy, patient activation, and self-care among Filipino immigrants who have hypertension.
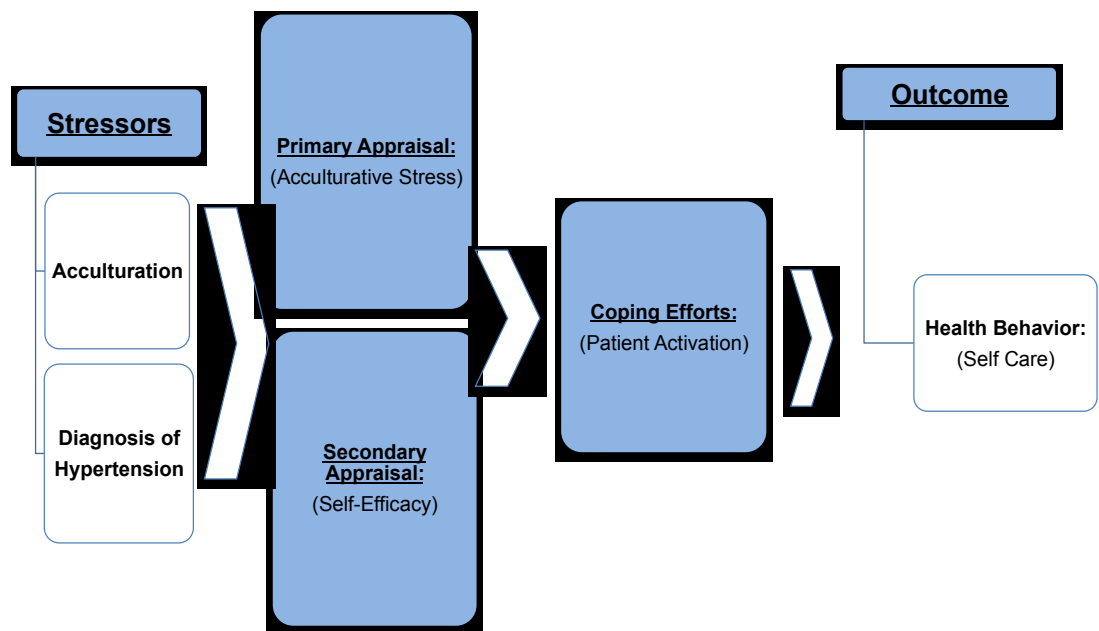
Background and Significance

Globally, hypertension—defined as having a diastolic blood pressure of ≥90 mm Hg or systolic blood pressure of ≥140 mm Hg on 2 or more occasions—is the leading risk factor for death and disability causing an estimated 9.4 million deaths annually (Lim et al., 2012). In the US, about 32.6% of adults 20 years or older have hypertension and hypertension is the leading risk factor in the development of cardiovascular heart disease and stroke across all ethnic/racial groups, including Asian Americans broadly, and Filipino Americans specifically (Lim et al., 2012; Mozaffarian et al., 2015). Designing effective and high quality interventions requires a comprehensive understanding of how hypertension affects racial subgroups.

As with the broader Asian American population, the number of Filipinos in the US is expected to increase (Shresta & Heisler, 2011), and as such, there is a need to investigate how hypertension affects this population. In addition, understanding the factors that are associated with this chronic disease and how Filipinos deal with and manage hypertension would be key to decreasing this health disparity.

Prevalence

According to the 2010 US Census, Filipinos are the second largest group of Asian Americans in the US. Currently numbering about 3.5 million, this number reflects a 45% increase from the 2000 census (U.S. Census Bureau, 2010). Results of several studies that explored hypertension among Filipinos in the US consistently revealed a high prevalence of hypertension ranging from 15.7% to 79% for this population when compared with other Asian American subgroups and Whites, and in some cases, the prevalence rate equals or exceeds that of Blacks (Ancheta et al. 2015; Appel, Huang, Ai, & Lin, 2011;

Barnes, Adams, & Powell-Griner, 2008; Davis, Juarez, & Hodges, 2013; Klatsky & Armstong, 1991; Klatsky, Tekawa, & Armstrong, 1996; Ryan et al., 2000; Stavig, Igra, & Leonard, 1984; Stavig, Igra, & Leonard, 1988; Stavig, Igra, Leonard, McCullough, & Oreglia, 1986; Wu, Hsieh, Wang, Yao, & Oakley, 2011; Ye, Rust, Baltrus, & Daniels, 2009; Zhao et al., 2015). However, a significant number of these studies used an existing database and aggregated Filipinos with other Asian American subgroups that limit the generalizability of study findings.

Factors Associated with Hypertension among Filipinos in the US

A review of the literature conducted to understand why this health inequity persists for this population revealed insights that are associated with this chronic illness that include socio-demographic, personal and work-related factors, presence of co-morbidities, self-care, and immigration and cultural-related factors.

Socio-demographic, work-, and personal-related factors, and presence of co-morbidities. In general, there is a paucity of studies on hypertension among Filipinos in the US. The results of these limited number of studies identified older age, male gender, positive family history, not having a health insurance, increased level of job stress, and indicators of support (such as having fewer number of close friends) to be associated with the diagnosis of hypertension (De Castro, Gee, & Takeuchi, 2008; de Castro, Gee, & Takeuchi, 2008; Stavig, Igra, & Leonard, 1984; Stavig, Igra, & Leonard, 1988; Ursua et al., 2014). However, these studies used cross-sectional designs, and some studies did not separate the different Asian American subgroups and clustered hypertension with other chronic diseases, which limit the generalizability of study findings (De Castro, Gee, &

Takeuchi, 2008; De Castro, Gee, & Takeuchi, 2008; Stavig, Igra, & Leonard, 1984; Stavig, Igra, & Leonard, 1988).

The presence of other co-morbidities such as obesity and increased BMI, and diabetes, and perceived psychological distress, self-rated health status as either poor or fair have also been found to be associated with hypertension (Ursua et al., 2014) for this population. Notable health behaviors associated with the diagnosis of hypertension include a non-smoking status and increased physical activity (Ursua et al., 2013; Ursua et al., 2014). Similarly, the use of cross-sectional study design and convenience sampling limit the generalizability of these study findings.

Self-care. The ability to adopt and maintain a heart healthy lifestyle has been shown to significantly relate to the diagnosis of hypertension across racial and ethnic groups (Fan, Mallawaarachchi, Gilbertz, & Mokdad, 2010; Schroder, Fahey, & Ebrahim, 2004). In addition, optimal hypertension self-care behaviors such as adherence to taking anti-hypertensive medication, following a low salt or fat diet, exercising on a regular basis, keeping regular physician visits, and reduction of stress could lead to a decrease in blood pressure and all-cause mortality rate, and a lower risk in developing stroke and other cardiovascular diseases across racial and ethnic groups (Campbell et al., 2014; Fan, Mallawaarachchi, Gilbertz, & Mokdad, 2007; Han, Lee, Commodore-Mensah, & Kim, 2014; Glynn, Murphy, Smith, Schroeder, & Fahey, 2010; Schroder, Fahey, & Ebrahim, 2004).

A major factor that could contribute to successful hypertension self care management is self-efficacy or the individual's perceived confidence in carrying out self-care behaviors that relate to management of a chronic illness including hypertension

(Lee, Han, Song, et al., 2010). Results of several studies have demonstrated that self-efficacy is a strong predictor of self-care behaviors among patients who have heart failure and hypertension across racial and ethnic groups (Paradis, Cossette, Frasure-Smith, Heppel, & Guertin, 2010; Lee, Han, Song, et al., 2010; Schnell-Hoehn, Naimark, & Tate, 2009).

There is also evidence in the literature indicating that patients who have a chronic illness, including hypertension, that are highly engaged or activated to manage their own illness have better health outcomes (Kinney, Lemon, Person, Pagoto, & Saczynski, 2015; Rask, Ziemer, Kohler, Hawley, Arinde, & Barnes, 2009). In addition, enabling patients using culturally-tailored approaches, including immigrants, to take an active and engaged role in managing their chronic illness including hypertension could lead to improved health outcomes and quality of life, and could potentially reduce racial and ethnic health care disparities (Cunningham, Hibbard, & Gibbons, 2011; Simmons, Wolever, & Bechard, 2014).

However, there was notable lack of information that studies self-care among Filipinos who have hypertension. In a study conducted by Taira et al. (2007) that explored anti-hypertensive medication adherence among Japanese, Korean, Filipino, Chinese, part-Hawaiian, and White patients in Hawaii found that Filipinos were the least adherent among the group [OR=0.69 (0.64-0.74)]. The factors associated with low anti-hypertensive medication adherence included younger age, higher morbidity, and history of heart disease. In addition, seeing a physician of the same ethnicity as the patient was not associated with anti-hypertensive medication adherence.

Ursua et al. (2014) found significant decreases in systolic and diastolic blood pressure readings, and weight and BMI, and an improvement in blood pressure control in a study that utilized trained community health workers (CHWs) to deliver culturally tailored interventions to improve the management of hypertension of Filipino immigrants in the New York and New Jersey area (Ursua et al., 2014). Further, the results of the study also showed significant improvements in cardiovascular knowledge, weight management, diet, self-efficacy, and dietary behaviors regarding salt and sodium, and fat and cholesterol intake after the interventions delivered by Filipino CHWs.

Although there is evidence suggesting that high level of self-efficacy and patient activation is associated with enhanced self -care behaviors in managing a chronic illness including hypertension, no studies were found that specifically explored these factors among Filipinos who have hypertension.

