

HERNÁNDEZ, CHRISTINA M., Ph D. Foreign-born Mexican Women's Utilization, Adherence, and Understanding of Preventive Health Screening Recommendations. (2011).

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The purpose of this cross-sectional study was to explore factors related to foreign-born Mexican women's understanding, utilization and adherence to preventive health screening recommendations using the Interaction Model of Client Health Behavior (IMCHB) as a guiding framework. Specifically, this study examined the following client singularity variables: demographic characteristics (age and marital status); social influences (acculturation, marianismo); environmental resources (education, health insurance status); cognitive appraisal (blood pressure knowledge); affective response (fatalism, cultural cancer screening beliefs); and the client-professional interaction variables affective support (trust in provider) and professional/technical competencies (perceived communication) as they related to the health outcomes utilization and adherence to national recommendations for preventive health screenings. The preventive health screenings were Papanicolaou exam, clinical breast exam (CBE), mammogram, diabetes screening and blood pressure screening.

A total of 97 foreign-born Mexican-immigrant women living in central and western North Carolina participated in this study. The majority of the women were married/partnered, had a low level of acculturation, limited education, no health insurance, and income levels at the poverty threshold. Most women had a usual source of care through utilization of community health centers or health departments. The majority of the women met adherence guidelines for the Papanicolaou exam and blood pressure

screening. More than three-fourths of the women met adherence guidelines for a CBE and diabetes screening; more than half were adherent to mammography guidelines.

Multiple linear regression analysis was used to assess the association between demographic characteristics, social influences, environmental resources, cognitive appraisal, affective response, affective support, professional technical competencies and utilization of nationally recommended preventive health screening exams. Similarly, a multiple linear regression analysis was performed with the same predictor variables and adherence to preventive health screening recommendations. A lower level of educational attainment was related to meeting all of the screening recommendations. Trust was associated with a higher total number of screening exams in the previous five years. Cultural cancer screening beliefs were associated with higher utilization of screening exams over the five year period. Blood pressure knowledge was related to the number of specific types of health screening exams obtained at least once in the previous five years. Women reported receiving insufficient health information concerning the exams.

New knowledge was learned about women's perception of their healthcare provider and its relationship to utilization and adherence to preventive health screening recommendations. Findings from this study were used to enlighten implications for practice, education, research, health policy and health systems regarding foreign-born Mexican women.

FOREIGN-BORN MEXICAN WOMEN'S UTILIZATION, ADHERENCE, AND
UNDERSTANDING OF PREVENTIVE HEALTH SCREENING
RECOMMENDATIONS

by

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This dissertation is dedicated to my grandmother María de Jesús de Flores Hernández and my grandfather Alphonso Hernández who, through courage and fortitude, provided the inspiration for this dissertation.

APPROVAL PAGE

This dissertation has been approved by the following committee of the Faculty of
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CHAPTER I

INTRODUCTION

Foreign-born Mexican women who have immigrated to the United States face serious health and socio-economic challenges (Ashing-Giwa et al., 2006; Nandi, et al., 2008; Wallace & Castañeda, 2008a, 2008b, 2010; Wallace, Gutiérrez, & Castañeda, 2005). The U.S. is currently home to five million foreign-born Mexican women, both documented and undocumented, making this the largest female immigrant group (Wallace & Castañeda, 2008a, 2010; Wallace, Gutiérrez, & Castañeda, 2005). Foreign-born Mexican women experience higher rates of diabetes, cervical cancer, obesity, and HIV/AIDS (Center for Disease Control and Prevention [CDC], 2009, 2010a, 2010b; Sowell, Holtz, Velasquez, 2008) and use fewer preventive services such as mammography and cervical cancer screening, dental care and vaccinations when compared to native-born Mexicans and the non-Hispanic female population (Ashing-Giwa, et al., 2006; Hawley et al., 2008; Herrick & Gizlice, 2004; Sheppard et al., 2008a Wallace, Gutiérrez, & Castañeda, 2005). Foreign-born Mexican women, especially those who have lived in the U.S. for 10 years or less, do not to have a usual source of care, are poorer and have lower levels of education compared to other women living in the U.S. (Nandi, et al., 2008; Wallace & Castañeda, 2010). Because foreign-born Mexican women are the largest and fastest growing female immigrant population and experience substantial preventive health disparities, it is essential to understand this vulnerable

group's health needs and the factors that influence their health outcomes (Wallace & Castañeda, 2008b, 2010), specifically preventive health needs.

Purpose

Foreign-born Mexican women (FBMW) are at high risk for death and disability from causes that are preventable, recognized and treatable. Understanding the factors related to the women's knowledge and use of preventive health screenings provides a basis for intervention, education, policy, and further research to decrease disparities. Therefore, the purpose of this study was to examine foreign-born Mexican women's understanding of preventive health screening recommendations for cervical and breast cancer, diabetes and blood pressure and the factors associated with the women's utilization and adherence to national standards.

The client-professional interaction has been identified as one area that influences health outcomes and behaviors (Agency for Healthcare Research and Quality [AHRQ], 2010a; Cox, 1982, Cox & Roghmann, 1984). Preventive healthcare recommendations comprise the healthcare providers' foundation for counseling foreign-born Mexican women concerning their healthcare. The U.S. Preventive Services Task Force (USPSTF, 2010) and other nationally recognized authorities including the American Congress of Gynecologists and Obstetricians (ACOG, 2009a; 2009b; 2011), the American Cancer Society (ACS, 2011a), the American Diabetes Association (ADA, 2011) and the National Heart Lung and Blood Institute (NHLBI, 2003) provide evidence based recommendations concerning preventive health measures. Each of these recommendations serves as a guide

to achieve Healthy People 2020 objectives to decrease morbidity and mortality (U.S. Department of Health & Human Services [U.S. DHHS], 2010).

The Interaction Model of Client Health Behavior (IMCHB) was used to guide this study. One main assumption of the IMCHB is that a combination of client variables and elements of the client-professional interaction influence health behaviors and outcomes (Cox, 1982). For this study, outcomes were defined as utilization of healthcare services and adherence to the recommended care regimen (Cox, 1982, 1986, 2003; Cox & Roghmann, 1984). Client singularity, client professional interaction, and health outcome elements were operationalized. Foreign-born Mexican women's perception of preventive health screening recommendations and factors associated with obtaining preventive health screenings were examined. Specifically, utilization and adherence to recommendations for five preventive screenings (Papanicolaou exam, mammogram, clinical breast exam [CBE], diabetes testing, and blood pressure checks) were assessed.

Background and Significance

Hispanic/Latinos in the Current U.S. Population

Hispanic/Latinos are the new majority minority population in the United States (U.S. Census Bureau, 2011a). Currently Hispanic/Latinos constitute 16.3% or approximately 50.5 million of the total U.S. population (Pew Hispanic Center, 2011a) and are projected to comprise 30% percent or 132.8 million of the U.S. population by 2050 (U.S. Census Bureau, 2008). In contrast, the non-Hispanic white population is predicted to be slightly larger in 2050 (203.3 million) than in 2008 (199.8 million) (U.S. Census Bureau, 2008). Almost two-thirds of Hispanic/Latinos residing in the U.S. are

native born. More than 64% of Hispanic/Latinos are of Mexican origin followed by Puerto Rican, 9.2%; Central American, 8.0%; South American, 5.6%; Cuban, 3.5%; Dominican, 2.8%; and 6.6% from other Hispanic/Latino countries (U.S. Census Bureau, 2010). The Hispanic/Latina group is young, with a median age of 27.7 years compared to median of 36.9 years of age for the U.S. population (U.S. Census Bureau, 2011a). Approximately 31.9% of native-born Hispanic/Latinos and 47.6% of foreign-born Hispanic Latinos are 25 to 44 years of age compared, to 26.4% of non-Hispanic whites and 28.4% of African Americans (U.S. Census Bureau, 2011a).

Foreign-born Hispanic/Latinos constitute approximately 32% of Hispanic/Latinos living in the U.S. Persons immigrate from the following countries: Mexico, 56.7% ; Spanish speaking Caribbean nations, 16.8%; Central America, 13.8%; and South America, 12.6% (U.S. Census Bureau, 2010). Among Mexican females, 49.4% are native-born and 44.3% are foreign-born. Approximately one-half of foreign-born Mexican women have become naturalized citizens. Within the Hispanic/Latino ethnic groups, Mexican women have the second highest birth rate (24.4 per 1,000 women) compared to Central and South American, Puerto Rican and Cuban women, whose live birth rates are 25.0 per 1,000 women, 17.4 per 1,000 women, and 10.2 per 1,000 women respectively (U.S. Census Bureau, 2011a). Three out of four foreign-born Mexican women have children under the age of 18, which is higher than rates of other immigrant women (Wallace & Castañeda, 2010).

Hispanic/Latinas and Cervical Cancer

Hispanic/Latina women suffer a disproportionate burden of disease and illness (Ven Ploeg & Perrin, 2004). The rate of cervical cancer among Hispanic/Latina women is 14.8 per 100,000 which is almost double the rate of cervical cancer among all other racial and ethnic groups (7.6 per 100,000 persons) [CDC, 2011a]. Cervical cancer rates among foreign-born Mexican women increase with greater length of residence in the U.S., perhaps due to acquisition of negative health behaviors (ACS, 2011b). The National Cancer Institute (2010) has reported that women who have not been screened for cervical cancer have three to seven times the risk of developing invasive cervical cancer, a more advanced and less curable form of the disease. This risk is particularly problematic for foreign-born Mexican women as they are “least likely to have had a Pap test in the previous 3 years” compared to their U.S. born counterparts (Flores & Bencomo, 2009). The disparities in cervical cancer could be eliminated if women were screened for pre-cancerous lesions and received the human papillomavirus vaccine (ACS, 2011b).

Hispanic/Latinas and Breast Cancer

While rates of cervical cancer are highest among foreign-and native born Hispanic/Latinas, breast cancer accounts for the greatest number of cancer deaths among Hispanic/Latinas (ACS, 2011b; Sheppard, Figueiredo, et al., 2008a). One in eleven Hispanic/Latina women residing in the U.S. will be diagnosed with breast cancer during her lifetime (ACS, 2011b). Hispanic/Latina women, including foreign-born Mexican women, are approximately 20% more likely to die of breast cancer than non-Hispanic women when diagnosed at similar stages (ACS, 2011b). In post-menopausal women,

sustaining a healthy body mass index and taking part in “moderate or vigorous physical activity” is associated with a decreased risk of developing breast cancer. It is estimated that one-half of foreign and native-born Mexican women age 60 and over are obese (CDC, 2011b). According to the National Cancer Institute (NCI, 2011), “women who are immigrants and those with lower incomes, with less education, without insurance, and lacking a usual health care provider are less likely to get screening mammograms.”

Hispanic/Latinas and Diabetes

In addition to cervical and breast cancer, diabetes represents a significant health threat to the Hispanic/Latina community, particularly among foreign and native-born Mexicans (CDC, 2011c). Based on fasting glucose or A1C levels, more than one-third of all Mexican and Mexican-American adults have pre-diabetes (CDC 2011c). The risk of being diagnosed with Type 2 diabetes is 66% higher among Hispanic/Latinos and 87% higher for Mexicans and Mexican-Americans when compared to non-Hispanic white adults 20 years of age and older (CDC 2011c). Recent data indicates that 13.3% of foreign and native-born Mexicans have diagnosed diabetes, which is significantly higher than the 7.1% of non-Hispanic whites diagnosed with this disease (CDC, 2011c). Also, recent findings revealed that 43% of Mexican and Mexican-American women suffer from obesity, a significant risk factor for diabetes (CDC, 2011b). These disparities place foreign and native-born Mexican women at great risk of sequelae related to diabetes including heart disease, stroke, hypertension, blindness and kidney failure (CDC, 2011b). Also, gestational diabetes occurs more often among Hispanic/Latino females compared to non-Hispanic white women (CDC, 2011b).

Hispanic/Latinas and Hypertension

While cervical cancer, breast cancer and diabetes account for a significant mortality and morbidity burden among Hispanic/Latinas, including foreign and native-born Mexican women, heart disease is the leading cause of death among women in the Hispanic/Latina community (National Center for Health Statistics, [NCHS], 2011). Hypertension represents one modifiable risk factor related to heart disease, yet foreign and native-born Mexican women and men have a lower rate of blood pressure treatment and control compared to non-Hispanic whites and African Americans (Bersamin, Stafford, & Winkleby, 2009). Foreign and native-born Mexican women and men in the 25-34 age category are the least likely to realize that they are hypertensive (Bersamin et al.). Further, persons who are Spanish speaking are more likely to have poor blood pressure control compared to their English speaking counterparts (Eamranond, et al., 2009). As the Hispanic/Latina population increases in the U.S., the prevalence of hypertension and the associated burden of disease is expected to increase exponentially (Bersamin, et al.).

Linguistic Barriers

Lack of English fluency is associated with impaired healthcare access and a decrease in healthcare utilization (Cordasco, Ponce, Gatchell, Traudt, & Escarce, 2010; Ding & Hargraves, 2009; Flores, 2006; Mutchler, Bacigalupe, Coppin, & Gottlieb, 2007; Smedley, Stith, & Nelson, 2003; Wilson, Chen, Grumbach, Wang, & Fernandez, 2005). Three out of every five foreign-born Mexican women experience linguistic barriers, while the rate for all foreign-born persons is one out of five (Wallace & Castañeda,

2010). Moreover, 73.9% of foreign-born Mexicans report that they speak English less than “very well” compared to 38.8% of native-born Mexicans (U.S. Census Bureau, 2010a). In fact, only 3% of foreign-born Mexican households speak English at home as their primary language (Wallace & Castañeda, 2010). Thus foreign-born Mexican women are at a disadvantage communicating with a predominantly English speaking healthcare provider group (Wilson et al.).