Immigration and cultural-related factors. The role of culture, immigration, and acculturation and its influence on treatment and management of cardiovascular diseases, including hypertension among immigrants have been extensively explored in the literature, especially among Hispanics/Latinos (Moran, Diez Roux, & Jackson, 2007; Rodriguez, Hicks, & Lopez, 2012; Yi, Elfassy, Gupta, Myers, & Kerker, 2014). However, there is a dearth of studies that specifically investigate the role of culture and immigration-related factors and their influence on hypertension and hypertension-related outcomes among Filipinos in the US. Results of the one of the few published studies indicated that length of US residency is associated with hypertension for this population (Ursua et al., 2013; Ursua et al., 2014; Ursua et al., 2014). Specifically, those Filipinos who have lived in the US for more than 15 years were 1.6 times more likely to have a

diagnosis of hypertension compared with those who have lived in the US for 5 years or less.

The results of a qualitative study (Dela Cruz & Galang, 2008) that explored Filipino Americans' illness beliefs, practices, and perceptions related to hypertension suggest that there are multiple culturally-specific factors that influence the development and management of hypertension for this population. The participants in the study shared the following factors that influence their ability to effectively manage this chronic illness: Filipino diet that is high in fat and salt, lack of physical activity, lifestyle factors such as smoking and use of alcohol, genetics, daily stress from multiple sources such as from work and family responsibilities, and perceived discrimination.

There is a noticeable lack of studies that explore how acculturation, especially the stress and adaptation associated with living in a different culture (acculturative stress), influence self-care among Filipinos in the US who have hypertension. In addition, there was no study found that used a theoretical framework to explain how immigration and the challenges associated with adjusting to a different culture influence self-care health behaviors among Filipinos who have hypertension.

Summary and Conclusions

The literature consistently points to an alarmingly high prevalence of hypertension among Filipinos in the US compared to other racial and ethnic groups. This health inequity is associated with a multitude of factors that are complex, and at times, conflicting. There are several knowledge gaps that hamper a comprehensive understanding as to why this chronic illness continues to afflict this population that include the unclear relationships between and among culture-specific and personal-

related factors that influence how Filipinos in the US deal with and manage this chronic illness, especially among first generation Filipino immigrants. More specifically, there is a significant knowledge gap about how acculturation and its associated challenges (acculturative stress), self-efficacy related to hypertension management, and patient activation influence hypertension self-care behaviors among first generation Filipino immigrants who have hypertension. There is also a need to integrate a health behavior theoretical framework such as the Transactional Model of Stress and Coping (Lazarus & Folkman, 1984) to help clarify how first generation Filipino immigrants in the US who have hypertension (stressor) appraise (acculturative stress and self-efficacy), cope (patient activation), and manage (self-care) this disease condition.

Preliminary Studies

I have conducted a qualitative mini-study to explore self-care among first generation Filipino immigrants who have hypertension and psychometric testing of the *A Short Acculturation Scale of Filipino Americans* (ASASFA) when used among Filipino Registered Nurses using data collected in a previous study.

Qualitative Mini-Study

The aim of the qualitative mini-study was to explore and understand the experiences and care practices of Filipino immigrants who have hypertension using an ethno-nursing methodology. This mini-study was conducted to provide potential insight into this phenomenon of interest, and was guided by the following research questions: What are the cultural values, beliefs, perceptions, and practices among Filipino immigrants who have hypertension? What is the role of nurses in promoting culturally congruent care for Filipino immigrants who have hypertension?

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The method used for this mini-study was the ethno-nursing methodology developed by Madeleine Leininger (2006). This research inquiry uses an inductive method to explore nursing care phenomena and explain how individual's experience and value care and cultural practices. This mini-study used purposive sampling technique to recruit between 8-10 informants. To be included in the study, participants must meet the following criteria: at least 18 years of age, able to speak and write in English and *Taglish* (a combination of English and Tagalog—the official dialect in the Philippines), have a diagnosis of hypertension from a health care practitioner or currently taking an anti-hypertensive medication, and a first-generation Filipino immigrant. Leininger's four phases of qualitative data analysis guided this mini-study that include: (a) collecting, describing, documenting, and transcribing raw data; (b) identifying and categorizing of descriptors and components that relate to the domain of inquiry as guided by the Culture Care Theory; (c) analyzing pattern and context and examining the different meanings of care; and (d) identifying major themes and synthesis of research findings (McFarland, Mixer, & Webhe-Alamah, 2012).

Data collection is ongoing. The initial findings of this mini-study suggest that immigration and acculturation, cultural beliefs and self-care practices such as diet, physical activity, and anti-hypertensive medication adherence, strong religious and spiritual beliefs, and family dynamic influence care practices among Filipino immigrants who have hypertension. Participants also expressed nurses' influence in promoting positive self-care behaviors in managing hypertension.

Psychometric Testing of ASASFA

A study was conducted using secondary data to evaluate the construct validity of A Short Acculturation Scale for Filipino Americans (ASASFA). This study was part of a larger study that explored acculturation and job satisfaction among Filipino RNs (Ea et al., 2008). Briefly, at a convention sponsored by the Philippine Nurses Association of America, a convenience sample of 160 RNs who expressed interest in the study and met the following inclusion criteria received a set of questionnaire packets: (a) licensed in the US, (b) obtained entry-level nursing education in the Philippines, (c) at least 18 years old, and (d) currently working as an RN. Of this number, 141 RNs returned useable questionnaires, for a return rate of 88%.

This particular study aimed to answer the following research questions:

1) What are the relationships among the latent variables in ASASFA?

2) What is the internal reliability of the ASASFA scale?

3) Is there construct validity evidence on the ASASFA when used to measure acculturation among immigrant Filipino RNs?

To answer the research questions of the study, data were first analyzed to obtain a correlation matrix of the items in the instrument, a reliability coefficient, and then an exploratory factor analysis was conducted. Next, confirmatory factor analysis (CFA) was performed to further evaluate the construct validity of the ASASFA in measuring acculturation for this sample. Results of the CFA demonstrate reliability and validity evidence of acculturation from ASASFA for Filipino Americans. ASASFA can be used as a valid measure of acculturation for the burgeoning Filipino population in the US.

The results of these preliminary studies have significantly informed the development of the specific aims of this dissertation research proposal. In addition, the conduct of these projects has enabled the researcher to establish relationships with several Filipino community and professional organizations that could support recruitment efforts for the planned dissertation research.

Research Design and Methods

Research Design

This study will use a cross-sectional correlational design to determine the relationships between and among acculturation, acculturative stress, self-efficacy, patient activation, and self-care. More specifically, descriptive statistics, bivariate correlations, and multiple regression analyses will be used to answer the research questions.

Setting, Population and Sampling

The target population for this study will be first generation community-dwelling Filipino immigrants at least 18 years of age who have a current diagnosis of hypertension or are currently taking an anti-hypertensive medication. Convenience sampling technique will be used to obtain the sample for this study. Women participants who are pregnant or taking a contraceptive medication will be excluded from the study because these factors have the potential to increase blood pressure.

Power analysis. Because of inadequate information in the literature about the magnitude of relationships between and among the multiple variables of interest for this study and to ensure adequate power to perform the planned inferential statistical analyses, the sample size calculation was based on conservative estimates using small-to-moderate effect sizes. According to Cohen (1988), a sample of at least 141 is needed to detect a

population small-to-moderate effect size (R^2) of .08 using four predictors to achieve a power of .80 with a significance alpha level set at .05. Online statistical soft wares (http://www.danielsoper.com/statcalc3/calc.aspx?id=1;

http://www.gpower.hhu.de/en.html) were also used to calculate for sample size using four predictors using a small-to-moderate effect size (f^2) of .08, which indicated that at least 153 sample is needed. In addition, a sample size of at least 123 is needed to detect a small-to-moderate effect size (r= .25) to achieve a power of 0.80 to conduct bivariate correlations with a significant level set at 0.05 (Polit, 2011; http://www.cct.cuhk.edu.hk/stat/other/correlation.htm). The study will recruit at least 165 participants. This sample size would be sufficient to conduct the planned inferential statistical analyses planned for this study.

Recruitment and Data Collection

To recruit study participants, the researcher will distribute and leave informational flyers in public areas where a large number of Filipinos are known to congregate, such as churches, grocery stores, and Filipino restaurants. This flyer will include information about the study and contact information of the researcher. To expand the recruitment pool, the researcher will also contact the leadership of several Filipino professional and community organizations that can assist the researcher to identify potential participants for the study.

During active recruitment described above, those who express interest to participate in the study will be considered as potential subjects and will be screened for study eligibility. Those who self-report as having been told to have hypertension by a

health care provider or currently taking an anti-hypertensive medication will be considered eligible to participate in the study.

Once the participant have meet the inclusion criteria and has agreed to participate in the study, he/she will be given the survey packet that includes the informed consent form, the survey instruments, and a pen. Once he/she has signed the consent, the participant will then be directed to a private and quiet area where he/she can complete the survey questionnaires without disruption. Participants will be asked to place their completed questionnaires in an envelope provided by the researcher. As an incentive, participants will receive a $10 retail store gift certificate for returning the completed questionnaires.

In addition, those individuals who contact the researcher using the phone listed in the informational flyer and have expressed interest in the study will also be screened for eligibility via the phone by the researcher and, if found eligible, will be provided with information about the next data collection session and location, where the same process described above will be observed.

The participants will also be assured that information shared will be safeguarded to ensure confidentiality. To safeguard confidentiality, unique identifiers (UID) will be assigned to all participants and all data collection instruments will identify participants only by these unique identifiers. Logs linking subjects' identifying information (name, address, and contact information) to their UIDs will be kept locked in a file cabinet in the researcher's office. Data collection instruments will also be kept locked in a file cabinet in the researcher's office and will only be accessible to the researcher. Only aggregate data will be reported.

Variables and Instruments

The primary variables of interest for this proposed study include acculturation, acculturative stress, self-efficacy, patient activation, and self-care. In addition to the demographic questionnaire, the instruments that will be used to measure the primary variables for this study include the A Short Acculturation Scale for Filipino Americans (ASASFA); Riverside Acculturative Stress Inventory (RASI); Hypertension Self Care Profile Self-Efficacy Scale; Patient Activation Measure (PAM) instrument; and the Medical Outcomes Study (MOS) General and Specific Adherence scale. Internal consistency reliability coefficients will be analyzed for each of these instruments; a value of 0.70 or more indicates that the items contained in the instrument fit together conceptually (DeVon et al., 2007).

Acculturation will be measured using the A Short Acculturation Scale for Filipino Americans (ASASFA), a 12-item Likert-type instrument that yields interval level data consisting of three subscales that measures acculturation in areas of language use and preference at work, media use and preference, and social relations (Dela Cruz, Padilla, & Agustin, 2000). The first 5 items measure language use at home and socially, the next 3 items asks participant's language preference in media use, and the remaining 4 items assess participants' ethnic preference in social relations. Participants are asked to rate each item as 1 (*Only Filipino*), 2 (*More Filipino than American/English*), 3 (Equally), 4 (*More American/English that Filipino*), or 5 (*Only American/English*) (Dela Cruz, Padilla, & Agustin, 2000). There is evidence of high reliability (Cronbach's alpha = .84-.91) for this instrument when used in several studies (Dela Cruz & Galang, 2008; Ea, et al., 2008; Ea et al., 2010; Kataoka-Yahiro, 2010; Mc Adam, Stotts, Padilla, & Puntillo,

2005). There is also evidence of content and construct validity using confirmatory factor analysis as described by the instrument's authors (Dela Cruz, Padilla, & Butts, 1998).

The scoring and interpretation of the results obtained from ASASFA include calculating for the group mean by adding individual total scores and dividing the result by the total number of questions (12), and calculating for the individual mean score by dividing the sum of the means by the number of participants (Dela Cruz, Padilla, & Agustin, 2000). The total acculturation score ranges from a minimum of 12 to a maximum of 60 and the possible mean score ranges from a minimum of 1 to a maximum of 5 (Dela Cruz, Padilla, & Agustin, 2000). Lower total and mean scores indicate low level of acculturation while higher total and mean scores indicate an acculturation level that leaned toward the American culture (Dela Cruz & Agustin, 2000).

Acculturative stress will be measured using the Riverside Acculturation Stress Inventory (RASI), a 15-item Likert-type questionnaire that assesses the multi-dimensional factors associated with acculturative stress (Miller, Kim, & Benet-Martinez, 2011). The instrument is made up of five subscales that include language skills, discrimination, intercultural relations, cultural isolation, and work challenges. Participants are asked to rate each item from 1 (strongly disagree) to 5 (strongly agree); higher mean scores indicate a higher level of acculturative stress. There is evidence of validity and reliability when used among a sample of Asian Americans, including Filipino Americans. Internal consistency ranges from .83 to .85 for the total RASI scores; construct validity was established using theory-driven hypothesis-testing regarding the relationships between acculturative stress and bicultural integration ($r = .12$-$.40$), depression ($r = .20$), anxiety ($r = .20$), and general stress ($r = .32$).

Self-efficacy will be measured using the Hypertension Self-care Profile Self Efficacy Scale, a 20-item 4-point Likert-type questionnaire (*1 = Not Confident, 4 = Very Confident*) that assesses an individual's confidence in hypertension management that relate to physical activity, nutrition, alcohol intake, smoking, medication adherence, blood pressure monitoring, weight and stress management, and appointment keeping (Han, Lee, Commodore-Mensah, & Kim, 2014). The total score ranges from a minimum of 20 to a maximum of 80, with higher scores indicating greater hypertension management self-efficacy. There is evidence of construct, content, discriminant, and concurrent validity using exploratory factor analysis and hypothesis testing guided by the Orem's self-care model and Motivational Interviewing when used among mostly Black inner-city residents. The items in the instrument also demonstrated strong internal consistency registering a Cronbach's alpha of 0.91.

Patient activation will be measured by the Patient Activation Measure 13 (PAM-13), an abbreviated version of the original 22-item widely-used reliable and valid instrument that measures knowledge, skills, and confidence for self-management among patients who have a chronic illness such as diabetes and hypertension (Hibbard, Mahoney, Stockard, & Tusler, 2004). The instrument yields interval level data and could be converted to nominal level data. To obtain the patient activation score, all the responses to the 13 items are added to obtain a raw score and multiplied by the number of items completed and do not have an N/A as an answer. This raw score is then compared to a table to interpret the level of patient activation. Those participants whose PAM score is 47 or lower belong to Level 1 (May not yet believe that the patient role is important); 47.1 to 55.1 as Level 2 (Lacks confidence and knowledge to take action); 55.2 to 67 as

Level 3 (Beginning to take action); and 67.1 or higher as Level 4 (Has difficulty maintaining behaviors overtime (Insignia Health, 2013).

Self-care will be measured by the Medical Outcomes Study Adherence scale, a widely-used valid and reliable instrument that yields interval level data. The instrument consists of a 5-item general adherence section that assesses participant's tendency to adhere to general treatment regimen for the past 4 weeks and a four-item specific adherence section addressing hypertension that assess patient's ability to follow a salt diet, low fat or weight loss diet, take prescribed medications, and exercise regularly for the past 4 weeks (Hays et al., 1994). Participants are asked to rate each item from *None of the time* (1), *A little of the time* (2), *Some of the time* (3), *A good bit of the time* (4), *Most of the time* (5), and *All the time* (6). Internal consistency of the general adherence section of the instrument across studies ranges from .79 to .85 (Di Matteo et al., 1993; Hays et al., 1994; Zugelj et al., 2009) and .68 for the specific adherence scale for hypertension (Zugelj et al., 2009). Participant scores are added separately for each of the sections— higher total and mean scores indicate higher adherence.

Table 3.1. Study Variables and Measures

Acculturation	A Short Acculturation Scale for Filipino Americans
Acculturative Stress	Riverside Acculturation Stress Inventory
Self-Efficacy	Hypertension Self-Efficacy Scale
Patient Activation	Patient Activation Measure 13
Self- Care	Medical Outcomes Study General and Specific Adherence Scale

A demographic questionnaire will also be used to obtain a profile of the sample for this study. Participants will be asked personal and socio-demographic information such age, gender, income, health insurance status, length of US residency, work and work status, and medical and medication history.

Plans for Data Analysis and Interpretation

A code book will be developed by the researcher to identify and define the variables in the study which will include an abbreviated variable name, the description of that variable, and the range of possible numeric values entered onto a computer file. A logbook will also be kept by the researcher to note all changes such as recoding of the variables and any updates in the database.

The researcher will enter collected data onto a secured computer file as soon as possible and on an ongoing basis. Data entered will be checked for accuracy and missing information. Missing data will be handled in several ways. First, the missing data will be verified against the original document and corrected as necessary. Second, if missing data is verified, the data will be examined for patterns. If there is no pattern and given that there are not too many missing data, these subjects could be deleted from the analysis. If there is a pattern or there are too many missing data, the researcher could replace the missing values with the mean of the variable(s) or the group mean that the subject belongs to, or use regression to predict the missing values (Tabachnick & Fidell, 2013).

Statistical Package for Social Sciences (SPSS) version 22 will be used to conduct descriptive and inferential statistical analyses. Socio-demographic data will be analyzed by mean, median, standard deviation, frequency, percentage, and range to present the characteristics of the sample in this study.

To answer RQ1, SPSS will be used to determine the aggregate means, medians, standard deviations, frequencies, percentages and ranges of acculturation, acculturative stress, self-efficacy, patient activation, and self-care among the sample. Results will be analyzed for normal distribution, symmetry, skewness, and kurtosis. Prior to conducting the planned inferential statistical analyses, all efforts will be made to ensure that test assumptions have been met.

To answer RQ2, bivariate correlations will be examined using Pearson product-moment correlation coefficient (Pearson r) between and among the major variables in the study. To assure the integrity of the analysis, the researcher will assess that the assumptions for the correlation test analysis have been met that include making sure that the variables are normally distributed. In addition, the result of the scatterplots will be examined for either positive or negative linearity before running the correlation analysis.

Once the assumptions have been met, the researcher then evaluates the significance of the correlation. If there is significance, the researcher then examines the correlation coefficient (r) to determine the magnitude of the relationship between the two variables. Correlation coefficients can range between -1.00 through .00 to +1.00 with negative values (-1.00 to .00) indicating a negative relationship and positive values (.00 to +1.00) indicating a positive relationship (Polit, 2010). The absolute value will be used to determine strength, i.e. the closer the index to 1 the stronger the relationship. The r^2 will then be examined to determine the proportion of variance in one variable that can be accounted for by the other variable. A correlation matrix table will be created to visually present the data.

To answer RQ 3, multiple regression analysis will be used. To assure the integrity of the analysis, the researcher will assess that the assumptions for the multiple regression have been met that include ensuring for homoscedasticity and addressing multicollinearity and outliers, and that variables are normally distributed.