Poverty

Among Mexicans who reside in the U.S., nearly one-third lives in poverty, which equates to a maximum of \$10,890 for one person, \$14,710 or less for two persons, \$18,530 or less for three persons and \$22,350 or less for a family of four (U.S. DHHS, 2011c). Hispanic/Latinos are more than three times as likely to live below the poverty level as non-Hispanic Whites. The situation is worse for non-citizen Hispanic/Latinos, whose poverty rate is 28.1%, in contrast to a rate of 13.9% for naturalized Hispanic/Latino citizens (U.S. Census Bureau, 2011a). Almost one-quarter of Mexican families (both native and foreign-born) subsist at the poverty level compared to slightly over one-fifth of Puerto Rican families, less than one-fifth of Central/South American families and more than one-tenth of Cubans (U.S. Census Bureau, 2011a).

Poverty is especially problematic for foreign-born Mexican women as they experience three times the rate of poverty than that of other immigrant women (Wallace & Castañeda, 2008, 2010). Among female-headed households, 47% of all foreign-born Mexican women live at or below the poverty level compared to 35.2% of African-American women, 32.6% of foreign-born Central American women, 21.8% of foreign-

born South American women and 9.6% of non-Hispanic white women (U.S. Census Bureau, 2010a). This socio-economic marginalization of foreign-born Mexican women contributes to an increased level of health vulnerability (Wallace & Castañeda, 2008).

Education

Previous studies have shown that lower educational levels are associated with suboptimal health behaviors and health outcomes (Clark & Royer, 2010; Cutler, & Lleras-Muney, 2006; Egerter, Braveman, Sadegh-Nobari, Grossman-Kahn, & Dekker, 2009). Among Hispanic/Latinos age 25 and over, 39.2% have less than a high school education compared to 9.9% of non-Hispanic Whites (U.S. Census Bureau, 2011a). Persons of Mexican descent are the largest proportion of Hispanics without a high school degree (44.3%), followed by Central American and South Americans (32.7%), Puerto Ricans (23.4%) and Cubans (21.5%) [U.S. Census Bureau, 2011a]. This trend is more concerning for foreign-born Mexicans, as 61% have less than a high school education compared to 52.3% of foreign-born South Americans and 48.8% of foreign born Central Americans (U.S. Census Bureau, 2010b). Among foreign-born Mexican women, 58% do not have a high school education, which is four times the rate of other foreign-born women, five times the rate of African-American women and nearly ten times the rate of non-Hispanic whites (Wallace & Castañeda, 2010). Because educational attainment is related to health outcomes, health knowledge, insurance status and income, foreign-born Mexican women face serious challenges maintaining and improving their health status (Egerter et al.).

Education and Poverty

A strong inverse relationship exists between educational level and poverty, with lower levels of education related to greater rates of poverty (Egerter, et al., 2009). This interplay of education and poverty is especially problematic for foreign-born Mexican women due to their low levels of educational attainment and limited options for high paying jobs (Wallace & Castañeda, 2008a, 2008b). It has been established that being poor is linked to poor health outcomes (Kaplan, 2009; Organization for Economic Co-operation and Development (OECD), 2003; World Health Organization, n.d.). This fact exacerbates the health status of Hispanic/Latinos, most especially those who are foreign-born, as poverty is one trait that prevails among this subgroup (U.S. Census Bureau, 2010a; Wallace & Castañeda, 2010).

Income and Employment

Hispanic/Latinos earn a lower wage than their non-Hispanic white counterparts. Forty-six percent of Hispanic/Latinos earn less than \$20,000 annually compared to 31% of non-Hispanic whites (Pew Hispanic Center, 2011a). This disparity widens for foreign-born Hispanic/Latinos as their annual median earnings are \$20,000 compared to \$23,000 for their native-born counterparts (Pew Hispanic Center, 2011a). Among foreign-born Mexicans, the annual median income drops to \$19,000, which leaves minimal funds to purchase healthcare services (Pew Hispanic Center, 2011a).

Income and employment status may be adversely affected by low educational attainment, poverty level, and language abilities (Egerter, et al., 2009; Wallace & Castañeda, 2008, 2010). More than two-thirds of foreign-born Mexican men and women

are employed and generally work in the poorly paid unskilled labor market, such as positions in hotels, fast food service, agriculture, landscaping and construction (U.S. Census Bureau, 2011; Wallace & Castañeda, 2008). These low-income occupations are the least likely to offer health insurance benefits. Thus, this group relies on publicly funded or free healthcare, or subsists without healthcare services (Institute of Medicine [IOM], 2001a, 2009; Kaiser Commission, 2010; Wallace & Castañeda, 2008, 2010).

Health Insurance

Health insurance is strongly correlated with access to healthcare services (IOM, 2001a, 2001b, 2004, 2009; James, et al., 2009; Kaiser Commission, 2010). Persons who are uninsured are more likely to delay seeking care, less likely to afford prescriptions medications and often go without necessary health services due to cost (Billings & Cantor, 2008; Institute of Medicine, 2001a; Kaiser Commission, 2010; Smedley, et al., 2003). Major reasons cited for uninsurance include that employers do not offer insurance, or it is cost-prohibitive for the individual or family to purchase (Kaiser Commission, 2010; Kaplan, 2009; Wallace & Castañeda, 2008, 2010). In fact, 74.2% of Hispanic/Latinos, 75.8% of Mexicans and Mexican-Americans, 51.7% of African-Americans and 53.2% of non-Hispanic whites do not have health insurance for these reasons (NCHS, 2010).

It is estimated that more than one-half of foreign-born Mexican women are uninsured compared to 25% of other foreign-born women, adding to the vulnerability of these Mexican women (Wallace & Castañeda, 2010). One explanation for this disparity is that foreign-born Mexican women are the least likely to be represented in the labor force

compared to other foreign-born women, non-Hispanic women, and African-American women. Also, foreign-born Mexican women are the least likely to be employed in positions that provide benefits (Wallace & Castañeda, 2010). Consequently, foreign-born Mexican women may delay preventive health measures such as cervical and breast cancer screening, diabetes testing and blood pressure checks. When diagnosed with a serious health problem, many of these women and their families face a financial catastrophe due to low income and lack of health insurance (Wallace & Castañeda, 2010). Except for pregnancy, foreign-born women (including Mexican women) may only qualify for State Children's Health Insurance Program (SCHIP) or Medicaid benefits to cover pre-natal care (Kaiser Commission, 2006; U.S. DHHS, n.d.). After pregnancy, undocumented foreign-born women may no longer qualify for publicly funded benefits (U.S. DHHS, n.d.).

Gender and Culture

Mexican culture prescribes specific beliefs, practices, and gender roles that influence health behavior and health outcomes among foreign-born Mexican women including obtaining Pap exams, mammograms, diabetes testing and blood pressure checks (Davila, 2005; Monk, Manning, Denman, & Cornejo, 2009; Padilla & Villalobos, 2007; Sobralske, 2006). *Machismo* is a male gender role that esteems masculinity, strength and power as male characteristics (Sobralske) and provides tacit permission for men to have sexual relationships outside of marriage as proof of their virility (Jezzini, Guzmán, & Grayshield, 2008; Sowell et al., 2008). The rise in sexually transmitted diseases and HIV/AIDS among foreign-born Mexican women may be one health

consequence of the machismo ideology (Sowell et al.). This principle of *machismo* is compounded by its female counterpart, *marianismo*, which compels prolific fertility and requires that Latina women espouse qualities of purity, sexual naïveté, selflessness and subservience to men (Jezzini et al.). Thus, foreign-born Mexican women may access the healthcare system primarily for prenatal care and childbirth, and not for specific preventive screenings.

Theoretical Underpinnings

Theory influences and guides the development of scientific questions and may provide the structure to “explain a maximum number of observable relationships among the variables in a given field of inquiry...” (Meleis, 2007, p. 46). Importantly, theory may organize factors associated with foreign-born Mexican women’s understanding of health screening recommendations including Papanicolaou exams, mammograms, clinical breast exams (CBE), diabetes testing, and blood pressure checks, and may formulate new knowledge about their utilization of these services (Chinn & Kramer, 2008). Several theories or models may be used to explore foreign-born Mexican women’s perceptions of healthcare screening recommendations. Thus, several theories will be briefly examined to identify the theoretical underpinnings that best support this study.

Health Belief Model

Many theoretical frameworks attempt to explain or predict causal factors of client health behavior and ways to adopt new behaviors (Ajzen, 1991; Bandura, 2004, Rosenstock, Stretcher, & Becker, 1988). The Health Belief Model (HBM), originally developed in the 1950’s, assesses the concepts of susceptibility, seriousness, benefits, and

barriers to a behavior as well as cues to action, and self-efficacy (Champion & Skinner, 2008; Glanz, Rimer, & Lewis, 2002; Rosenstock, 1966; Rosenstock et al.). This psychological model has been used to examine the propensity towards numerous health behaviors including obtaining regular mammograms (Menon, Champion, Nonahan, Daggy, & Skinner, 2007; Vadaparampil, Champion, Miller, Menon, & Skinner, 2003), procuring cervical cancer screening (Johnson, Mues, Mayne, & Kiblawi, 2008), choosing or declining vaccinations (Rhodes & Hergenrather, 2003) utilizing bicycle helmets (Ross, Ross, Rahman, Cataldo, 2010) and sexual risk taking (Downing-Matibag & Geisinger, 2009). While there is empirical support that certain variables of the HBM are predictive of changes in health behaviors, often the variance accounted for by this model does not explain a significant proportion of behavioral change (Carpenter, 2010; Clark & Houle, 2009; Harrison, Mullen, & Green, 1992; Janz & Becker, 1984). Most researchers agree that a psychological model such as HBM measures only attitudes and beliefs and therefore is only one element of understanding behavioral change (Champion & Skinner, 2008; Clark & Houle; Cox, 1982).

Social Cognitive Theory (SCT)

Social Cognitive Theory (SCT), previously known as social learning theory, is a value expectancy theory that depicts behavioral changes and their maintenance as a combination of incentives, outcome expectations, and efficacy expectations (Bandura, 1986, 1997, 2004). Specifically, the individual believes that she can successfully engage in a new behavior and that this behavioral change or action will lead to a positive outcome (Clark & Houle, 2009). One contribution made by SCT is the concept of self-

efficacy which refers to an individual's belief that she is capable of successfully engaging in a behavioral change. SCT has been applied to numerous topics such as positive behavior change after cancer diagnosis and treatment (Harper et al., 2007) and reduction of underage drinking (Price et al., 2009). Limitations of this theory include its broad focus on "virtually all human phenomena" (McAlister, Perry, & Parcel, 2008, p. 168) and inattention to costs or barriers as a predictor of behavior change and health outcomes as well as its broad focus (Rosenstock et al., 1988). Specifically, SCT does not consider the client-professional interaction as a variable that may influence health behaviors and health outcomes.

Theory of Reasoned Action (TRA)/Theory of Planned Behavior (TPB)

The theory of reasoned action and the theory of planned behavior evaluate individual motivational factors such as behavioral intention, attitude, subjective norm and perceived control as precursors and predictors of behavioral change (Ajzen, 1991; Clark & Houle, 2009). The TRA purports that intention based on one's personal attitude and beliefs and "subjective norms" may predict one's willingness to undertake a behavior such as seeking a mammogram or diabetes testing (Ajzen; Montañó & Kasprzyk, 2008; Clark & Houle). The TBP adds the dimension of perceived behavioral control to one's personal attitudes, beliefs and "subjective norms" as a means of predicting intention to carry out a behavior (Montañó & Kasprzyk; Clark & Houle). These theories take into account external variables such as demographics, attitudes, personality traits, and other individual factors. The TRA and TPB have been used to predict reduction of risky behaviors (Ben-Natan, Golubev, & Shamrai, 2010; Hole, Moan, & Rise, 2010) and

engagement in healthy behaviors (Burns, 2009; Griva, Anagnostopoulos, & Madoglou, 2009; Hong, Gittelsohn, & Joung, H., 2010; Peters & Templin, 2010; Plotnikoff, Lippke, Courneya, Birkitt, & Sigal, 2010). One criticism of these theories is that while relationships between variables may be illuminated, results may not be explanatory (Montaño & Kasprzyk).

While psychological and value expectancy theories posit that behavior change is related to the characteristics and motivation of the individual (Ajzen; Rosenstock et al., 1988), none of these theories consider the impact of the client-professional interaction on health behaviors and health outcomes. Another limitation of these theories is their lack of accountability for the role of the health encounter between the client and provider and its subsequent influence on health behaviors and health outcomes.

Conceptual Framework

Cox (1982) proposes that the client-professional interaction is an integral factor that influences client health behaviors and outcomes and that models that do not incorporate the interaction are missing a vital explanatory factor. Based on these beliefs, she formulated the Interaction Model of Client Health Behavior (IMCHB) (refer to figure one). This model was chosen as the guiding framework of this study because it recognized the importance of the client as individual and the role that healthcare professionals play in providing thorough professional/technical competencies and positive affective support as a means to impact client health behaviors and health outcomes (Cox, 1982; Cox & Roghmann, 1984).

The Interaction Model of Client Health Behavior (ICHMB) is an abstract nursing process model that examines the impact of interrelated client variables and the client-professional interaction on the following health outcomes and health behaviors: utilization of healthcare services; clinical health status indicators, severity of healthcare problem; adherence to the care regimen; and satisfaction with care (figure 1) (Carter & Kulbok, 1995; Cox, 1982, 1986, 2003; Cox & Roghmann, 1984; Matthews & Muirhead, 2008). For this study the outcome variables of utilization of healthcare services and adherence to the care regimen will be evaluated.

The IMCHB identifies client characteristics, behavioral determinants, the role of the professional, and the process of the client-professional interaction as a means to predict health outcomes, explain health behaviors and shape individualized interventions. Cox emphasized that this model is salient because it focuses on the *process* by which the individual attains positive or negative health outcomes or behavioral changes rather than the outcome itself. Understanding this process may advance a professional's capacity to respond to client needs, alter the interaction, and thereby influence positive health behaviors and health outcomes (Cox & Roghmann, 1984; Matthews & Muirhead, 2008).

Client Singularity

Client singularity (CS) is a concept that represents a client's individual background variables and behavioral determinants. CS elements are antecedents to the client-professional interaction (Ackerson, 2010; Cox, 1982; Cox & Roghmann, 1984; Troumbley & Lenz, 1992). Background variables, in conjunction with factors of intrinsic motivation, cognitive appraisal and affective response are the underpinnings of client

singularity (see Figure 1) and influence each client-provider interaction which, in turn, influences health behavior and health outcomes (Cox, 1982, 1986; Cox & Roghmann; Farrand & Cox, 1993). Background variables are considered non-modifiable and are defined as demographic characteristics, social influence, previous healthcare experience, and environmental resources.