After ensuring that the assumptions for multiple regression analysis have been met, the researcher determines significance by examining the F statistic under ANOVA if the predictors (acculturation, acculturative stress, self-efficacy, and patient activation) as a set predict self-care management among the sample. The r^2 (or adjusted r^2 if the sample size is limited) will then be examined to determine what percent of the variance in self-care predicts the final regression model. The r^2 will be interpreted using Cohen's guideline (1988): 0.02 (small effect size), .13 (moderate effect size), and .30 (large effect size). To determine which specific predictors significantly contribute to the regression model, the beta weight (standardized coefficient) for each predictor is examined for significance ($p < .05$). Finally, the squared semi-partial correlations will be examined to determine the unique contribution of each of the predictors to the regression model when the effects of other variables have been removed.

Study Limitations and Challenges, and Strategies to Address Threats to Study

Rigor and Validity

There are several threats that could significantly influence the generalizability of study findings. A major limitation is the study's cross-sectional design and the convenience sampling technique which could not determine causality of the variables in the study. The use of these self-report instruments is a major threat to the study's construct validity including the possibility of social desirability response bias.

Although the proposed study described above would use a descriptive cross-sectional research design which makes it a challenge to control threats to the study's internal validity, there are some strategies that a researcher could use to control threats to internal validity especially in addressing temporal ambiguity of the predictor variables on the outcome variable. One strategy is to use multiple regression analysis to separately examine the effect of the predictor variables on the study outcome variable while controlling for the effects of the confounding variables (Polit & Beck, 2012). To address threats related to the statistical conclusion validity, the researcher needs to ensure that there is adequate sample size for this study as determined by power analysis. Having adequate sample size could avoid committing type I (false-positive) or type II (errors).

There is also a risk for bias responses due to use of self-report instruments. In order to mitigate this threat, the consent form will emphasize that responses will be confidential. The participants will also be provided privacy while completing the questionnaires. The researcher will also emphasize to the participants that data collection instruments will be locked in a file cabinet in the researcher's office. A copy of the consent form will be provided to the participants with the researcher's contact information.

To achieve the minimum sample needed to obtain adequate power for this study and to encourage participation among a population that is hard to reach, a $10 retail store gift certificate will be given as an incentive for completing the questionnaires.

Proposed Timeline

	9/15	10/15	11/15	12/15	01/16	02/16	03/16	04/16
Proposal Defense	X							
IRB Submission	X							
Data Collection		X	X	X				
Data Entry		X	X	X				
Data Analysis				X	X			
Writing of Data Results (Manuscript #2)					X	X		
Manuscript #2 to Committee							X	X

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CHAPTER FOUR

RESULTS

Hypertension (HTN) is a leading risk factor in the development of cardiovascular disease (CVD) and stroke—two major causes of mortality and morbidity in the United States (US)—across all racial and ethnic groups (Mozaffarian et al., 2015; Zhao et al., 2014). Filipinos in the US are at especially high risk as they possess a disproportionately high burden of HTN compared with other minority groups. The results of early and current studies that explored HTN among Filipinos in the US have consistently revealed a prevalence rate that is highest among Asian Americans and one that is quickly approaching that of Blacks and Native Americans (Appel, Huang, Ai, & Lin, 2011; Barnes, Adams, & Powell-Griner, 2010; Klatsky & Armstrong, 1991; Ryan et al., 2000; Stavig, Igra, & Leonard, 1984; Stavig, Igra, & Leonard, 1988; Ye, Rust, Baltrus, & Daniels, 2009; Zhao et al., 2015). In addition, studies have also highlighted this population's sub-optimal control and management of HTN when compared with other Asian American subgroups (Taira, Gelber, Davis, Gronley, Chung, & Seto, 2007; Zhao et al., 2015).

Despite this reported alarmingly high prevalence and sub-optimal control of HTN for this rapidly-growing minority population, there is a paucity of studies on HTN among Filipinos in the US, especially those that explore the unique factors that might influence how this group experiences and manages this chronic illness. This health inequity requires attention as it poses a serious health threat among Filipinos in the US, who belong to the second largest group of Asian Americans (U.S. Census Bureau, 2010). The

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purpose of this study was to explore self-care among Filipino immigrants who have HTN, and its relationship to factors that might be unique to this population that could provide valuable insights to increasing our understanding of why this health inequity persists for this immigrant group.

Background and Significance

HTN among Filipinos in the US

Filipinos belong to the second largest Asian American subgroup, making them the third largest immigrant group in the US (US Census Bureau, 2010). According to the 2010 US Census, there are approximately 3.4 million Filipinos living in the US which reflects a 45% increase from the 2000 US Census. Despite their significant number and projected population growth, there is a paucity of information about their general health status. The sparse literature exploring their health status identifies CVD as the leading cause of death among Filipinos in the US, with HTN as a leading risk factor (Ryan et al., 2000;). Results of early and current studies that explored HTN among Filipinos in the US consistently revealed a HTN prevalence rate between 24% to 31% that is highest among Whites and other Asian American subgroups that include Asian Indians, Chinese Americans, Japanese Americans, Korean Americans, and other Asian and Pacific Islander groups (Barnes, Adams, & Powell-Griner, 2008; Stavig, Igra, & Leonard, 1984; Stavig, Igra, & Leonard, 1988; Ye, Rust, Baltrus, & Daniels, 2009). Further, Zhao et al. (2015) reported a HTN prevalence rate of 59.9% among Filipino men, which is higher than the prevalence among Non-Hispanic Blacks (59.3%), Mexican American (54.1%), and Non-Hispanic White (46%), and other Asian American men. In addition, this population has also been identified to have one of the fastest rates of developing HTN

when compared with Whites, and Chinese and Korean Americans (Davis, Juarez, & Hodges, 2013).

Though limited, the literature also provides some insights to a host of multidimensional factors that contribute to the prevalence—and potentially the health inequity—that include personal and health-related factors (De Castro, Gee, and Takeuchi, 2008; Ursua et al., 2013), medication non-adherence (Taira, Gelber, Davis, Gronley, Chung, & Seto, 2007), and unique cultural and immigration-related factors (Dela Cruz & Galang, 2008; Ursua et al., 2014).

Personal and health-related factors found to be associated with the diagnosis of HTN for this population include older age, male gender, positive family history, and not having a health insurance (Ursua et al., 2014). In addition, the presence of other co-morbidities such as obesity, increased BMI, and diabetes (Ursua et al., 2013); perceived psychological distress (De Castro, Gee, & Takeuchi, 2008); and self-rated health status as either poor or fair have also been found to be associated with HTN (Ursua et al., 2014) for this immigrant group. Notable health behaviors associated with the diagnosis of HTN include smoking and decreased physical activity (Ursua et al., 2013; Ursua et al., 2014).

The results of these limited studies have consistently revealed that this population possesses a HTN prevalence rate that is disproportionately higher when compared with Whites and other Asian and Pacific Islander groups and in some cases, exceeds that of African Americans. In addition, results of these studies provide insights of the common and unique factors associated with HTN among Filipino in the US when compared to other minority ethnic and racial groups. As such, there is a need to further explore these

factors to increase our understanding of why this health inequity endures as a major

health threat among Filipinos in the US.

Acculturation and Acculturative Stress

The role of culture and immigration—including acculturation and acculturative

stress—and their association with cardiovascular diseases across cultures and populations

has been extensively explored in the literature. However, results of these studies yield

conflicting results. Edelman, Christian, and Mosca (2009) found that a low level of

acculturation to host country is associated with health beliefs and perceptions that may

predispose immigrants to greater susceptibility in developing CVD, while Steffen et al.

(2006) found that acculturation to Western societies and the stress associated with this

cultural change are risk factors in the development of HTN. However, Ro (2014) found

no consistent evidence that links acculturation with negative health behaviors outcomes

among Asian Americans.

Despite clear evidence showing this line of inquiry is both relevant and important,

there is a dearth of studies that specifically investigate how the process of adjustment

(acculturation) and the challenges and conflicts associated with this transition

(acculturative stress) influence HTN-related outcomes among Filipinos in the US.

Results of the few studies that explore the role of immigration and culture-specific factors

associated with HTN indicate that length of US residency is associated with HTN for this

population (Ursua et al., 2013; Ursua et al., 2014; Ursua et al., 2014). Specifically,

Filipinos who have lived in the US for more than 15 years were 1.6 times more likely to

have a diagnosis of HTN compared with those who have lived in the US for 5 years or

less. Participants of a qualitative study that explored Filipino Americans' illness beliefs,

practices, and perceptions related to HTN identified that the Filipino diet, lack of physical activity, lifestyle factors such as smoking and use of alcohol, genetics, daily stress from multiple sources such as from work and family responsibilities, and perceived discrimination could influence the development and management of HTN for this population (Dela Cruz & Galang, 2008).

Self-Care, Self-Efficacy, and Patient Activation

Chronic diseases, including CVD and HTN are the leading causes of death and disability in the US and globally (Mozaffarian et al., 2015). In the US, ethnic minority populations experience a disproportionate burden of chronic illness (Mozaffarian et al., 2015). Key to addressing this health challenge is to target behavioral risk factors to decrease an individual's burden of developing preventable diseases and disability, and from dying prematurely. More specifically, it is critically important to understand the factors that enable and support the adoption and maintenance of health behaviors that promote population health, especially among members of minority and disadvantaged communities.