Demographic characteristics are qualities that may socially define a person, such as age, place of birth, race/ethnicity and marital status. Social influences consist of attitudes, beliefs or actions that are effected by a person's peer group (Cox, 1982, 1986; Cox & Roghmann; Farrand & Cox, 1993). These influences include acculturation, gender roles such as marianismo, and cultural beliefs including fatalism, all of which may impact a foreign-born Mexican women's health behaviors and health outcomes.

Acculturation is related to social influence and is considered a key element in understanding Latino health beliefs, practices, and norms as they relate to health behavior and health outcomes (Burnam, Telles, Karno, Hough, & Escobar, 1987; Cueller, Arnold, & Maldonado, 1995; Marín, Otero-Sabogal, & Perez-Stable, 1987; Page, 2006; Ver Ploeg & Perrin, 2004; Wallace, Pomery, Latimer, Martinez, & Salovey, 2010). The classic definition of acculturation derived from the field of anthropology states that “acculturation comprehends those phenomena which result when groups of individuals having different cultures come into continuous first-hand contact, with subsequent changes in the original cultural patterns of either or both groups” (Redfield, Linton, & Herskovits, 1936, p. 149). A more current definition describes acculturation as a long-term dynamic process where a person progresses simultaneously through at least two

cultural dimensions, and adjusts certain features of the culture of origin while incorporating a subset or all parts of the new culture (Berry, 1980, Marín, 1992, Marín & Gamba, 1996; Page).

Conceptually, acculturation can be envisioned as a unidimensional or bidimensional process (Byrd & Clayton, 2003; Marín & Gamba, 1996; Ryder, Alden, & Paulhus, 2000). The unidimensional model portrays acculturation as a one-sided process where a foreign culture takes on the characteristics of the dominant culture in a linear fashion starting from not acculturated and progressing to completely acculturated (Lara, Gamboa, Kahramanian, Morales, & Hayes-Bautista, 2005). This characterization asserts that as acculturation takes place, the foreign culture may relinquish its original culture as it acquiesces towards dominant cultural beliefs and practices (Cabassa, 2003; Cuellar et al., 1995; Lara, et al).

Critics of the unidimensional construct assert that acculturation is a fluid and bicultural process rather than a static progression from one extreme (not acculturated) to the other (completely acculturated) (Lara, et al., 2005; Marín & Gamba, 1996). When acculturation is conceived of as a bidimensional process, an individual may fall into several subcategories: assimilation (complete acculturation); separation (maintaining the cultural of origin while rejecting the new culture); integration (espousing culture of origin and the new culture); or marginalization from both cultures. Movement between these subcategories takes place in a bi-directional non-linear fashion (Lara, et al.). As the acculturation process proceeds, Latino traditions and beliefs such as familismo, fatalism,

and machismo may diminish while acclimatization to a belief in personal control over health status develops.

Environmental resources include socioeconomic indicators such as income, health insurance status, educational level and employment. These resources are interconnected and may influence a person's health behavior and health outcomes. For example, level of educational attainment may be related to the type of employment and earning power that one has. Employment and income may impact health insurance status which directly influences health outcomes (Egerter et al. 2009).

Behavioral determinants constitute the second portion of client singularity and are defined as cognitive appraisal, affective response and intrinsic motivation (Cox, 2003). While background variables are considered static, behavioral determinants may be amenable to change that could influence health behavior and health outcomes (Cox, 2003). Cognitive appraisal describes the level of comprehension and thought processes that a client employs to interpret a health issue such as when to obtain a preventive screening exam. A person's cognitive appraisal influences their health beliefs and health behaviors and should be assessed during the client-professional interaction (Cox, 1982). Knowledge and beliefs are the chief components of cognitive appraisal (Cox, 1982, 2003).

Affective response constitutes a client's feelings and emotions related to a health need (Cox, 1982). Affective response is considered a mediator of cognition, in that some of affective responses may deter or impede cognitive appraisal of the health concern (Cox, 1982). For example, foreign born Mexican women have cited that they experience

so much fear and shame when exposing their body to a male healthcare provider that they do not pursue CBE's and Papanicolaou exams (Byrd Chavez & Wilson, 2007; Flynn, Betancourt, & Ormseth, 2011). Responses such as anger, fear, sadness, and guilt may or may not be logical or reality based, yet these responses may influence a foreign-born Mexican woman's judgment and reaction to the client-professional interaction (Cox, 1982). A third construct, intrinsic motivation, encompasses a person's fundamental need for self-sufficiency and self-determinism and may influence cognitive appraisal and affective response (Cox, 1982; Cox & Roghmann, 1984; Matthews & Muirhead, 2008).

Cox asserts that client singularity variables should be envisioned as interrelated and interconnected and should be assessed collectively rather than as separate entities (Cox, 1982; Cox & Roghmann, 1984). Each client's unique characteristics influence the client-professional interaction and subsequent health behaviors and outcomes (Cox, 1982).

Client-Professional Interaction

According to Cox, "the major hypothesis of the IMCHB is that health outcome is determined by the fit of the provider reactions to the client's responses to a health concern as well as the client's physical and socio-environmental characteristics" (Cox & Roghmann, 1984, p. 276). A hallmark of the IMCHB is the emphasis on the ongoing reciprocal nature of the client-professional interaction and its influence on a person's health behavior and health outcomes (Cox, 1982; Cox & Roghmann). The inclusion of this element in the IMCHB framework validates the provider's responsibility to attend to

client singularity needs as a means of influencing health behaviors and health outcomes (Cox, 1986).

The client professional interaction is comprised of affective support, professional/technical competencies, health information and decisional control. Affective support refers to the care that a health professional offers in response to a client's emotional needs and comprises "the primary foundation on which all other interventions and interaction factors are built" (Cox, 2003, p. 96). Accordingly, the healthcare provider should convey emotional support and facilitate the client's coping skills in a supportive manner so that each client has the opportunity to choose optimal health behaviors (Cox, 1982). Affective support may reduce the "level of emotional arousal" to a point where cognitive appraisal may be more effective and facilitate a trusting relationship that may benefit future interactions (Cox, 1982). Interpersonal trust has been described as "the acceptance of a vulnerable situation in which the truster believes that the trustee will act in the truster's best interests" provider (Thom, Hall, & Pawlson, 2004, p. 125) and may be one indicator of affective response (Kaiser et al., 2010). Attributes of trust include compassion, integrity, loyalty, ability to understand client needs and support for emotional needs (Cox, 2003; Betancourt, Flynn, & Ormseth, 2010).

Professional technical competencies represent the professional skills, including interpersonal skills, and techniques required to treat a client's health condition (Cox, 1982, 2003; Matthews & Muirhead, 2008) and represents one important aspect of professional competency (Thom, et al., 2004). Effective communication on the part of the healthcare provider facilitates "listening, understanding, providing complete and honest

information, and expressing caring” (Thom et al., p. 125) and may, in turn, foster trust between the client and healthcare provider.

Health information is comprised of the health knowledge and treatment options that the provider shares and the amount of information imparted to the client (Cox, 1982, 2003). The elements of client’s singularity should guide the manner in which health information is disclosed (Cox, 1982, 2003). Decisional control refers to an individual’s perceived power to make effective decisions (Cox, 1982).

Health Outcome

Health outcomes are the final element of the IMCHB and are the culmination of client singularity and the client-professional interaction (Cox, 1982). Health outcomes are defined as utilization of healthcare services, adherence to the recommended care regimen, satisfaction with care, clinical health indicators and severity of health problems (Cox, 1982, 2003). The outcome variables in this study were utilization of healthcare services and adherence to the recommended care regimen.

Utilization of healthcare services refers to the appropriate use of healthcare resources to promote positive health outcomes (Cox, 1982, 1986). Obtaining a Papanicolaou exam, CBE, mammogram, diabetes testing or blood pressure screening represents utilization of healthcare services that may protect a foreign-born Mexican woman’s health. Provider recommendations to obtain preventive care services are positively associated with foreign-born Mexican women’s acquisition of these services (Tejeda, Thompson, Coronado, & Martin, 2009). Previous studies suggest that provider recommendations to obtain a pap smear or a mammogram have been associated with

utilization of these services (De Alba & Sweningson, 2006; Schuler, Chu, & Smith-Bindman, 2008; Tejeda et al; Wallace, Hunter, Papenfuss, De Zapien, Denamn, & Giuliano, 2007). When a foreign-born Mexican woman does not seek preventive screenings, she may incur diagnosis of health conditions at an advanced stage or endure disease sequelae that prompt increased use of tertiary care services, morbidity, and early mortality.

Adherence to a recommended regimen refers to a client's compliance with a plan of care. For example, in the presence of a family history of cervical cancer, a provider may recommend that a foreign-born Mexican woman obtain a Papanicolaou exam each year. While the woman may obtain one Pap smear (based on her provider's recommendation), it may not translate to a commitment to have annual exams (Watts, et al., 2009). The same process is true of mammograms (Williams et al., 2011). The client-professional interaction provides an opportunity for the clinician to support and encourage adherence to regular preventive screening exams for cervical cancer, breast cancer, diabetes and hypertension.

Use of IMCHB

Initially this conceptual model was intended to examine the relationship between client needs and nursing interventions as a method to inform and evaluate client-centered nursing interventions (Cox, 1982). Since the initial development, the IMCHB has been utilized to inform health promotion programs (Troumbley & Lenz, 1992), to identify personal factors such as motivation that influence health behavior and health outcomes (Ackerson, 2010; Cox, 1986, 2003; DiNapoli, 2003; Read, 2002), to inform the

client-professional interaction (Mathews & Muirhead, 2008), to measure outcome variance explained by client singularity factors (Robinson & Thomas, 2004), and to develop instruments that measure various constructs of the IMCHB (Cox, 1986, 2003; Wilbur, Chandler & Miller, 2001). This study adds the inclusion of all three elements within one study and focuses on a specific high risk minority group.

Assumptions of IMCHB

Cox (1982) posits three assumptions. First is the belief that “clients are capable of making informed, independent, and competent choices about their healthcare behavior” (p. 46). This holistic model asserts that each client has the ability to make healthcare decisions and that these decisions are influenced by her personal physical-psychosocial-environmental dynamics and the client provider interaction. The second philosophical assumption asserts that the client assumes final accountability for choices that influence her health behavior and outcomes and that, ultimately, it is not the providers or the family who should make these choices (Cox, 1982; Cox & Roghmann, 1984). However, because of the Mexican cultures collectivist nature, family members, especially the male head of household may be involved in a foreign-born Mexican woman’s health decisions (Elder, Ayala, Parra-Medina, & Talavera, 2009). The third assumption affirms that the client’s and provider’s perception of the health concern do not necessarily match (Carter & Kulbok, 1995).

This study will focus on foreign-born Mexican women’s demographic characteristics, social influences, environmental resources, cognitive appraisal of blood pressure, and perceived affective response and professional/technical competencies as

they relate to elements of health outcomes. The outcome variables will consist of utilization and adherence to five preventive health screening recommendations: Papanicolaou exam, CBE, mammogram and diabetes and blood pressure screening.

Preventive Health Screening Recommendations

For prevention and early detection of cervical cancer, the American Association of Obstetricians and Gynecologists (2009a) recommends that Papanicolaou screening take place every two years for women 21- 30 years of age. Women who are 30 years old or more who have had three consecutive negative results may be screened once every three years and at age 65 or 70 Papanicolaou exams may be discontinued once there have been three negative results and no abnormal screenings within the previous 10 years (ACOG, 2009a). The Papanicolaou test is not recommended for women who have had a total hysterectomy for non-cancer related health problems.

The USPSTF recommends that starting at age 50 women should obtain a mammogram to screen for breast cancer on an annual or biennial basis based on healthcare provider recommendation and selected risk factors (2010). ACOG guidelines (2009b) recommend that a woman should be offered annual screening by mammography starting at 40 years of age. The USPSTF does not endorse breast-self exam teaching (BSE) or clinical breast exam (CBE), as scientific findings remain inconclusive regarding the benefits or harms of these health practices. However, the ACS endorses CBE's every three years for women 20-39 years of age and every year for women 40 years old or older (2011a).

While recommendations on breast cancer and cervical cancer screening are clear, the USPSTF (2008) indicates that current evidence does not support random glucose screening to detect Type 2 diabetes among asymptomatic adults with a blood pressure reading below 135/80 mm HG. Those with a blood pressure reading of 135/80 mm Hg or greater should receive diabetes screening services coupled with blood pressure management to deter cardiovascular events. The American Diabetes Association (ADA, 2011) recommends diabetes testing based on selected risk factors not included in the USPSTF screening and counseling recommendations. Based on the ADA standards, persons with a BMI greater than 25 with one additional risk factor such as physical inactivity, family history of diabetes or of an at risk race/ethnicity should be screened for diabetes. Furthermore, the ADA recommends that all individuals age 45 and over should receive a blood glucose evaluation.

The USPSTF (2010) strongly recommends that all adults age 18 and older should be screened for high blood pressure but does not offer a timeframe for these checks. The National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7) advocates that blood pressure screening should take place every 2 years in persons with blood pressure less than 120/80 mmHg and every year if the systolic blood pressure lies between 120 to 139 mmHg or diastolic blood pressure between 80 to 89 mm Hg (NHLBI, 2004).

Current screening recommendations that are applicable to all females including foreign-born Mexican women and their respective 2020 Healthy People objectives (U.S. DHHS, 2010) are listed in Table 1.

Definitions

The following definitions were used for this study. A summary of the IMCHB model and its operationalized concepts are summarized in Table 2.

Client Singularity

Demographic characteristics: Socially defined characteristics of a person including age, place of birth, marital status and length of residence in U.S.

Social influences: Qualities shaped by membership in a peer group such as acculturation.

Environmental resources: socioeconomic indicators such as income, health insurance status, and educational level.