Self-care, or the ability to adopt and adhere to a heart healthy lifestyle, has been shown to significantly relate to the diagnosis of HTN across racial and ethnic groups (Fan, Mallawaarachchi, Gilbertz, & Mokdad, 2010; Schroder, Fahey, & Ebrahim, 2004). Specifically, optimal HTN self-care behaviors such as adherence to taking anti-hypertensive medication, following a low salt or reduced fat diet, exercising on a regular basis, cutting down or stopping smoking and alcohol intake, keeping regular physician visits, and reduction of stress could lead to a decrease in blood pressure and all-cause

mortality rate, and a lower risk for developing stroke and other cardiovascular diseases across racial and ethnic groups (Mozaffarian et al., 2015).

As with culture, despite the strong literature on the impact of self-care on HTN diagnosis, there is a notable lack of studies that explore self-care among hypertensive Filipino immigrants in the US. Taira et al. (2007) explored anti-hypertensive medication adherence among Japanese, Korean, Filipino, Chinese, part-Hawaiian, and White patients in Hawaii and found that Filipinos were the least adherent among the group [OR=0.69 (95% CI=0.64-0.74)]. The factors associated with low anti-hypertensive medication adherence included younger age, higher morbidity, and history of heart disease (Taira et al., 2007).

Another significant factor identified in the literature that could contribute to successful HTN self-care management is self-efficacy, or the individual's perceived confidence in carrying out self-care behaviors that relate to management of a chronic illness including HTN (Lee, Han, Song, et al., 2010). Results of several studies have demonstrated that self-efficacy is a strong predictor of self-care behaviors among patients who have heart failure and HTN across racial and ethnic groups (Paradis, Cossette, Frasure-Smith, Heppel, & Guertin, 2010; Lee, Han, Song, et al., 2010; Schnell-Hoehn, Naimark, & Tate, 2009). Ursua et al. (2014) found significant decreases in systolic and diastolic blood pressure readings, and weight and BMI, and an improvement in blood pressure control in a study that utilized trained community health workers (CHWs) to deliver culturally tailored interventions to improve the management of HTN of Filipino immigrants in the New York and New Jersey areas (Ursua et al., 2014). Further, the results of the study also showed significant improvements in cardiovascular knowledge,

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weight management, diet, self-efficacy, dietary behaviors regarding salt and sodium, and fat and cholesterol intake after the interventions delivered by Filipino CHWs (Ursua et al., 2014).

There is also evidence in the literature indicating that patients who have a chronic illness, including HTN, that are highly engaged or activated to manage their own illness have improved health and health-care related outcomes across racial and ethnic groups (Cunningham, Hibbard, & Gibbons, 2011; Greene, Hibbard, Sacks, Overton, & Parrota, 2015; Greene & Hibbard, 2011; Kinney, Lemon, Person, Pagoto, & Saczynski, 2015; Simmons, Wolever, Bechard, & Snyderman, 2014). For example, Greene et al. (2015) found that higher level of patient activation is associated with decreased health care costs, better clinical outcomes, healthy behaviors, and increased use of preventive screening among women. However, no study was found in the literature that specifically explored patient activation among Filipino immigrants in the US who have HTN.

Self-efficacy and patient activation are two key components to understanding self-care behaviors across racial and ethnic groups. As such, there is a critical need to understand the roles and relationships of these two constructs in HTN self-care management among Filipino immigrants in the US. Exploring these two related constructs for this population, guided by a behavioral theoretical framework, could provide insights as to what types of interventions might be effective in potentially reducing this health inequity.

Despite the disproportionate burden of HTN afflicting Filipinos in the US, very little is known about how this population manages this chronic illness. Most noticeable is the lack of studies that comprehensively explore self-care among Filipino immigrants

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who have HTN, especially about how their unique experiences and challenges as first generation immigrants influence their self-care and health status. In addition, although there is strong and robust evidence indicating that high levels of self-efficacy and patient activation are associated with enhanced self-care behaviors in managing a chronic illness including HTN, no studies were found that specifically explored these factors among Filipino immigrants who have HTN (Cunningham, Hibbard, & Gibbons, 2011; Greene, Hibbard, Sacks, Overton, & Parrotta, 2015; Lee, et al., 2010; Lewis, 2012; Warren-Findlow, Seymour, & Huber, 2011). To shed some light on why this health inequity persists for this population, this study explored the relationships between and among acculturation, acculturative stress, HTN self-efficacy, and HTN self-care among first generation Filipino immigrants in the US who have HTN using the Transactional Model of Stress and Coping (TMSC) as a theoretical framework.

Theoretical Framework

The TMSC was used to guide this study. Developed by Lazarus and Folkman (1984) to explain how individuals cope with stressful events, this theory is made up of several key variables that include primary appraisal, secondary appraisal, coping efforts, meaning-based coping, and outcomes of coping or adaptation (Lazarus & Folkman, 1984).

The theory posits that when an individual experiences a stressful event(s), he/she initially evaluates the severity of the situation (primary appraisal) and determines his/her ability to modify and manage the situation (secondary appraisal) (Lazarus & Folkman, 1984). These appraisals or evaluations lead to actions or strategies to deal and manage the

stressful event(s) (coping efforts). These coping efforts lead to either positive or negative adaptation (outcomes of coping) (Lazarus & Folkman, 1984).

For this study, the stressors were operationalized as a diagnosis of HTN and the process of acculturation experienced by first generation Filipino immigrants. Primary appraisal was operationalized as acculturative stress, or the conflict experienced by the acculturating individual, while secondary appraisal was operationalized as HTN self-efficacy, which refers to the individual's belief and confidence to manage HTN self-care behaviors. Coping was operationalized as patient activation, the individual's level of engagement with managing a health condition. The individual's level of self-care, or the performance of behaviors associated with HTN management, was used as the health behavior outcome of coping. As a theoretical framework that attempts to explain how individuals cope and deal with different types of stressors and how these coping mechanisms lead to individualized outcomes, the TMSC as used for this study explains the relationships between and among acculturation, acculturative stress, HTN self-efficacy, patient activation, and HTN self-care among Filipino immigrants who have HTN (see conceptual framework below).
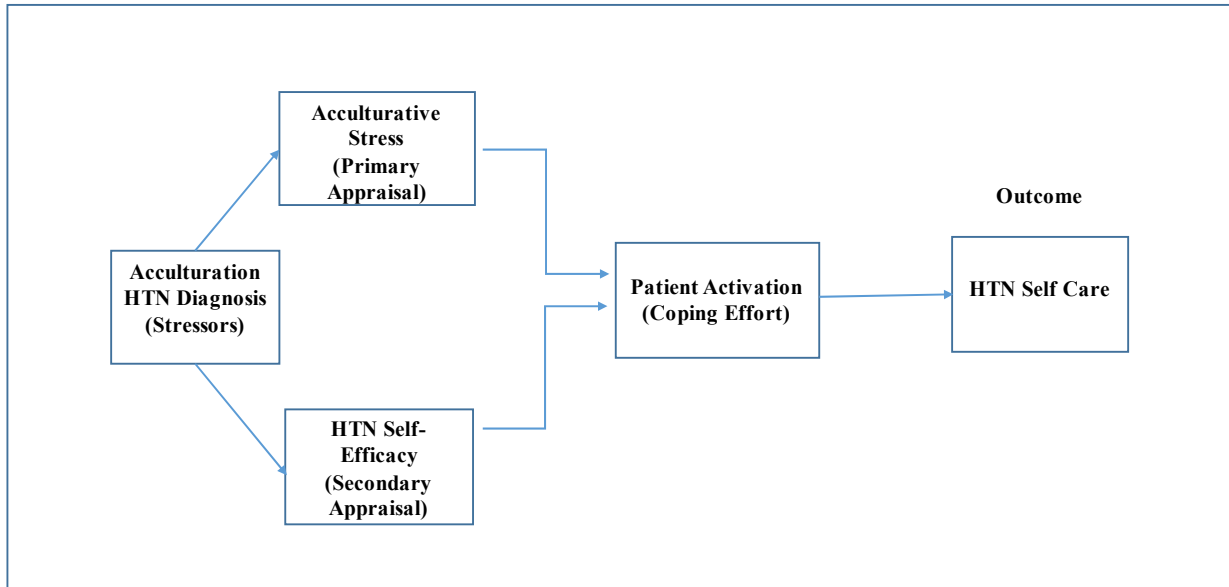
Figure 4.1. Conceptual framework based on the Transactional Model of Stress and Coping (Lazarus & Folkman, 1984).

Specific Aims

The primary purpose of this study was to examine self-care behaviors associated with HTN management among first generation Filipino immigrants in the US who have HTN, using the TMSC (Lazarus & Folkman, 1984) as a guiding framework. The specific aims of this study were to determine the levels of and relationships between and among acculturation, acculturative stress, HTN self-efficacy, patient activation, and HTN self-care among first generation Filipino immigrants in the US who have HTN.

Methods

Design

This study used a cross-sectional correlational design to determine the relationships between and among acculturation, acculturative stress, HTN self-efficacy, patient activation, and HTN self-care. Institutional Review Board approval was sought and obtained for this study.

Setting and Sample

The target population for this study was first generation community-dwelling Filipino immigrants, at least 18 years of age and able to speak and write in English, who had a current diagnosis of HTN or were currently taking an anti-hypertensive medication. Women participants who were pregnant or taking a contraceptive medication were excluded from the study because these factors have the potential to increase blood pressure.

A convenience sampling technique was used to obtain the sample for this study. The majority of the participants recruited in this study were members of several religious organizations, residents of a retirement living facility, and members of Filipino community organizations, mostly from New York-New Jersey urban areas. To recruit study participants, the researcher distributed and left informational flyers in public areas where a large number of Filipinos are known to congregate, such as churches, grocery stores, and Filipino restaurants. The researcher also contacted the leadership of several Filipino professional and community organizations who identified potential participants for the study and invited the researcher to attend meetings and group gatherings. The researcher handed out flyers during these gatherings and was given an opportunity to speak to the members of the group to explain the purpose of the study and the eligibility criteria. Those who expressed interest and met the eligibility criteria were provided a packet that included the consent and the questionnaires. Most of these data collection sessions occurred before or after their group meetings and gatherings, and the researcher made sure that confidentiality of the participants was protected at all times. Participants were asked to place their completed questionnaires in an envelope provided by the

researcher. Participants who completed the survey received a $10 retail store gift certificate as an incentive.

An a priori power analysis was conducted based on conservative estimates using small-to-moderate effect sizes to determine the sample size needed to perform the planned statistical analyses in order to achieve a power of 0.80 using a small to moderate effect size on a two-tailed test with a significant level set at .05. Using the guidelines suggested by Tabachnik and Fidell (2013), $N > 50 + 8m$ (where m is the number of predictor variables), a sample size of 114 was needed to conduct linear regression using 8 predictor variables. In addition, a sample size of at least 123 was needed to conduct bivariate correlations (Polit, 2011). To account for incomplete data collections, a total of 163 participants were recruited for this study.

Variables and Instruments

The primary variables of interest for this study included acculturation, acculturative stress, HTN self-efficacy, patient activation, and HTN self-care.

Acculturation was measured using the A Short Acculturation Scale for Filipino Americans (ASASFA), a 12-item Likert-type instrument with evidence of validity and reliability ((Dela Cruz, Padilla, & Butts, 1998; Dela Cruz & Galang, 2008; Ea et al., 2008; Ea et al., 2010; Kataoka-Yahiro, 2010; Mc Adam, Stotts, Padilla, & Puntillo, 2005) that consists of three subscales that measures acculturation in areas of language use and preference at work, media use and preference, and social relations (Dela Cruz, Padilla, & Agustin, 2000). Participants were asked to rate each item as 1 (*Only Filipino*), 2 (*More Filipino than American/English*), 3 (Equally Filipino and American), 4 (*More American/English that Filipino*), or 5 (*Only American/English*) (Dela Cruz, Padilla, &

Agustin, 2000). The total acculturation score ranges from a minimum of 12 to a maximum of 60, and the possible mean score ranges from a minimum of 1 to a maximum of 5 (Dela Cruz, Padilla, & Agustin, 2000). Lower total and mean scores indicate a lower level of acculturation while higher total and mean scores indicate an acculturation level that tended toward the American culture (Dela Cruz & Agustin, 2000). Internal consistency for the sample in this study was α= .892.

Acculturative stress was measured using the Riverside Acculturation Stress Inventory (RASI), a 15-item Likert-type questionnaire that assesses the multi-dimensional factors associated with acculturative stress (Miller, Kim, & Benet-Martinez, 2011). The instrument is made up of five subscales that include language skills, discrimination, intercultural relations, cultural isolation, and work challenges. Participants are asked to rate each item from 1 (*strongly disagree*) to 5 (*strongly agree*); higher mean scores indicate a higher level of acculturative stress. The instrument's Cronbach's alpha in this study was α=.908.

Hypertension self-efficacy was measured using the HTN Self-care Profile Self-Efficacy Scale, a 20-item 4-point Likert-type questionnaire (*1 = Not Confident, 4 = Very Confident*) that assesses an individual's confidence in HTN management related to physical activity, nutrition, alcohol intake, smoking, medication adherence, blood pressure monitoring, weight and stress management, and appointment keeping (Han, Lee, Commodore-Mensah, & Kim, 2014). The total mean score ranges from a minimum of 1 to a maximum of 4, with higher mean scores indicating greater HTN management self-efficacy. The instrument's internal consistency for the sample in this study was α=.919.

Patient activation was measured using the Patient Activation Measure 13 (PAM-13), a widely-used reliable and valid 13-item Likert-type instrument that measures knowledge, skills, and confidence for self-management among patients who have a chronic illness such as diabetes and HTN (Hibbard, Mahoney, Stockard, & Tusler, 2004). To obtain the mean patient activation score, all the responses to the 13 items were added to obtain a raw score and divided by the number of items completed. Internal consistency for the sample for this study was $\alpha=.927$.

Hypertension self-care was measured using the Medical Outcomes Study Specific Adherence Scale, a widely-used valid and reliable instrument that assesses participant's tendency to follow eight behaviors associated with HTN self-care that include patient's ability to follow a low-salt and low fat or weight loss diet, take prescribed medications, cut down or stop smoking, curtail or avoid alcohol, exercise regularly, avoid stress, and use relaxation techniques for the past 4 weeks (Hays et al., 1994). Participants were asked to rate each item from *None of the time* (1), *A little of the time* (2), *Some of the time* (3), *A good bit of the time* (4), *Most of the time* (5), and *All the time* (6). To obtain the group's level of HTN self care, participant responses to each of the 8 items were added and divided by the number of items completed. Higher mean score indicates increased tendency to perform self care behaviors associated with HTN self care. Internal consistency of the instrument for the sample in this study was $\alpha=.811$.

A demographic questionnaire was also used to obtain personal, socio-demographic, and health-related information such age, gender, income, health insurance status, length of US residency, work and work status, and medical history.

Data Analysis

Statistical Package for Social Sciences (SPSS) version 22 was used to conduct descriptive and inferential statistical analyses. More specifically, descriptive statistics, bivariate correlations, and regression analyses were used to address the specific aims of this study. The descriptive statistical analysis conducted to obtain the sample's socio-demographic and health related-profile was based on the total number of participants in the study (N=163; Table 1).

To ensure the validity and reliability of instrument measures as well as the inferential statistical analyses, missing data in the instruments used to measure the major variables of interest (acculturation, acculturative stress, HTN self-efficacy, patient activation, and HTN self care) were handled using the case-by-case item deletion approach which entailed calculating the mean for available data as long as the sample has completed at least 80% of items in a Likert-type instrument (Shafer & Graham, 2002). Only those participants who completed at least 80% of the items in each of these instruments were included in the bivariate, regression and bootstrapping analyses. Each instrument as well as the demographics were analyzed for normal distribution, symmetry, skewness, and kurtosis to make sure that they had met the test assumptions before conducting the inferential statistical analyses that used a p value of $<.05$ to detect significance.

Bivariate correlations using Pearson product-moment correlation coefficient (Pearson r) and point biserial correlation between and among the major variables in the study, including those variables identified in the literature such as age, gender, length of

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US residency, having a health insurance, and level of education that relate to HTN self-care were conducted.

A simultaneous linear regression was conducted between HTN self-care and the major variables of interest including those variables that had an alpha level of $\leq.10$ in the bivariate analyses. To assure the integrity of the analysis, the researcher assessed that the assumptions for the multiple regression have been met before running the linear regression analysis that include having an adequate sample size, checking for linearity via scatterplots, ensuring for homoscedasticity and checking for multicollinearity and outliers, and that variables are normally distributed (Polit, 2011).

In addition, mediation analysis was conducted by bootstrapping technique using SPSS version 22 INDIRECT macro feature as described by Preacher and Hayes (2008). This established technique to test for mediation allows for estimating indirect and direct effects of the model using up to 10,000 bootstrap resamples with bias-corrected confidence estimates (Preacher and Hayes, 2008).

<div align="center">

Results

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Socio-demographic and Health-related Profile

The majority of the participants were female (n=113, 69.3%), married (n=96, 58.9%), with some college education or have completed at least a college degree (n=104, 64.2%), who worked either full-time or part-time (n=87, 54.5%), and have lived in the US for more 10 years (n=124, 83.2%). The study participants' ages ranged from 40 to 93 years with a mean of 63.9 years. Almost half (n=73, 44.7%) of the participants reported an annual household income of less than $50,000 with 36.8% (n=60) of the participants reporting more than $50,001, while 12.3% (n=20) of the participants reported not receiving any income.

A summary of the socio-demographic, health and health-related profile of study

participants is presented in Table 1 below.

Table 4.1

Socio-demographic and Health-related Profile (N=163)

Characteristics	n (%)
Gender	
Male	49 (30.1%)
Female	113 (69.3%)
Missing	1 (0.6%)
Age	
40-64	80 (49.1%)
≥65	77 (47.2%)
Missing	6 (3.7%)
Marital Status	
Single	22 (13.4%)
Married	96 (58.9%)
Divorced	14 (8.6%)
Widowed	30 (18.4%)
Missing	1 (0.6%)
Education	
High School Level/Graduate	20 (12.3%)
College Level/Graduate	104 (63.8%)
Graduate Level	37 (22.7%)
Missing	2 (1.2%)
Work Status	
Yes, Full/Part Time	87 (53.3%)
No/Retired	74 (45.4%)
Missing	2 (1.2%)
Household Income	
≤$50,000	73 (44.7%)
≥$50,001	60 (36.8%)
Not receiving income	20 (12.3%)
Missing	10 (6.1%)
Length of US Residency	
≤10 years	25 (16.8%)
>10 years	124 (83.2%)
Missing	14 (8.6%)
Initial Entry to the US	
As an immigrant	57 (35%)
Via work visa	33 (20.2%)
As a student	2 (1.2%)
Through marriage/fiancée visa	7 (4.3%)
As a tourist	43 (26.4%)

Other		14 (8.6%)
Refuse to answer		1 (0.6%)
Missing		6 (3.7%)
Ethnicity of Neighborhood		
Majority are Filipinos		14 (8.6%)
Some Filipinos		17 (10.4%)
Mixture of Different Ethnic Groups		117 (71.8%)
Dominated by One Ethnic Group		13 (8.0%)
Missing		2 (1.2%)
Self-Identity as Filipino		
Totally Filipino		83 (50.9%)
More Filipino than American		41 (25.2%)
Equally Filipino and American		38 (23.3%)
More American than Filipino		1 (0.6%)
Health Insurance Coverage		
Yes		143 (87.7%)
No		20 (12.3%)
Duration of HTN Diagnosis		
$\leq$3 years		52 (31.9%)
>3 years		109 (66.9%)
Missing		2 (1.2%)

Table 2 provides descriptive results for the study's major variables, including mean,

standard deviation, and range. In all cases, higher mean scores indicate higher level of

acculturation, acculturative stress, HTN self-efficacy, patient activation, and HTN self care.