Cognitive appraisal: knowledge and understanding of health issues, such as high blood pressure.

Affective response: emotional reaction to health issues based on personal beliefs and experiences.

Client-Professional Interaction

Affective support: provider behavior and response to client's singularity and measured by client perception (e.g. trust).

Professional technical competencies: provider capabilities to meet a client's health needs (communication) as perceived by the client.

Health information: reported discussions, materials or education for preventive health screenings and the related health issues provided to women by providers.

Health Outcomes

Preventive health screenings: common health exams including Pap smear(s), CBE(s), mammogram(s), diabetes testing(s) and blood pressure check(s).

Utilization of health care services: number of specific preventive screening exams that a woman has obtained.

Preventive health screening recommendations: women's reports of advice or counsel for specific preventive health screenings from friend, family, community person, or healthcare provider.

Adherence to recommended care regimen: was determined by comparing women's utilization of preventive health services to national guidelines.

To explore the context of foreign-born Mexican women's health the following measures were assessed in this study: height, weight, body mass index (BMI), Hgb A1C, blood pressure self-reported health rating, family and personal medical history. These clinical measures provided a framework to interpret other findings.

Any study examining foreign born Mexican women's health needs should evaluate findings in light of cultural mores and practices. Specific cultural mores including *familismo* (familialism), *personalismo* (personalismo), *respeto* (respect), and *fatalismo* (fatalism) have broad implications for foreign-born Mexican women's health beliefs and practices and may influence the client-professional interaction (Clark & Redman, 2007; Davila, 2005; Padilla & Villalobos, 2007). *Familismo* is a cultural norm that embraces the close and extended family unit as the major support system and

requires that a Mexican woman place her family's needs above her own needs, including healthcare needs (Davila; Gurman & Becker, 2008; Roosa, 2009).

Respeto or respect refers to the respect and honor afforded to male authority figures who determine all final decisions including healthcare decisions for each family member (Gurman & Becker, 2008; Padilla & Villalobos, 2007). The concept of *respeto* extends to healthcare providers who are viewed as "authority figures" and may deter from foreign-born Mexican woman from asking questions about their healthcare or voicing concerns to their provider (Gurman & Becker).

Personalismo or personalismo refers to the expectation that warm and friendly social interaction should be a part of personal and professional exchanges including the healthcare encounter (Gurman & Becker, 2008). In the healthcare setting, it is preferred that the healthcare provider inquire about the foreign-born Mexican women's family and overall well-being prior to engaging in a health exam. When this culturally driven etiquette is not included in the health encounter, foreign-born Mexican women may perceive that the provider is not personally invested in their care, which may foster mistrust of the provider and the healthcare system (Davila, Bonilla, Gonzalez-Ramirez, & Villarruel, 2007).

Fatalismo or fatalism represents a cultural phenomenon in which Latina women perceive that serious illnesses, especially cancer, are not within ones control or are a result of "luck, fate, or powers beyond the person's control..." (Lopez-McKee, McNeill, Bader, & Morales, 2008, p. 942). Foreign-born Mexican women who espouse fatalistic

cancer beliefs may perceive that they have little control over health outcomes and thus avoid or discount the value of screening exams (Lopez-McKee et al.).

Research Questions (RQ)

The following research questions were addressed in this study:

RQ 1): Does client singularity influence health outcomes among foreign-born Mexican women?

RQ 1 a): What is the association between demographic characteristics (age, marital status), social influence (acculturation, marianismo), environmental resources (insurance, income, education), cognitive appraisal of blood pressure, affective response (fatalism, cultural cancer beliefs) and utilization of health services: Papanicolaou testing, CBE, mammography, diabetes testing, and blood pressure screening among foreign-born Mexican women?

RQ 1 b): What is the association between demographic characteristics, social influences, environmental resources, cognitive appraisal of blood pressure, affective response and adherence to preventive recommendation guidelines for Papanicolaou testing, CBE, mammography, diabetes testing, and blood pressure screening among foreign-born Mexican women?

RQ 2): Does the client-professional interaction influence health outcomes among foreign-born Mexican women?

RQ 2 a): What is the association between affective support (trust) and professional/technical competencies (communication) with utilization of these services:

Papanicolaou testing, CBE, mammography, diabetes testing, and blood pressure screening among foreign-born Mexican women?

RQ 2 b): What is the association between affective support and professional/technical competencies with adherence to preventive recommendation guidelines for Papanicolaou testing, CBE, mammography, diabetes testing, and blood pressure screening among foreign-born Mexican women?

RQ 3): Does client singularity and the client-professional interaction influence health outcomes among foreign-born Mexican women?

RQ 3 a): What is the association between demographic characteristics, social influences, environmental resources, cognitive appraisal of blood pressure, affective response, affective support and professional/technical competencies with utilization of Papanicolaou testing, CBE, mammography, diabetes testing, and blood pressure screening among foreign-born Mexican women?

RQ 3 b): What is the association between demographic characteristics, social influences, environmental resources, cognitive appraisal of blood pressure, affective response, affective support, professional/technical competencies to adherence to preventive recommendation guidelines for Papanicolaou testing, CBE, mammography, diabetes testing, and blood pressure screening among foreign-born Mexican women?

Summary

Hispanic/Latinos are the majority minority race in the U.S., and nearly two-thirds are of Mexican ancestry. Hispanic/Latinos who reside in the U.S. experience a disproportionate burden of illnesses and disease compared to non-Hispanic whites. This is especially true of foreign-born Hispanic/Latinas, including foreign-born Mexican women who are a particularly vulnerable subgroup. Specifically, foreign-born Mexican women experience disparate morbidity and mortality for diseases that can be prevented or treated if detected early. The IMCHB was selected to guide the conduct of this study that examined CS and CPI factors related to foreign-born Mexican women's health outcomes of utilization, adherence and understanding of preventive health screening recommendations. Conditions for focus of the study included cervical cancer, breast cancer, diabetes, and hypertension. Additionally, Mexican cultural mores that may influence gender roles and health beliefs and may affect the client-health professional interaction and the woman's understanding and receptiveness to health information were examined.

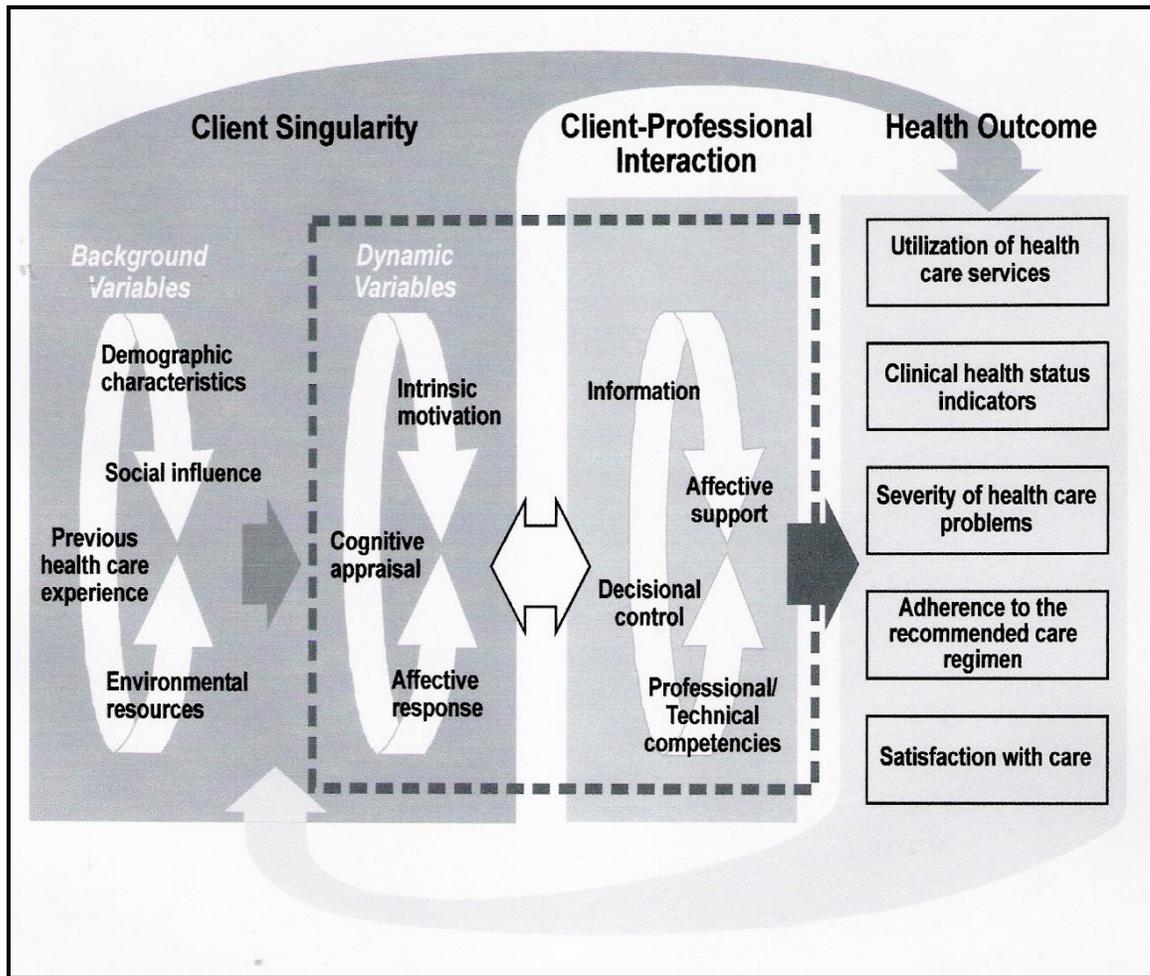


Figure 1: Interaction Model of Client Health Behavior (IMCHB)

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Table 1.

National Screening Recommendations and Related Healthy People 2020 Objectives

Health Issue	Counseling/Screening Recommendation	Health People 2020 Objective ^g
Cervical cancer (Pap Smear)	<p>Pap smear at least every 3 years for women age 21-65 who have been sexually active (excludes women who have had a hysterectomy for a non-cancer reason).^a</p> <p>Pap smear not recommended after age 75.^a</p> <p>Women from ages 21 to 30 should be screened every two years instead of annually, using either the standard Pap or liquid-based cytology.^b</p> <p>Women age 30 and older who have had three consecutive negative cervical cytology test results may be screened once every three years with either the Pap or liquid-based cytology.^b</p> <p>It is reasonable to stop cervical screening at age 65 or 70 among women who have three or more negative cytology results in a row and no abnormal test results in the past 10 years.^b</p>	<p>C-4: Reduce the death rate from cancer of the uterine cervix.</p> <p>C-15: Increase proportion of women who receive cervical cancer screening.</p> <p>C-18.2: Increase the proportion of women who were counseled by their providers about Pap test.</p>
Clinical breast exam (CBE)	<p>Scientific findings remain inconclusive regarding benefits or harms of CBE.^a</p> <p>Women in their 20s and 30s should have a CBE by a health professional preferably every 3 years.^c</p> <p>Starting at age 40, women should have a CBE by a health professional every year.^c</p>	<p>C-3: Reduce the female breast cancer death rate.</p> <p>C-17: Increase the proportion of women who receive breast cancer screening.</p>

Breast cancer (mammography)	<p>Recommendation for screening mammogram before age 50 based on individual basis.^a</p> <p>Biennial screening mammography for women aged 50 to 74 years.^a</p> <p>Annual screening mammogram beginning at age 40.^d</p>	<p>C-3: Reduce the female breast cancer death rate.</p> <p>C-17: Increase the proportion of women who receive breast cancer screening.</p> <p>C-18.1: Increase the proportion of women who were counseled by their providers about mammograms.</p>
Diabetes	<p>Diabetes screening should occur for asymptomatic adults with sustained blood pressure of 135/80 mm HG or greater. The optimal screening interval is not known.^a</p> <p>Diabetes testing should be considered in all adults who are overweight (BMI \geq25 kg/m) and have additional risk factors including: physical inactivity, first degree relative with diabetes, high-risk race ethnicity (including Latinos), hyperlipidemia and testing for diabetes for all persons should begin annually at age 45.^d</p>	<p>D-16: Increase the proportion of persons with diabetes whose condition has been diagnosed.</p>
Blood pressure	<p>Screening for all adults aged 18 and older. Optimal interval for screening unknown.^a</p> <p>Screening should be done every two years if BP < 120/80 mm Hg; every year if BP \geq 120-139 systolic or 80 to 99 diastolic.^f</p>	<p>HDS-4: Increase the proportion of adults who have had their blood pressure measured within the preceding 2 years and can state whether their blood pressure was normal or high.</p>

Note. ^aUSPSTF, 2010; ^bACOG, 2009a; ^cACS, 2011a; ^dACOG, 2009b; ^eADA, 2009; ^fNHLBI, 2004; ^gU.S. DHHS, 2010.

CHAPTER II

REVIEW OF THE LITERATURE

This literature review was intended to examine and synthesize data regarding the concepts of client singularity including demographic variables, social influence, environmental resources, cognitive appraisal, and affective response among foreign-born Mexican women. In addition, this review examined the client-professional interaction concepts of affective support, and professional/technical competencies as they related to foreign-born Mexican women's health behaviors and health outcomes. Finally, the relationship between demographic variables, social influence and environmental resources and affective support and professional/technical competencies were discussed as they related to utilization of healthcare services and adherence to recommended care regimen.

Client Singularity

Foreign-born Mexican women's unique characteristics contribute to their health beliefs and values, motivation to seek care, adherence to treatment, ability to process health information, satisfaction with care, and utilization of healthcare services (Byrd, Peterson, Chavez, & Heckert, 2004; Davila et al., 2007; Esposito, 2005; Garcés, Scarinci, & Harrison, 2006; Goel et al., 2003; Hunt & de Voogd, 2005; Julliard et al., 2008). Among foreign-born Mexican women, characteristics such as age, income, place of birth, citizenship status, linguistic abilities (Melancon, Oomen-Early, & del Rincon, 2009),

religiosity, educational level, length of U.S. residency and health insurance status are significant predictors of access to care, health behaviors health outcomes and comprehension of health information (Garcés et al., 2006; Julliard et al., 2008). Knowledge of health beliefs and motivational incentives is an essential component to predict and understand health outcomes (Cox, 1982, 2003). Cox and others who have employed the IMCHB model purport that comprehension of client singularity concepts are necessary to inform the client-professional interaction and, ultimately, to influence health behaviors and outcomes, including utilization of healthcare services, severity of a health problem, health status indicators, adherence to treatment recommendations and satisfaction with care (Ackerson, 2010; Cox, 1982, 1986, 2003; Cox & Roghmann, 1984; DiNapoli, 2003; Farrand & Cox, 1993; Mathews & Muirhead, 2008; Read, 2002).