Table 4.2

Study Variables and Measures

Variable	Measures	M (SD, Range)
Acculturation	A Short Acculturation Scale for Filipino Americans	2.63 (.627, 1.0 - 4.08)
Acculturative Stress	Riverside Acculturation Stress Inventory	2.37 (.818, 1.0 - 4.47)
HTN Self-Efficacy	Hypertension Self-Efficacy Scale	3.12 (.517, 1.8 - 4.0)
Patient Activation	Patient Activation Measure 13	3.42 (.421, 2.46 - 4.0)
HTN Self- Care	Medical Outcomes Study Specific Adherence Scale	4.56 (.939, 1.00 – 6.0)

Specific information on each of the HTN self-care behaviors are presented in Figure 2. Participants' self-reported performance of specific self-care behaviors associated with HTN ranged from 41.1% (taking low fat or weight loss diet) to 88.3% (taking prescribed medications).
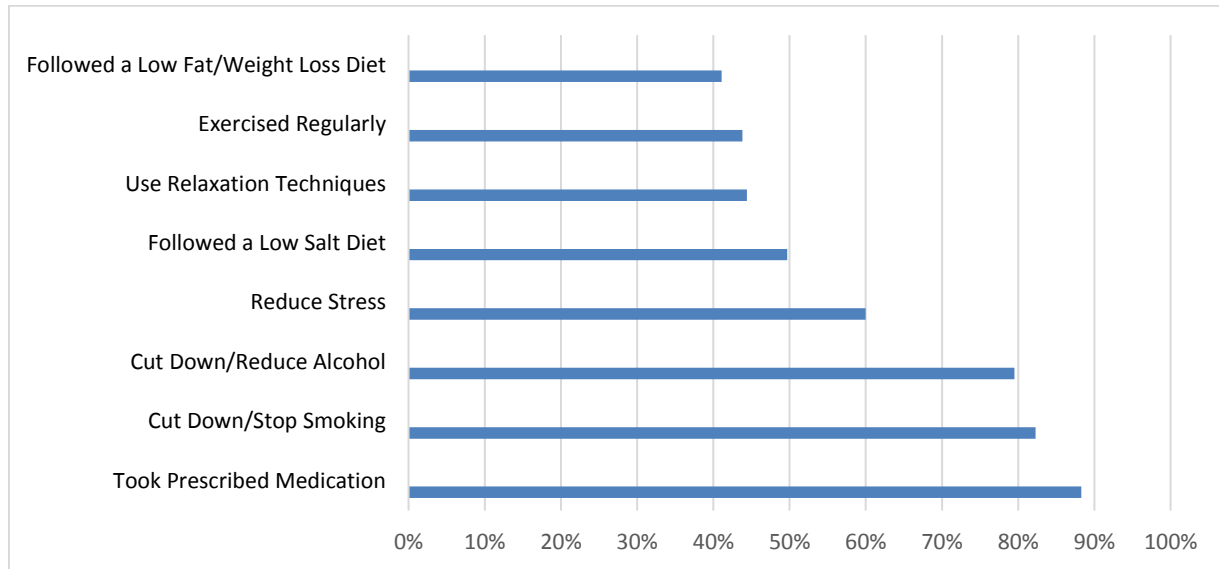

Figure 4.2. Percent of participants reporting performing "all" or "most of the time" the self-care behaviors associated with HTN.

Results of correlation analyses examining the relationships between select socio-demographic factors (gender, age, length of US residency, having health insurance, and level of education) found to be associated with HTN self-care among this population in the literature, and major variables of interest showed that HTN self-care is positively related to age, HTN self-efficacy, and patient activation, and negatively associated with acculturation and having a health insurance. Table 3 provides a complete correlation matrix of the bivariate analyses.

Table 4.3

Correlations of the variables

	1	2	3	4	5	6	7	8	9	10
1. Age (years)	1									
2. Male	-.039	1								
3. Length of US Residency (years)	.279**	-.008	1							
4. Health Insurance (y/n)	.115	.001	.506**	1						
5. Some College Education (y/n)	-.155	.072	.060	-.044	1					
6. Acculturation	-.268**	.184*	.325**	.248**	.314**	1				
7. HTN Self Efficacy	.146	-.083	-.006	-.038	.182*	-.024	1			
8. Acculturative Stress	.147	.031	-.033	-.013	-.283**	-.216**	-.154*	1		
9. Patient Activation	-.048	-.040	.076	-.166*	.075	.011	.385**	-.119	1	
10. HTN Self Care	.197*	-.047	-.146	-.188*	-.142	-.252**	.407**	-.027	.333**	1

Note. **$p < 0.001$; *. $p < 0.05$. Pairwise sample sizes ranged from 133 to 163.

To determine if select socio-demographic factors found to be significant during bivariate correlation analysis and the major variables of interest are associated with HTN self-care for this sample, a linear regression was conducted. In addition to the major variables of interest and those variables (age and having a health insurance) that were found to relate to HTN self-care, length of US residency ($p=.094$) and level of education ($p=0.088$) were also added in the model as covariates. The regression model significantly predicted HTN self-care, $R^2=0.295$, Adjusted $R^2=.246$, F (8, 116) = 6.006, $p<.001$. A review of the model indicates that only HTN self-efficacy $\beta=0.27$, t(116)=3.045, $p=0.003$, and patient activation $\beta=0.21$, t(116)=2.292, $p=.024$ significantly contributed to the regression model that accounted for 29.5% of the variance in HTN self-care. Further, unstandardized beta weights revealed that HTN self-efficacy and patient activation were positively correlated with HTN self-care. A summary of the regression analysis is presented in Table 4.

Table 4.4

Regression model predicting HTN self care (N=125)

Independent Variables	HTN Self-Care			
	b	SE b	β	p
Age	.014	.009	.150	.102
Health Insurance	-.363	.296	.-.121	.222
Level of Education	-.307	.193	-.132	.114
Length of US Residency	-.007	.009	-.080	.442
Patient Activation	.508	.222	.205	.024
Acculturation	-.264	.154	-.156	.089
HTN Self Efficacy	.526	.173	.270	.003
Acculturative Stress	-.111	.102	-.090	.276
R^2	.295			
Adjusted R^2	.246			
F	6.006			.000

Results from the mediation analysis exploring the mediating role of patient activation between HTN self efficacy and HTN self care are presented in Figure 3. Results indicate that there was significant relationship between HTN self-efficacy and HTN self-care (B=.78, $p < .001$) (pathway c). There were also significant associations between HTN self efficacy and patient activation (B=.31, $p <.001$) (pathway a), patient activation and HTN self care (B=.49, $p <.05$) (pathway b), and between HTN self efficacy and HTN self care when controlling for patient activation (B=.63, $p<.05$) (pathway c'). The results of the bias corrected estimate of the indirect effect (ab pathway) indicate that patient activation partially mediated the relationship between HTN self-efficacy and HTN self-care (B=.15; $CI_{95\%}$ = .0356, .3239).
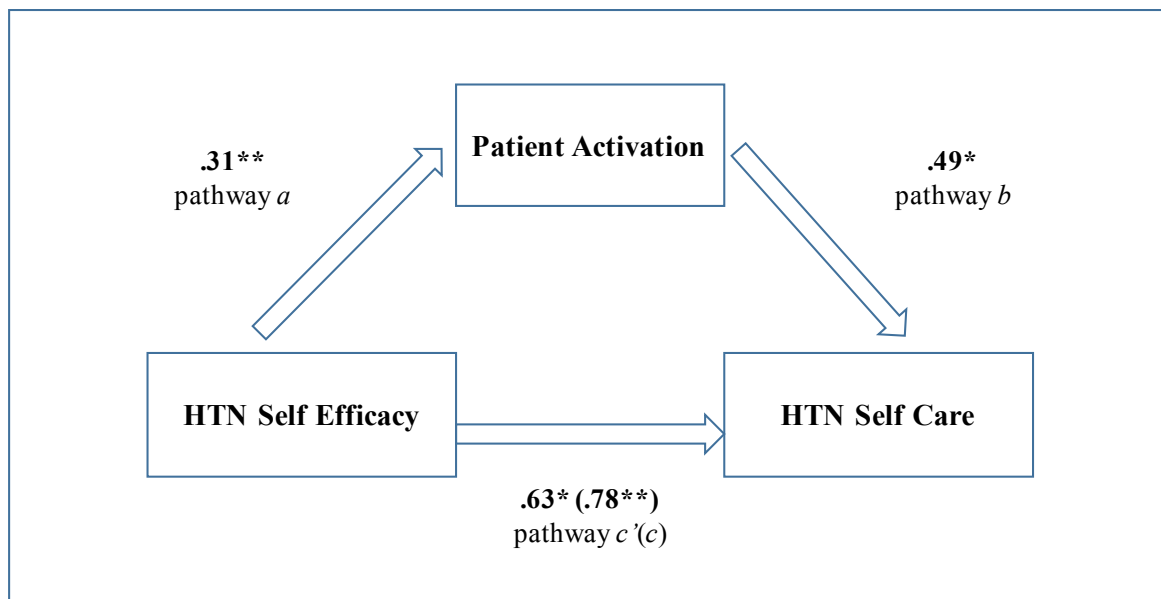

Figure 4.3. Summary of regression analyses testing the mediation effect of Patient Activation; Note: *p<.05 **p<.001.

Discussion

To our knowledge, this is the first study that explored HTN self care among Filipino immigrants in the US using the TMSC as a theoretical model. The results of this

study revealed that the participants had an over-all HTN self care that is sub-optimal and consistent with results of other studies that explored self care behaviors among a diverse patient population who have HTN (Taira et al., 2007; Warren-Findlow & Seymour, 2011; Warren-Findlow, Seymour, & Huber, 2011; Zhao, 2008). The study findings also revealed variability in the rate of how participants performed each of the self care behaviors associated with HTN. Similar to results of other studies that explored self-care in HTN and other chronic illnesses, "took the prescribed medication" was the behavior that the majority of participants reported to perform "most" or "all of the time" while "followed a low salt or weight loss diet" was the behavior least performed by the participants "most" or "all of the time" (Dickson, Howe, Deal, & McCarthy, 2012; Lee, 2013; Marti et al., 2013; Warren-Findlow & Seymour, 2011; Zugelj, Zupancic, Komidar, Kenda, Varda, &Gregoric, 2009). These findings provide valuable information and insights to researchers on what specific self care behaviors to explore and address when designing intervention studies to enhance self care management among Filipino immigrants who have HTN.

The study results also showed that HTN self-efficacy and patient activation significantly predicted HTN self care for this sample. This adds to the robust literature that supports the strong association between self-efficacy and self-care behaviors associated with HTN management across ethnic and racial groups (Lee, et al., 2010; Lewis, 2012; Warren-Findlow, Seymour, & Huber, 2011; Ursua et al., 2013; Yoo, Kim, Jang, & You, 2011). Further, this study finding supports the need to further test evidence-based interventions shown to improve self-efficacy, including those that are culturally-tailored for Filipino Americans to enhance HTN self care behaviors. For example, Ursua

et al. (2013) found that a series of culturally-tailored workshops based on the National Heart, Lung, and Blood Institute curriculum delivered by trained Filipino Community Health Workers led to improved cardiovascular health outcomes, including self-efficacy, among Filipino immigrants in New York City.

The positive association between HTN self care and patient activation also supports continued inquiry into strategies that increase patient activation among Filipino immigrants who have HTN. This finding contributes to a growing body of evidence that indicates that patients, regardless of race or ethnicity, who are activated and engaged have better health and health care-related outcomes, including enhanced HTN self care (Alegria, Sribney, Perez, Laderman, & Keefe, 2009; Cunningham, Hibbard, & Gibbons, 2011; Greene & Hibbard, 2010; Greene, Hibbard, Sacks, Overton, & Parrotta, 2015; Simmons, Wolever, Bechard, & Snyderman, 2014). Several strategies mentioned in the literature to consider that could enhance patient activation include individualized coaching by health care providers based on one's level of patient activation, and programs that build on knowledge and self-management skills, improve problem-solving and communication, and enhance coping skills (Hibbard, Mahoney, Stock, & Tusler, 2007; Greene & Hibbard, 2010).

Although age, acculturation, and having health insurance coverage were found to be associated with HTN self care during bivariate correlations, they were found to not significantly contribute to the regression model predicting HTN self care. Similar to the findings of a study by Ursua et al. (2013), age was also not found to be associated with control of HTN among Filipinos when other socio-demographic and health-related variables were controlled. This finding differs from the result of a study by Lee et al.

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(2009) where older age was found to be predictive of self care behaviors in managing

HTN among a sample of Korean Americans. However, it is important to note that the

mean age for the sample in the Lee et al. (2009) was 51.9 years which was younger

compared the sample in this study whose mean age was 63.9 years. These inconsistent

study results highlight the need to further explore and clarify the role of this important

variable in HTN self care among Filipino immigrants in future studies using a larger

sample size and varying age groups.

Acculturation was also not found to be related to HTN self-care in the model. It is

not certain if this result truly reflects the true relationship between acculturation and HTN

self-care. This could be explained by the characteristic of the sample where majority

(83%) had been in the US for more than 10 years. It is also possible that the effect of

acculturation became less potent when more powerful psycho-behavioral variables such

HTN self efficacy and patient activation were included in the analysis, or this could also

be due to measurement or sampling error. It is important to note that the instrument used

to measure acculturation focused on participants' familiarity with the English language,

media use and preference, and pattern of social interaction to operationalize

acculturation. Results of studies that investigate the relationship between acculturation

and health-related outcomes have been mixed. Ro (2014) found inconsistencies in results

of 28 studies that explored the role of acculturation with a number of health and health-

related outcomes that include health care utilization and health behaviors, body weight,

presence of chronic conditions and disability, and perception of health. However, the

result of this study points to a need to further explore and investigate, and tease out the

role of acculturation and other immigrant-related variables on HTN self care among

Filipino immigrants using instruments that fully capture the nuances of cultural adjustment in the context of a health condition.

Having health insurance was also not predictive of HTN self care when included in the regression model. This is inconsistent with the result of study by Ursua et al. (2013) where having health insurance is associated with HTN control among a sample of Filipinos. This could be explained by the characteristic of the sample where an overwhelming majority reported having health insurance coverage as compared to Ursua's study where only 50% of the sample reported having health insurance coverage.

In addition, study results also indicate that acculturative stress was not associated with HTN self-care for this sample. A possible explanation could be that the instrument used did not fully capture the nuances of cultural adjustment in the context of chronic illness. Another explanation could be the characteristic of the sample where the majority were highly educated, fluent in the use of English language, and had lived in the US for more than 10 years. As the scale is composed of several subscales that include language skills, discrimination, intercultural relations, cultural isolation, and work challenges, there may be a need to analyze the relationship of these individual subscales to HTN self-care. There is a need to further validate this instrument for this population using a larger sample size, and with varying length of US residency, age, and immigrant status.

Our test of the mediation effect of patient activation on the relationship between HTN self-efficacy and HTN self-care suggests that HTN self-efficacy influences HTN self-care via patient activation (indirect effect), in addition to its direct effect on HTN self-care. This finding has significant implications that contribute to increasing our understanding of how HTN self-efficacy and patient activation could enhance HTN self-

care, and potentially how these two key variables are related to one another. The results of this study could also provide insights to the question raised by Hibbard, Mahoney, Stock and Tusler (2007) as to what types of interventions could increase patient activation. The findings of this study suggest that, for this sample, increasing HTN self-efficacy could also enhance patient activation, and that would in turn positively influence HTN self care. Raising patient activation levels has also been associated with reduced health care costs and better access to health care that could reduce health inequity (Cunningham, Hibbard and Gibbons, 2011; Greene, Hibbard, Sacks, Overton, & Parrotta, 2015). The study findings also lend support to an assumption postulated by TMSC that an effect of secondary appraisal (HTN self-efficacy) is mediated by actual coping efforts such as problem management (patient activation) (Lazarus & Folkman, 1984). This finding also highlights the importance of patient engagement in managing one's health condition and its influence in enhancing one's confidence to perform specific health behaviors associated with HTN management.

The study findings should be interpreted with caution. Major limitations of the study include its use of cross-sectional design, and use of self-report instruments and convenience sampling technique which could not determine causality of the variables in the study. There is also a need to establish validity and reliability of the instruments that measure HTN self-efficacy, patient activation, and HTN self-care for this population. Although the study design made it a challenge to control threats to the study's internal validity, there were some strategies that the researcher used address those threats, especially in addressing temporal ambiguity of the predictor variables on the outcome variable. One strategy was the use linear regression analysis to separately examine the

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effect of the predictor variables on the study outcome variable while controlling for the effects of the confounding variables (Polit & Beck, 2012). To address threats related to the statistical conclusion validity, the researcher made sure that there was adequate sample size for this study as determined by power analysis before conducting the inferential statistical analyses. Having adequate sample size would avoid committing type I (false-positive) or type II (errors) (Polit & Beck, 2012).

There was also a risk for bias responses due to use of self-report instruments. In order to mitigate this threat, the consent form emphasized that responses will be confidential; the participants were also provided privacy while completing the questionnaires. The researcher also emphasized to the participants during data collection that data collection instruments will be locked in a file cabinet in the researcher's office.

Conclusions

This study provides valuable new insights that increase our understanding of the relationship among stress, coping, and self-care in an immigrant population, and how the TMSC may help guide research and intervention. Findings from this study highlight the importance of addressing HTN self-efficacy and patient activation in improving HTN self care that would not only improve individual health outcomes but could also potentially reduce health inequity for this population. Although the results of this study have limited generalizability, they fill a significant knowledge gap regarding HTN self care among one of largest groups of immigrants in the US. There is a need to replicate this study and to further test the assumptions of TMSC using a larger sample size, a broader age range and varied life experience related to acculturation and health status. Exploring these topics would address the Department of Health and Human Services' (2011) *Action Plan*

to Reduce Racial and Ethnic Health Disparities initiative to target patient-centered

outcomes in diverse populations and could inform health practice, research, and policies

that specifically target the unique needs of Filipino immigrants who have HTN.

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