Background Variables

Foreign birth represents one characteristic associated with poor health outcomes and underutilization of health screenings such as pap smears, mammograms and blood pressure checks (Echeverria & Carrasquillo, 2006; Goel et al., 2003; McDonald & Neily, 2011; McMullin, De Alba, Chávez, & Hubbell, 2005; Rojas-Guyler, King, & Montieth, 2008). Native-born Mexican men and women had 2.69 times greater odds of having blood cholesterol screening and 5.61 times greater odds of having a blood pressure screening compared to foreign-born Mexicans (Jurkowski, 2006). Further, foreign-born Mexican men and women had 2.54 times lower odds of having a routine check-up in the previous two years. In addition, foreign-born Hispanic/Latina women were less likely to report having a pap smear or fecal occult blood testing compared to native-born

Hispanic/Latinas and white women (Goel et al.). Age, marital status, and ethnicity have also been linked to utilization of breast cancer and other cancer screening services (Bazargan, Bazargan, Farooq, & Baker, 2004; Bersamin et al., 2009; Lawsin, Erwin, Bursac, & Jandorf, 2011).

Social Influences

For most persons, positive social influences serve as a protective factor related to health and health outcomes (Almeida, Molnar, Kawachi, & Subramanian, 2009).

Foreign-born Mexican women name family and friends as a significant influence on their health beliefs and health decisions (Ashing-Giwa et al., 2006a; Bird, Moraros, Banegas, & King, 2008; Rogers, 2010). Specifically, the influence of friends, family, and cultural customs have been cited as factors that shape and reinforce cultural beliefs and values related to a foreign-born Mexican woman's attitudes and ideas about health problems, health practices and behaviors, and engagement with the U.S. healthcare system (Garcés et al., 2006; Tafur, Crowe, & Torres, 2009). Many foreign-born Mexican women have expressed that their family encouraged them to seek regular health checkups, and that they accessed health care services in order to perform their role as mother and wife (Garcés et al.; Rogers). Foreign-born Spanish speaking Hispanic/Latinos favor and trust health information that originates through family, friends and respected "experts" such as health care providers and community leaders (Larson, Wong-McLoughlin, & Ferng, 2009).

Acculturation may be defined as the process of changes in behavior as cultural learning occurs when immigrants are exposed to a new culture (Padilla & Perez, 2003)

and may be influenced by social contact with a foreign culture (Berry, 2005; Marín & Gamba, 1996). Level of acculturation has been associated with educational achievement, socioeconomic status, health insurance coverage status, utilization of preventive health services and health disparities (Barcenas et al., 2007; Kinsler et al., 2009; Mainous et al., 2006; Wingo et al., 2009; Zambrana & Carter-Pokras, 2010). Preference to speak Spanish rather than English is associated with lower acculturation level (Elder et al., 2009). Less acculturated Mexican women are more likely to be foreign-born, Spanish speaking, uninsured, have no usual source of care and receive health services at a clinic or health center (Ghaddar, Brown, Pagán, & Díaz, 2010). Less acculturated Mexican women are likely to have less than a high school education and higher rates of poverty when compared to more acculturated Mexican women (Ghaddar et al.; Rojas-Guyler et al., 2008; Wingo et al.). Age is not related to acculturation level, as both younger and older foreign-born Mexican women (Ghaddar et al.; Brown, Pagán, & Díaz, 2010) experience low levels of acculturation (Rojas-Guyler et al.; Wingo et al.).

Low acculturation levels may be related to certain health protective factors. For example, among Hispanic/Latinas a lower level of acculturation has been linked to a lower rate of obesity (Ahluwalia, Ford, Link & Bolen, 2007; Barcenas et al. 2007) and has been associated with a lesser prevalence of hypertension (Moran et al., 2007; Vaeth, Duwayne, & Willett, 2005). Lower levels of acculturation are related a lower rate of cigarette smoking and alcohol use, fewer low-birth weight babies, lower risk of obesity (Ahluwalia et al.; Barcenas et al.) and a higher rate of breastfeeding (Gibson, Diaz, Manious, & Geesey, 2005; Wingo et al., 2009). Additionally, previous research has

linked low acculturation among Hispanics with higher quality dietary intake (Ayala, Baquero, & Klingler, 2008; Escamilla-Pérez, 2011; Ghaddar et al., 2010). Specifically, lower acculturation level among foreign-born Mexican men and women is related to higher consumption of fruits, vegetables, (Ghaddar et al.) fiber (Mainous et al., 2008) and grains (Ayala et al.). Additionally, a lower acculturation rate was associated with a lower number of risky sex behaviors and a lower likelihood of having an abnormal Pap exam (Ward, Ronciano, & Breitkopf, 2010).

Acculturation does not always have a protective effect. A low level of acculturation is associated with a high intake of rice and beans (Ayala et al.) which may contribute to the epidemic proportion of Hispanic who are diagnosed with diabetes or prediabetes and exhibit obesity. Additionally, lower levels of English language acquisition, one indicator of a low acculturation status, are related to a lower likelihood of participating in physical activity (Ghaddar et al.; Mainous et al., 2008; Wingo et al., 2009; Yeh, Viladrich, Bruning, & Roye, 2009). Lower levels of acculturation were associated with less familial assistance and a greater adherence to cultural explanation of illness, including the belief that anger and negative experiences cause illnesses such as diabetes.

Acculturation may be directly or indirectly associated with cervical cancer screening or Pap smear results (Ward et al., 2010). According to Shah and associates Hispanic/Latina women (no breakdown by ethnicity) who were less acculturated were less likely to have ever had a pap smear or to have had a pap smear in the previous 1-3 years (Shah, Zhu, Wu, & Potter, 2006). A large study (n=3149) of foreign and native-

born Mexican and Central American women revealed that acculturation served as a mediator for predicting abnormal Pap test results (Ward et al., 2010). Specifically, the number of sexual partners in the previous year, age at first sexual intercourse, and lifetime number of sexual partners functioned as indirect predictors of abnormal Pap test results (Ward et al.). Further, foreign and native-born Mexican women with higher levels of acculturation were more likely to have been diagnosed with sexually transmitted diseases (Kepka, Coronado, Rodriguez, & Thompson, 2010).

Research that has examined the link between acculturation and receipt of mammography has reported conflicting correlations between the two variables. Borrayo and associates (2009b) did not find a significant association between acculturation and scores on the Latina Breast Cancer Screening Scale (LBCS) among foreign-born Mexican women. However, level of acculturation was significantly associated with the “divine predestination” subscale of the LBCS, which included statements such as “only God can decide if I get breast cancer” and “only God can decide if a woman gets better from breast cancer” (Borrayo et al., 2009b, p.949). Women who had lower acculturation levels scored higher on the presence of divine predestination beliefs. In that study acculturation was operationalized by totaling the number of years residing in the U.S. Findings from a study conducted by Lawsin and colleagues (2011) reported that level of acculturation and knowledge were “significant correlates to CBE” among foreign-born Mexican women and that “differences in breast cancer and cervical cancer screening appeared to be influenced by acculturation as measured by the number of years living in the U.S. and cancer knowledge” (p. 4).

Low levels of acculturation and lack of health insurance among foreign-born Mexican women and men diagnosed with diabetes may be associated with higher increments of “problematic care experiences” including confusion concerning information provided, frustration due to insufficient information and absence of support for diabetes self-management when care was received from a community health center (Rodriguez, Chen, & Rodriguez, 2010). Latham and Calvillo revealed that level of acculturation directly influenced foreign-born Mexican women’s health belief of diabetes, social support and understanding of the disease (2009). Foreign-born Mexican men and women who are less acculturated than their native-born counterparts were less likely to have had blood pressure screening or a routine health exam in the preceding two years (Jurkowski & Johnson, 2005). Moran and colleagues (2007) examined proxy measures of acculturation including place of birth, language spoken in the home, and number of years residing in the U.S. and found lower levels of acculturation to be associated with lower prevalence of hypertension among foreign-born Mexican women. The relationship between acculturation and prevalence of hypertension persisted when parent’s country of birth was added to the proxies of acculturation independent of age, race/ethnicity, education, smoking, alcohol, physical activity, gender, education, smoking, alcohol intake, body mass index (BMI), and diabetes (Teppala, Shankar, & Ducatman, 2010).

An additional social influence, *marianismo*, is a Mexican female gender role that suggests women should be sexually naïve and submissive to their male partner in all matters (Beaulaurier, Craig, & De La Rosa, 2009). Foreign-born Mexican women who

incorporate marianismo beliefs into their life closely identify with their role as mother and spiritual caretaker of the family, take care of others rather than themselves, practice subservience to men and portray themselves as virtuous and chaste (Castillo et al., 2010; Maternowska et al., 2010; Raffaelli & Ontai, 2004). Therefore, a foreign-born Mexican woman's health, including her reproductive health, does not become a primary concern until it is at a crisis level or effects the overall functioning of the family (Ashing-Giwa et al., 2006a; Vanslyke et al., 2008). Foreign-born Mexican woman are to maintain sexual silence and are not to suggest the use of condoms lest they be viewed as "promiscuous" (Beaulaurier et al, p. 52).

Women who ascribe to the culture of marianismo may hide pain and illness from the family to avoid upsetting the family unit (Ashing-Giwa et al., 2006b; Vanslyke et al.). In a series of focus groups that included foreign-born Mexican women, participants felt that a diagnosis of cervical cancer would affect their physical, sexual, reproductive, emotional, mental, spiritual and economic health and well-being and that these factors would disrupt family dynamics (Vanslyke et al.). Latina women who had been diagnosed with breast cancer reported that one reason for fear of breast cancer was the strain it would place on the family and her role as caregiver (Ashing-Giwa et al., 2006b). Importantly, one foreign-born Mexican woman stated that because she did not want her family to worry, she delayed informing them that she was diagnosed with diabetes (Weiler & Crist, 2009). This woman revealed that when she disclosed her condition to her family it was solely because of a sense of duty to her sisters who might also have diabetes (Weiler & Crist).

Environmental Resources

Among foreign-born Mexican women, income, health insurance coverage and education are the most frequent environmental resources that serve as barriers to utilization of preventive healthcare services (Bustamante, Chen, Rodriguez, Rizzo, & Ortega, 2010; Echeverria & Carrasquillo, 2006; Garcés et al., 2006; Tejada et al., 2009). Foreign-born Mexican woman who live below the poverty threshold and are uninsured report lower levels of utilization of Pap smear, mammography, blood pressure checks and, if diabetic, HbA1c checks (Bustamante et al.). Foreign-born Latina women including Mexican women cite cost as a consistent barrier to obtaining a repeat mammogram (Mack, Pavao, Tabnak, Knutson & Kimerling, 2009). Low-income foreign-born Mexican women and those with lower educational levels were less likely to have access to health information and health services compared to Latinas who have lived in the U.S. longer or who had a higher-income (Documét and Sharma, 2004).

Between one-third (González, Vega, Rodríguez, Tarraf, & Sribney, 2009) and two-thirds of foreign-born Mexican women and men (Beal, Hernández, & Doty, 2009) have reported that they did not have access to a regular source of care. Foreign-born Mexican women without a regular source of care received fewer preventive care services including mammography, the Papanicolaou exam and blood pressure checks (Beal et al.; Bustamante et al., 2009). Additionally, low levels of diabetes knowledge have been associated with lack of a usual source of care among foreign-born Latina women including those of Mexican origin (González et al., 2009).

Place of residence may represent an additional environmental obstacle to obtaining preventive health services. Regions of the United States not traditionally known as “Hispanic communities” are seeing growth in their foreign-born Mexican female population and there is an inadequate infrastructure to meet these women’s health needs (Pew Hispanic Center, 2005). Emerging Latino communities are often outpaced in the ability to provide adequate housing, education and healthcare services to new residents (Pew Hispanic Center, 2005) and may be deficient in providing culturally tailored healthcare (Amirehsani, 2010).

Cognitive Appraisal

Studies that include foreign-born Mexican women have revealed a recurring set of beliefs and perceptions that influence their cognitive appraisal of health concerns (Dettenborn, DuHamel, Butts, Thompson, & Jandorf, 2005; Lopez-McKee et al., 2008; Vanslyke et al., 2008). Specifically, foreign-born Mexican women share a common set of beliefs and perceptions concerning diabetes, cardiac health, breast and cervical cancer screening that may influence their health knowledge of these diseases (Bird et al., 2010; Lopez-McKee et al., 2008; Vincent, Clark, Marquez-Zimmer, & Sanchez, 2006).

Many foreign-born Mexican women have expressed the belief that cervical cancer may be caused by infection, physical trauma, poor hygiene, “unwise sexual behavior”, multiple sex partners, having an abortion or having sex during menstruation (McMullin et al. 2005; Tejeda et al., 2009; Vanslyke et al., 2008). Foreign-born Mexican women reasoned that if one does not engage in unwise sexual behavior, one should not need a Pap smear (McMullin et al.). These findings were corroborated in a similar investigation

(Vanslyke et al.). Foreign-born Mexican women have expressed that they would need a pap smear only if one noticed signs of a pelvic infection (McMullin et al.).

Foreign-born Mexican woman lack health knowledge concerning HPV and its link to cervical cancer (Drewry, Garcés, & Scarinci, 2010; Sanderson et al., 2009; Wu, Porch, McWeeney, Ohman-Strickland, & Levine, 2010). In two separate studies, between 29% (Wu et al.) and 53% (Drewry et al.) of foreign-born Mexican women who attended health clinics had never heard of HPV. Half of the women were unaware that the Pap smear was used to detect cervical cancer (Wu et al). Among women who were familiar with HPV, more than one-third had never heard of the HPV vaccine (Sanderson et al.). Those foreign-born Mexican women who were aware of the HPV vaccine cited concerns about the vaccine's safety and side effects, effectiveness, and cost as reasons why one might not obtain the vaccine (Sanderson et al., Wu et al.). Further, one out of ten participants in the study conducted by Sanderson et al. reported that they would not know where to go to receive the vaccine. Foreign-born Mexican women who did not receive the HPV vaccine were more likely to perceive themselves as not at risk for HPV infection (Sanderson et al.; Wu et al.).

False or insufficient health information represents one reason that foreign-born Mexican woman avoid or do not obtain recommended mammograms (Bird et al., 2010; Tejada et al., 2009). Hispanic women, including foreign-born Mexican females, have varying degrees of understanding concerning mammography and its connection to early breast cancer detection (Bird et al.; Lopez-McKee et al., 2008; Tejada et al.; Williams et al., 2011). Foreign-born Mexican women who did not feel sick or perceived themselves

as having low risk for being diagnosed with breast cancer believed that they did not need a mammogram (Tejeda et al.). While foreign-born Mexican women without a family history of breast cancer overwhelmingly believed that breast cancer, if diagnosed early, could be cured, nearly one-quarter of these women stated that if one received a breast exam by a doctor, there was no need to have a mammogram (Bird et al.). Further, this group of women stated that unless they experienced breast pain, felt a lump or had nipple discharge, a mammogram was not warranted (Bird et al.). A focus group with oncology patients revealed that the majority of Latina patients diagnosed with breast cancer had never obtained a mammogram (Ashing-Giwa et al., 2006b).

Foreign-born Mexican women and men, particularly those with no usual source of care have “significantly lower odds... of higher diabetes knowledge and awareness” compared to native-born Mexican women and men (González et al., 2009). A lower level of education and lower income correlated to a lesser amount of diabetes awareness and knowledge among both native and foreign-born Mexicans (González et al.). Foreign and native-born Mexican women and men have reported that diabetes interferes with their ability to carry out daily activities and nearly three-fourths had never participated in a diabetes education program (Melancon et al., 2009). Higher scores on perceived knowledge of type 2 diabetes were associated with greater ease working with their physicians and a stronger sense of ability to adjust their lifestyle (Melancon et al.). Some participants indicated that they believed a person does not develop diabetes until they live in the United States (Melancon et al.).

In a large study in which more than half of the sample was born in Mexico, 41% of male and female foreign-born and native-born Mexican women and men were unaware that they were hypertensive and those persons 25-34 years old were significantly less likely to be aware of their hypertension than older Mexican's age 75-84 (Bersamin et al., 2009). Additionally, Mexican women and men who did not have health insurance were significantly less likely to be aware of their hypertension than Medicaid recipients (49% vs. 70%, respectively) (Bersamin et al.). Among foreign-born Mexican women and men diagnosed with diabetes, nearly half were unaware of their hypertensive status (Vijayaraghavan et al., 2010).

Affective Response

Affective response, or one's emotional reaction to a health concern or crisis, influences one's ability to process health information, utilize preventive health services, interpret symptoms, make health decisions and choose health actions (Cox, 1982; Mora, DiBonaventura, Idler, Leventhal, & Leventhal, H., 2008; Mora, Halm, Leventhal, & Ceric, 2007). Affective responses such as fear, shame, pain or embarrassment may mediate a foreign-born Mexican woman's cognitive interpretation of a health issue and her willingness to participate in preventive health services such as a mammography, cervical cancer screening and general physical examination (Brietkopf, Catero, Jaccard & Berenson, 2004; Coronado, Thompson, Koepsell, Schwartz, & McLerran, 2004; Garcés et al., 2006; McMullin et al., 2005; Scarinci, Beech, Kovach, & Bailey, 2003; Sheppard et al., 2008b; Tejeda et al., 2009). Foreign-born Mexican women cited fear of pain and having their body exposed to a male doctor as a common reasons for avoiding a

mammogram, (Tejeda et al.) and CBEs even when the woman understood the purpose of the exams (Flynn, Betancourt, & Ormseth, 2011). Other authors have reported similar findings (Garbers & Chiasson, 2004; Garcés et al.).

Fatalism, represents a culturally driven belief that illness, diseases such as cancer and diabetes are punishment from a spiritual force, fate, or part of “God’s will” and that death is inevitable (Johnson et al., 2008; Lopez-McKee et al., 2008; Powe & Finnie, 2003). Fatalism among foreign-born Mexican women is closely linked to perceived locus of control (Lopez-McKee et al, 2008; Russell, Perkins, Zollinger, & Champion, 2006) and has been associated with low socioeconomic status (Russell et al.), lack of knowledge, being a member of an underserved medical community (Powe & Finnie) and low educational level (Dettenborn et al., 2005). Additionally, women believe that disease or illness related suffering constitutes a burden that must be born and that no outside forces, including Western medicine, will alleviate the condition (Moreno, 2007). Fatalism may manifest itself as a lack of motivation or “desire” to actively pursue preventive healthcare services such as mammography and Pap tests and may contribute to denial of susceptibility to the disease (Melancon et al., 2009). Low income foreign-born Mexican women who infrequently received mammograms (one time in previous five years) demonstrated a significantly higher score on the Powe Fatalism Index when compared to those women who were classified as regular users (four mammograms in past five years) (Lopez-McKee et al., 2008). Healthcare providers may interpret a fatalistic response as passivity or disinterest in taking responsibility for one’s health. Among Latina women, including foreign-born Mexican women, screening fatalism as

measured by the Cultural Cancer Screening Scale (Betancourt, Flynn, Riggs, & Garberoglio, 2010) was associated with lack of clinical breast exam adherence (Flynn, Betancourt, & Ormseth, 2011).

Foreign-born Mexican women who had been diagnosed with diabetes revealed that diabetes carries a cultural stigma similar to if one were diagnosed with tuberculosis (Weiler & Crist, 2009). To these women, a diagnosis of diabetes was extremely disturbing because family and society would perceive that, because they were “ill”, they would be unable to fulfill their daily roles as wives and mothers (Melancon et al., 2009; Weiler & Crist). Because foreign-born Mexican women attach their identity and self-esteem to their gender role, a diagnosis of diabetes was devastating and one reason that they denied their condition (Weiler & Crist). Among foreign-born Mexican women diagnosed with diabetes, perceptions of intrusion on daily activities of living have been associated with lower levels of type 2 diabetes knowledge (Melancon et al.). Additionally, foreign-born Mexican women have revealed that dismay and depression are a common response to a diabetes diagnosis (Melancon et al.).

Research related to hypertension among native and foreign-born Mexican women has examined many aspects of this condition including blood pressure awareness (Bersamin et al., 2009; Christian, Rosamond, White, & Mosca, 2007; Giardina et al., 2011; Vijayaraghavan, He, Stoddard, & Schillinger, 2010); factors associated with cardiovascular risk and cardiovascular screening practices (Jurkowski, 2006; Kramer et al., 2004); and the association between acculturation and hypertension (Derby et al., 2010; Jurkowski & Johnson, 2005; Moran et al., 2007; Vaeth & Willett, 2005). Further

research has examined the effect of promotora health education and other interventions on reduction of cardiovascular risk (Balcazar et al., 2010; Davidson et al., 2007).

However, an extensive literature review did not reveal any study that examined foreign-born Mexican women's affective response to hypertension or cardiovascular screening practices.

Client-Professional Interaction

Affective Support

Affective support, defined as the psychosocial care that a healthcare professional offers to a client and her family in response to their emotional needs comprises “the primary foundation on which all other interventions and interaction factors are built” (Cox, 2003, p. 96). The perceived degree of affective support received by foreign-born Mexican women influences health outcomes including preventive health service utilization, adherence to treatment recommendations, and satisfaction with services (Hunt, de Voogd, & Castaneda, 2005; Sheppard et al., 2008b). Specifically, foreign-born Mexican women who perceived that the health encounter was conducted in a respectful, personable, and compassionate manner expressed great satisfaction with their provider and their care. Women who reported a higher rate of satisfaction in their healthcare provider relationship demonstrated a higher rate of mammography adherence (Sheppard, Wang et al.).

Sufficient affective support may facilitate a trusting relationship between a foreign-born Mexican women and her healthcare provider (Kaiser et al, 2010). Additionally, trust in provider is associated with acceptance of provider health

recommendations (Ashing-Giwa et al., 2006a; Devlin, Roberts, Okaya & Xiong, 2006; Julliard et al, 2008; Johnson et al., 2008; Sheppard et al., 2008a). Julliard and colleagues noted that foreign-born women trust their doctor's medical training and automatically respect him or her as the authority in charge of their health. The author concluded, "without compassion, trust, and respect on the part of the physician, interviewees said they would not share information, and the level of confidence in their health care clinicians plummeted" (p. 545). Foreign-born Mexican women's perceptions of healthcare provider mistreatment, coupled with anger about mistreatment, are negatively related to continuity of cancer screening care (Betancourt et al., 2011). Based on this perceived mistreatment, Mexican-foreign born women have reported that their provider was not being honest with them, which influenced the women's trust in their provider and whether they returned for follow-up cervical and breast cancer screening (Betancourt et al., 2011).

In a study concerning perceived diabetes knowledge among foreign-born Mexican women, higher scores on the Diabetes Knowledge Questionnaire (DKQ) correlated with an increased level of comfort with the healthcare provider as measured by the Diabetes Attitude Scale (DAS-3) [Melancon et al., 2009]. Comfort with provider was also associated with a higher level of foreign-born Mexican woman's self-efficacy regarding diabetes self-management (Melancon et al.).

Professional/Technical Competencies

Communication is a professional/technical competency that influences the client-professional interaction and the foreign-born Mexican women's health behavior and health outcomes (Ford, Crabtree, & Hubbell, 2009; IOM, 2009). Provider recommendations to obtain preventive care services are positively associated with foreign-born Mexican women's acquisition of preventive screening services (Tejeda et al., 2009). Previous studies suggest that provider recommendations to obtain a pap smear or a mammogram has been associated with utilization of these screenings (De Alba & Sweningson, 2006; Schuler, Chu, & Smith-Bindman, 2008; Tejeda et al., 2009; Wallace, Hunter, Papenfuss, De Zapian, Denamn, & Giuliano, 2007). In fact, Dettenborn and colleagues noted that physician recommendation to obtain a CBE or Pap smear and a family history of cancer were the only two significant variables that explained foreign-born Mexican women's attainment of these services (Dettenborn et al., 2005). Further, Schuler and colleagues (2008) reported that provider recommendations to obtain a mammogram constituted the single most important factor to increase mammography use. In a qualitative study, foreign-born Mexican women cited their doctor's recommendation followed by their daughters support as factors that encouraged or discouraged them to obtain a mammogram (Tejeda, 2009).

Latinas, including foreign-born Mexican women, have reported that they have experienced discrimination from healthcare providers based on the inability to communicate in English, their health insurance status, and their ethnicity (Keller, Silberberg, Hartmann, & Michener, 2010; Mutchler et al., 2007; Wasserman et al., 2006).

This perceived discrimination increases the likelihood of underutilization of healthcare services and is associated with increased use of the emergency department as a source of care (Keller et al., 2010). Perceived discrimination has been associated with the foreign-born Mexican woman's belief that she is receiving inferior quality care (Perez, Sribney, & Rodríguez, 2009; Sorkin, Ngo-Metzger, De Alba, 2010).

Frequently healthcare providers, because of lack of cultural competency or poor communication skills, are unable to communicate with foreign-born Mexican women in a manner that addresses their affective needs (Julliard et al., 2008; Simon et al., 2010). Among foreign-born Mexican woman, a client-provider encounter that incorporates a personable and unhurried approach will result in a stronger relationship between the provider and the woman, which, increase the likelihood that the woman will accept provider recommendations concerning preventive needs (Mayo, Sherrill, Sundareswaran, & Crew, 2007).

Oncology physicians who treat Latinas have reported that they needed further training to communicate with Latina women in a culturally appropriate manner and to increase understanding of health information and treatment options (Quinn et al., 2011). Hunt, de Voogd and Castañeda (2005) reported that during some client-provider interactions, clinicians used a set of standard anticipated questions and answers, rather than addressing the concerns that foreign-born Mexican women voiced. In one case, the resident physician presented technical health information regarding the abnormal alpha feta protein test to a foreign-born Mexican woman in medical terms; the woman did not ask any questions but cried quietly. The woman's mother apologized to the physician for

her daughter's behavior and then both women were told to go to the waiting area (Hunt, de Voogd, & Castañeda). The provider misunderstood the woman's tears as a sign of sadness, but failed to realize that she did not comprehend the amniocentesis or its possible risks and benefits. Based on this and other encounters, the healthcare provider's perception was that persons who accepted amniocentesis did so based on logical information and "reasoned goals". Further, providers perceived that women who decline tests did so based on "unreasoned emotion" (Hunt, de Voogd, & Castañeda, p. 306).

Linguistic barriers such as LEP and lack of client-provider language concordance (Eamranond et al., 2009b) represent a threat to successful communication, utilization of preventive health services, having a usual source of care (Cordasco et al., 2011), and, ultimately, the severity of healthcare conditions (Cheng, Chen, & Cunningham, 2007; IOM, 2009). An analysis of the Behavioral Risk Factor Surveillance System data revealed that Spanish-speaking Hispanic/Latinos reported poorer health status and were less likely to receive a flu shot, a checkup, or a dental visit in the past year when compared to English speaking Hispanic/Latinos (DuBard & Gizlice, 2008). Because the majority of foreign-born Mexican women report that they speak English less than very well (U.S. Census Bureau, 2010), provision of healthcare and health information in the Spanish language is important. Recently, the Joint Commission has stipulated that hospitals must "effectively" communicate with patients about their healthcare needs, and that part of effective communication includes communicating with the patient in their preferred language (The Joint Commission, 2011).

Use of interpreters has proven to be a valuable bridge to facilitate communication between Spanish speaking foreign-born Mexican women and English speaking healthcare providers (Moreno & Morales, 2010). According to Title VI of the Civil Rights Act of 1965, healthcare providers and institutions are legally obligated to provide interpretation services to non-English speaking clients at no charge to the client. A multi-site study surveyed approximately 1,600 Hispanic/Latino in a national language demonstration project. Ninety-five percent of the participants were foreign-born, 81% were female, and over half of male and female respondents were born in Mexico. Of those who stated that they needed an interpreter, 30% revealed that an interpreter was available usually or sometimes and 13% related that an interpreter was never available. Participants who required and always received an interpreter rated their healthcare experience and communication with their provider significantly higher than those who needed an interpreter but did not have access to one (Moreno & Morales).

The Institute of Medicine (2009) recommends that to facilitate effective communication, improve health outcomes and reduce health disparities, healthcare providers should incorporate foreign-born Mexican women's cultural and linguistic attributes into all health interactions. The Action Plan to Reduce Racial and Health Disparities recognizes that increasing the "percentage of people who reported that they experienced good communication with their healthcare provider" may improve health behaviors and health outcomes (U.S. DHHS, 2011a, p. 44). Another report, the National Plan for Action (U.S. DHHS; 2011b), asserts that "...the ability of providers to effectively interact and communicate with their patients [is linked] to improved patient

satisfaction, treatment compliance, and health outcomes” (U.S. DHHS, 2011b, p. 21). Further, mutual communication is essential to fulfill foreign-born Mexican women’s health care needs (U.S. DHHS, 2011b). Successful communication may foster respect and trust between the foreign-born Mexican women and her healthcare provider, promote satisfaction with services and exact greater utilization of healthcare services and adherence to screening recommendations (Kaiser et al., 2010; Shepherd, Wang et al., 2008).

Health Outcomes

Hunter (2005) conducted a study concerning foreign-born Mexican women’s understanding of oral and written cervical cancer education and found that women often did not understand why they were receiving a Pap test or the difference between a Pap test and a pelvic exam. In addition, these women reported that they rarely received a follow-up call with test results, and even when they were contacted, no explanation about the results was offered (Hunter). In a study of Latina women living in public housing, 33% of these women stated that they had never been told to have a pap smear or that they should be screened for cervical cancer (Bazargan et al., 2004).

Latinas have shared that Spanish language breast cancer and screening information is crucial to understand their diagnosis and treatment choices (Sheppard et al., 2008a). As one woman elaborated, ‘I did not have much information about cancer... so obviously if you don’t have information, you don’t know what treatments there are’ (Sheppard et al., 2008a, p. 386). Foreign-born Mexican women who had a better understanding of breast health risk factors were more likely to obtain a screening

mammogram (Tejeda et al., 2009). Among foreign-born Mexican women, more than one-third did not know that a mammogram was a low-dose x-ray, and nearly three-fourths of the women believed or were unsure if a bruise or hitting of the breast could cause breast cancer (Lawsin et al. 2011).

Higher levels of diabetes knowledge and understanding of the disease are positively related to adherence to a recommended treatment regimen (Melancon et al., 2009). Foreign-born and native-born Mexican women have cited lack of health information, as a significant barrier to properly managing their diabetes (Melancon et al.; Vincent et al., 2006; Weiler & Crist, 2009). Foreign-born Mexican women reported that they were informed by the provider that they had diabetes, and then handed a prescription without any additional education or teaching (Vincent et al., 2006). Due to the inadequate health information provided, many women presumed that diabetes was an acute condition that would resolve once they completed taking the prescription medication. During a focus group discussion, the women expressed a need for clear culturally relevant information on dietary changes, coping strategies and information concerning long-term effects of diabetes and that the health information they were currently receiving was not useful to them. Additionally, women perceived that healthcare providers were “too busy” to provide culturally relevant diabetes health information (Vincent et al., 2006). Foreign-born Mexican women have specified that while they possessed basic understanding of diabetes, they did not understand how to prepare a healthy diet as expressed by this comment: “They [healthcare providers] could have given classes on how to measure

food...food that I could eat...really good classes on how to measure food and that kind of stuff, but they didn't do that" (Weiler & Crist, p. 290).

Some foreign-born Mexican women expressed confusion and frustration based on the diabetes teaching received from their healthcare provider: "he said not to eat pork. Not to eat mango or apples, carrots, and beets...He said that blood sugar was never gonna be controlled..." (Weiler & Crist, 2009, p. 290). Another foreign-born Mexican woman specified that she received education concerning possible long-term complications of diabetes including kidney, eye and heart disease, but she was not offered information about how these complications occurred or what preventive measures to take (Weiler & Crist). These women stated that including family members in the diabetes education process might improve their diabetes control (Weiler & Crist).

Heart disease remains the leading cause of death among Hispanic women living in the U.S. (National Center for Health Statistics [NCHS], 2011), yet few studies have evaluated foreign-born or native-born Mexican women's attainment of blood pressure screening. Spanish-speaking Mexican Americans are less likely to be screened for cardiovascular disease than their English-speaking counterparts (Jurkowski, 2006) which, places them at an increased risk of adverse outcomes related to cardiac and cerebrovascular disease (Bersamin et al., 2009).

Contextual Understanding

Foreign-born Mexican women's health behavior, language, religiosity, spirituality, social norms and cultural beliefs are embedded in a cultural context (Ford et al., 2009; Skaff, Mullan, Fisher, & Chesla, 2003) and may influence a foreign-born

Mexican woman's "perception of their illness, treatment sought, and health behaviors" (Skaff et al., p. 297). A study that examined cancer screening and cultural context among Latinas reported familial and community relationships were esteemed ahead of all other cultural values, and that Latina women's motivation to improve their health and their health behavior should be evaluated in this context (Pasick et al., 2009). These findings are consistent with the collectivist orientation rooted in the Mexican culture (Elder et al., 2009). Understanding the sociocultural context in which foreign-born Mexican women's health and well-being take place presents healthcare providers a genuine opportunity to influence women's health outcomes (Elder et al.; Skaff et al.).

Summary of Current Knowledge

Foreign-born Mexican women are less likely to receive preventive health information or preventive screening services related to breast and cervical cancer, diabetes, and blood pressure screening when compared to native-born Mexican women and non-Hispanic white women. Foreign-born Mexican women experience a higher morbidity and mortality rate of many diseases including breast cancer, cervical cancer, diabetes, and heart disease. Health behaviors and health outcomes among foreign-born Mexican women are closely related to their ethnicity, acculturation level, years of residence in the U.S., educational attainment, health insurance status and English language proficiency. Additionally, the interplay of these women's unique cultural beliefs, gender roles, and religious and spiritual practices affect their utilization of health services and adherence to recommended health screenings for cervical and breast cancer and diabetes. Social influence of family and friends may promote women's health-seeking

behaviors such as obtaining a mammogram, Pap smear, or diabetes testing.

Encouragement or recommendations from a trusted healthcare provider may increase woman's receipt of health screenings. Cultural and linguistic challenges influence virtually all aspects of foreign-born Mexican women's interactions with the healthcare system.

Foreign-born Mexican women lack knowledge concerning the Papanicolaou exam, its purpose and its relationship to cervical cancer and HPV. Fear, embarrassment, and denial represent affective responses that influence a foreign-born Mexican woman's decision to obtain a Pap smear. Foreign-born Mexican women who live in public housing or lack health insurance may not receive a recommendation to have a Pap smear.

Foreign-born Mexican women may not perceive themselves to be at risk for breast cancer and may believe that death from cancer is inevitable. These beliefs, insufficient health information about breast cancer and the purpose of a mammogram and ineffective communication with a healthcare provider may preclude a foreign-born Mexican woman from obtaining a mammogram. Foreign-born Mexican women who speak only Spanish, have a low income, no health insurance and limited education are less likely to receive a mammogram or a CBE.

Mexican-Americans, including foreign-born Mexicans have one of the highest rates of diabetes among all racial/ethnic groups living in the U.S. and experience a disproportionate number of diabetes related complications. Foreign-born Mexican women have reported that lack of health information concerning diabetes and diabetes-self management impede their understanding of the seriousness of this disease.

Additionally, to avoid appearing “ill” or “unable to fulfill their role” as mother and wife, many foreign-born Mexican woman prefer not to know if they have diabetes or fail to disclose their disease to their family.

Heart disease is the leading cause of death among Hispanic women and it is clear that foreign-born Mexican women experience risk factors related to cardiac disease. Yet little is known about foreign-born Mexican women’s perception or understanding of blood pressure screening or hypertension. Health information and screening recommendations may not be offered in the woman’s preferred language or may be beyond the woman’s level of understanding. Healthcare encounters that are personalized and culturally respectful increase foreign-born Mexican women’s trust in their healthcare provider and the likelihood that women will adhere to provider recommendations.

Gaps and Omissions in Current Knowledge

Studies reviewed do not address the link between the foreign-born Mexican woman and her healthcare provider as it relates to health outcomes and health behaviors. Specifically, the encounter between the foreign-born Mexican woman and the healthcare provider has not been examined related to use of preventive screening recommendations including Pap smear, mammogram, CBE, diabetes testing and blood pressure screening. To date, no known research has evaluated the combined effect of foreign-born women’s unique characteristics (client singularity) and the health care encounter (client-professional interaction) as they influence utilization or adherence to recommendations for a Pap smear, mammogram, CBE, diabetes testing and blood pressure screening.

Few studies focus exclusively on foreign-born Mexican women's utilization of health services, health behaviors and health outcomes. Samples for the majority of literature reviewed in this chapter describe health outcomes and health behaviors related to preventive screening recommendations among both foreign and native-born Mexican women and men, or include Hispanics from more than one ethnic background (Mexican, Central and South American, Dominican). Specifically, few studies investigate the health screening practices of Pap smear, CBE, mammography, diabetes testing or blood pressure checks among foreign-born Mexican women as a single entity. Further, the majority of studies reviewed were conducted in the southwestern United States, California, New York and other established Hispanic/Latino communities. Few studies have taken place in the southeastern United States or among emerging Hispanic/Latino communities.

This study added knowledge of utilization and adherence to preventive health screening recommendations among foreign-born Mexican women living in the southeastern U.S. Little is known about foreign-born Mexican women's receipt and understanding of preventive recommendations for a Pap smear, mammogram, CBE, diabetes testing or blood pressure screening as they relate to adherence and utilization of preventive screening recommendations in an emerging Latino community in the southeastern United States. There has been limited focus on the influence of a healthcare provider's affective support and professional/technical competencies as they relate to foreign-born Mexican women's utilization and adherence to screening recommendations.

This study intended to identify factors that are associated with foreign-born Mexican women's use of these services. Importantly, this study elucidated factors that

could promote or detract from a foreign-born Mexican woman's utilization of preventive screening services including cervical cancer screening, CBE, mammography, blood pressure screening and diabetes testing. Further, this study added to the knowledge base regarding foreign-born Mexican women's adherence to recommended standards for a Pap smear, mammogram, CBE, diabetes testing and blood pressure check. Limited information has been reported on foreign-born Mexican women's cognitive appraisal of hypertension and the need for blood pressure checks.

The findings from this study may provide knowledge to assist healthcare providers to facilitate increased utilization and adherence to recommended preventive health screenings (Pap smear, mammogram, CBE, diabetes testing), among foreign-born Mexican women living in an emerging southeastern community, which may decrease morbidity and mortality related to cervical and breast cancer, diabetes and heart disease.

Summary

Foreign-born Mexican women's utilization and adherence to preventive health screening recommendations is influenced by a multitude of variables including ethnicity, age, cultural beliefs, gender roles, health insurance status, income, level of education, language, and social influences. Non-adherence to recommendations for screening exams may result in late diagnosis and premature death. Limited information about foreign-born Mexican women's cognitive appraisal of blood pressure and its relation to cardiovascular disease may result in premature cardiac and cerebral events, especially as these women age. Gender roles such as marianismo, cultural beliefs related to exposure of one's body to a person besides one's partner, and culturally prohibited discussions of

sexual health may inhibit women's use of a Pap smear, mammogram, or CBE. Healthcare provider recommendations to obtain preventive health services may promote foreign-born Mexican women to obtain these screenings. Specifically, woman who are encouraged by their provider to obtain a mammogram or Pap smear are more likely to procure these screening exams. Personalized and compassionate care from healthcare providers delivered in a culturally respectful manner and in the woman's language of choice may promote a trusting relationship and increase the likelihood that foreign-born Mexican women will ask health questions and follow provider recommendations. Failure to obtain preventive screenings exams may perpetuate foreign-born Mexican women's health disparities.

CHAPTER III

METHODOLOGY

Design

A descriptive correlational cross-sectional design was employed to examine foreign-born Mexican women's elements of client singularity and the client-professional interaction as they related to the outcome variables utilization of healthcare services and adherence to recommended care regimen. For this study, a foreign-born Mexican woman was defined as a person who reported that she was born in Mexico and self-identified as Mexican. The elements of client singularity were as follows: demographic variables - age and marital status; social influences – acculturation and marianismo; environmental resources - education, income and insurance status; affective response fatalism and cancer cultural screening beliefs; cognitive appraisal - blood pressure knowledge. Elements of the client-professional interaction were evaluated through the following: affective support – interpersonal trust in provider; and professional/technical competencies – perceived communication. Outcomes consisted of utilization of five preventive health screening exams: Papanicolaou exam, CBE, mammogram, diabetes screening and blood pressure screening. Identification of adherence to these preventive screening exams was determined by nationally recommended screening guidelines.

Setting

This study was conducted in western and central North Carolina. Between 1990 and 2002 North Carolina experienced a 479% growth in the Hispanic/Latino population and is considered to be a “new Latino destination” (North Carolina Atlas Revisited, 2010; Suro & Singer, 2002). For this study, a foreign-born Mexican woman was defined as a person who reported that she was born in Mexico and self-identified as Mexican.

Current census data revealed that 8.4% of all residents of North Carolina were of Hispanic/Latino ethnicity (U.S. Census Bureau, 2011c) and 65% were of Mexican origin (Pew Hispanic Center, 2011b). Among all Hispanic/Latinos living in North Carolina, 57.8% were born outside of the U.S. and 38.4% were born in Mexico (U.S. Census Bureau, 2011c). Eighty-five of the 100 counties in North Carolina were classified as rural (North Carolina Rural Economic Development Center, n. d.). Participants were recruited from the following counties in central and western North Carolina: Davidson, Guilford, Randolph and Wilkes. Guilford and Davidson counties contain urban areas and Randolph and Wilkes are classified as rural counties (N.C. Rural Economic Development Center). Demographic information related to each of these counties is listed in Table 2.

Table 2

Demographic Information for Selected North Carolina Counties

State or county	Persons of Hispanic/Latino origin ^a %	Foreign-born Latino ^b %	Foreign-born Mexican ^b %	Speak Spanish at home ^b %	No. of churches by county ^c
North Carolina	8.4	57.8	38.4	6.3	
Davidson	6.4	74.6	57.1	5.4	148
Guilford	7.1	41.8	26.0	5.5	118
Randolph	10.4	84.8	77.1	8.7	139
Wilkes	5.4	76.8	58.0	4.7	170

Note: ^aU.S. Census Bureau, State and county quick facts; ^bU.S. Census Bureau, American Fact Finder; ^cNC Home Town Locator.

Sample

A convenience sample of 101 foreign-born Mexican women between the ages of 18 and 75 were recruited from a number of community settings. Criteria for inclusion included: a) women born in Mexico and who self-identified as Mexican; b) able to speak and understand the English or Spanish language; c) 18 -75 years of age; d) resided in U.S. for at least one year; e) seen by a healthcare provider in the previous 3 years; and f) alert and oriented to time, place, and person. Exclusion criteria were: a) Mexican women who had not been seen by a healthcare provider in the previous 3 years; b) Mexican women who self-reported that they were pregnant; c) Mexican women who self-reported having

been diagnosed with a mental illness in the previous 3 months; d) all males; and e) any person who was institutionalized (jail, nursing home etc.). This study focused on foreign-born Mexican women's utilization, adherence and understanding of preventive health screening exams. Thus, males and non-Mexican females were excluded from the study. Four of the 101 participants did not complete the interview and questionnaires due to difficulty with a question, choosing not to respond, or an exclusion criteria response that was not previously disclosed. These women were not included. Thus the final sample size was $N = 97$. A priori power analysis was conducted using nQuery Advisor version 7.0 software to determine the required sample size to answer the research questions. The a priori power analysis indicated that 81 participants would be required to use a multiple liner regression model with a significance level of .05, 80% power, estimated effect size of $R^2 = 0.20$ and twelve independent variables.

Recruitment

Several methods of recruitment were used. Spanish and English flyer were posted at a health department, churches, grocery stores, a bakery, beauty salons and restaurants. Flyers included a brief summary of the study and the researcher's contact information. The researcher announced the study in Spanish and English to potential participants at two churches with a large Mexican congregation. Potential participants were encouraged to share the flyers with other women who might be interested in the study. The investigator was available, before and after church services, to answer potential participants' questions and determine eligibility. Key community health leaders were informed of the study and asked to deliver the flyer to anyone who might be interested.

Social nomination was used. Study participants contacted interested persons and provided them with the researcher's contact information. Socially nominated participants called the researcher directly to determine their own eligibility and to ask questions about the study.

Data Collection Procedures

The researcher screened all potential participants for eligibility by phone or face to face. Based on information contained in the flyer approved by the university IRB, the researcher explained the purpose of the study and time commitment to women who met eligibility criteria. Face to face appointments were made to confirm eligibility and obtain informed consent. After informed consent was obtained, the researcher or research assistants administered the study questionnaires and obtained the clinical measures (height, weight, blood pressure, hemoglobin A1C). Data collection took place in private spaces at locations of the women's choice including private homes, churches, community agencies, mobile home parks and a private university office. At the end of each interview participants received \$15 cash to thank them for their time and assistance. After data collection was completed each person was provided Spanish language health education pamphlets concerning cervical cancer, mammography, diabetes and high blood pressure.

Due to the low literacy level of this group, all study data including consents, research instruments, and the demographic and health history form were read to each participant in their preferred language (English or Spanish). All of the participants chose to complete the interview in Spanish. All study materials were available in Spanish and in English at a written literacy level at or below the 7th grade level. The researcher and research assistants were bilingual in English and Spanish and the research assistants' first

language was Spanish. Informed consent and data collection interviews took approximately one hour to complete.

Human Subjects Protection

Approval for the use of human subjects was obtained from the IRB at the University of North Carolina at Greensboro. Letters of support for subject recruitment were obtained from two churches and a health department. Participants were informed that participation was strictly voluntary, that all information provided would be kept private and confidential and that no personal identifying data would be collected with the exception of the participant's name on the informed consent. Persons were informed orally and by written consent that they could stop participating in the study at any time without penalty. Participants were assured that, if they choose to participate in the study, healthcare services provided to them would not be jeopardized and that pastors, supervisors, healthcare providers, health departments and organization leaders would not be informed of who chose or declined to participate in this study. Instead of names, code numbers were assigned to all questionnaires and research tools. No master list connecting code numbers and participant names existed.

While in the field, data was stored in a locked box in the researcher's locked car trunk. Consent forms were kept in a separate locked container in the locked trunk of the researcher's car. Data was transported by the researcher and was kept in a locked file cabinet at the researcher's home in Greensboro, NC. Consents were kept in a locked cabinet behind a locked door in the dissertation chair's office at the university. All data files entered into SPSS were kept on a password protected computer at the student

researcher's home. The student researcher and dissertation chair were the only ones with access to the paper and password protected electronic files.

Instrumentation

Independent variables in this study were based on two elements of the IMCHB: client singularity and the client-professional interaction. The independent variables based on client singularity indicators included: age and marital status (demographic variables), acculturation and marianismo (social influences); income, education and insurance status (environmental resources); fatalism and cultural attitudes towards breast cancer (affective response); and blood pressure knowledge (cognitive appraisal). Variables based on the client-professional interaction consisted of: trust (affective support) and communication (professional/technical competencies).

The instruments included a Demographic Questionnaire, a Health History Questionnaire, the Short Acculturation Scale for Hispanics (SASH), the Marianismo Beliefs Scale (MBS), the Powe Fatalism Inventory (PFI) or Spanish Powe Fatalism Inventory (SPFI), the Cultural Cancer Screening Scale (CCSS) the High Blood Pressure Prevention I.Q. Checklist, the Interpersonal Trust in Physician Scale (IPTP) and the Communication Assessment Tool (CAT). Clinical measures included weight, height, body mass index (BMI), blood pressure and HbA1C (blood sugar). Each measure is described below.

Demographic Questionnaire

A researcher developed demographic tool was used to characterize the client singularity indicators. Participant's age, length of time in the U.S., marital status, other

persons living in participant's place of residence, educational attainment, insurance status, zip code, income and number of people supported by that income were collected. These items and indicators are similar to national health study participant classification such as the National Health and Nutrition Examination Survey [NHANES] (CDC, 2011d) and the National Health Interview Survey [NHIS] (CDC, 2011e). The researcher created the questionnaire in English and a native Hispanic speaker who was fluent in English translated it into Spanish. Following translation to Spanish, the questionnaire was back translated to English by a native-English speaker who was fluent in Spanish (Berry, 2002).

Health History Questionnaire

A researcher developed health questionnaire was used to obtain the following: self-rated health status; family health history; participant health history; medication information, if Pap smear, mammogram, CBE, diabetes testing or blood pressure had ever been checked; date and place of most recent Pap smear, CBE, mammogram (if age 40 or older), diabetes testing, blood pressure check; number of times screened for each test in previous 5 years; and by whom the screenings were recommended. Also, each person was asked what (if anything) their doctor or nurse has explained concerning each screening exam. These items are similar to those asked in the Medical Expenditure Panel Survey (AHRQ, n. d.), NHANES (CDC, 2011d) and the NHIS (CDC, 2011e). The questionnaire was created in English, translated by a native Hispanic speaker who was fluent in English, and then back translated to English by a native-English speaker who was fluent in Spanish (Berry, 2002).

Independent Variables

Short Acculturation Scale for Hispanics (SASH)

The acculturation level of study participants was measured using the Short Acculturation Scale for Hispanics (SASH) (Marín et al., 1987). The SASH scale was developed and tested in English and Spanish. This instrument contains 12 items that comprise three factors: “language use and ethnic loyalty” (five items), “media” (three items) and “ethnic and social relations” (four items). Each item is measured on 5 point scale. The responses set for the “language use and ethnic loyalty” and “media” subsections were: 1 = only Spanish; 2 = Spanish better than English; 3 = both equally; 4 = English better than Spanish; and 5 = only English. Responses for the “ethnic and social relations factor” were: 1 = all Hispanic/Latinos; 2 = more Latinos than Americans; 3 = about half & half; 4 = more Americans than Latinos; and 5 = all Americans. None of the items in the SASH questionnaire were reverse scored (Marín et al., 1987). Respondents’ answers were summed to generate a total score then divided by the total number of items (12). According to author guidelines, an average score of 2.99 was used to dichotomize participants into a lower acculturation level (≤ 2.99 or less) or a higher acculturation level (> 3.0) [Marín & Gamba, 1996].

Initially, the scale consisted of 17 items constructed from questions on previous acculturation tools. SASH questions were created in English or Spanish and translated into the opposite language using a double translation technique. Spanish speakers from multiple Hispanic ethnicities reviewed the scale to obviate “parochial wording” (Marín et al., 1987, p. 186). Validity was established by exploratory factor analysis (EFA)

conducted with 363 Hispanics (mostly Mexican and Central Americans) and 228 non-Hispanic groups. More than one-half of the Hispanic participants were female and the mean age of all Hispanic participants was 31.2 years (Marín et al.). Based on EFA the following three factors emerged: “language use”; “media”; and, “ethnic social relations” (Marín et al.). Final scores were correlated with participant generation, amount of time living in U.S. and participant’s self-evaluation of acculturation level.

Internal consistency was determined using the Alpha coefficient. The Alpha coefficient for the 12 total items was .92. The five items that comprised the “language” factor had an alpha of .90. The three items that comprised the “media” factor had an alpha of .86 and the four items on the third factor “ethnic and social relations” had an alpha of .78 (Marín et al., 1987). The three factors together accounted for 67% of the variance with factor one, language use, accounting for the majority of the variance (Marín et al.). Since its inception SASH has been used in numerous studies with foreign-born Mexican women, continues to be utilized with this Hispanic subgroup, and is considered a valid and reliable tool (Anders et al., 2010; Mainous et al., 2008; Vella, Ontiveros, Zubia, & Bader, 2011; Vincent, Pasvogel, & Barrera, 2007; Ward et al., 2010). This tool is in the public domain; thus, permission is not needed to use the instrument. Readability level is at the 5.8 Flesch-Kincaid grade level. Completion of this tool took less than five minutes.

Marianismo Beliefs Scale (MBS)

The Marianismo Beliefs Scale (MBS) examined cultural and gender related beliefs of the participants. This tool was available in English and Spanish (Castillo et al.,

2010). The response set for this 24 item questionnaire was on a 4 point scale ranging from (1) strongly disagree to (4) strongly agree. Subscale constructs include: family pillar (five items); virtuous and chaste (five items); subordinate to others (5 items); silencing self to maintain harmony (six items); and spiritual pillar (three items). Participants' responses were summed for the total scale and divided by 24, the number of questions contained in the tool. A higher mean score indicated a greater affinity for qualities that encompass marianismo beliefs (Castillo et al.).

Members of a Latina/o and non-Latino research team created the initial 85 item MBS (Castillo et al., 2010). Following review by two mental health care practitioners and two faculty researchers with expertise in Latina health, ten items were eliminated due to lack of clarity or redundancy. Upon review from two additional faculty members, minor grammatical and construct clarity were established. Thus, content validity was achieved (Castillo et al.). To establish construct validity, 185 Latino students enrolled in an undergraduate English class participated in an exploratory factor analysis for the remaining 75 items. Items were selected based on a component loading of at least 0.30 and if the item did not load on another factor. Five factors emerged: family pillar (5 items; 25.15% of variance); virtuous and chaste (5 items; 13.02% of variance); subordinate to other (5 items; 7.27% of variance); self-silencing to maintain harmony (6 items; 6.19% of variance); and, spiritual pillar (3 items, 5.65% of variance). The total variance accounted for was 57.28%. Subsequently, an additional 185 Latino students from the same undergraduate English class participated in the confirmatory factor analysis (CFA) so that the fit of the proposed five-factor structure could be determined

(Castillo et al., p. 170). Based on the responses from the 370 Latino students, subscale coefficient values were determined for the five subscales: family pillar = 0.77; virtuous and chaste = 0.79; subordinate to other = 0.76; self-silencing to maintain harmony = 0.78; spiritual pillar = 0.85 (Castillo et al.). The MBS has been used in other studies that are ongoing or currently under review (L. Castillo, personal communication, June 23, 2011). The author of this scale (L. Castillo) has granted permission to use the scale in this dissertation. Tool readability was at the fifth grade reading level. The MBS tool required 5-10 minutes to complete.

High Blood Pressure Prevention I.Q.

The High Blood Pressure Prevention I.Q. was developed by the National Heart and Lung Blood Institute to gauge blood pressure knowledge (NHBLI, 1994). The checklist consisted of 12 items that evaluated the respondents' basic blood pressure knowledge. This tool was available in English from the NHLB website and required source acknowledgement to use. It was translated by a native Hispanic speaker who was fluent in English, and then it was back translated to English by a native-English speaker who was fluent in Spanish (Berry, 2002). The response to each question was true or false. Participants were given a score of one for each of the twelve items that they answered correctly and a score of zero for incorrect answers. The number of correct responses was summed to determine the final score with a higher score indicating a higher level of blood pressure knowledge. Tool readability was at the 6th grade reading level and it took approximately 5-10 minutes for each woman to complete the High Blood Pressure Prevention I.Q.

Powe Fatalism Inventory (PFI)/Spanish Powe Fatalism Inventory (SPFI)

As a measure of affective response, the Spanish Powe Fatalism Inventory (SPFI) (Lopez-McKee, McNeill, Eriksen, & Ortíz, 2007) was used to measure the degree of cancer fatalism expressed among the study participants. The English and Spanish versions of the inventory consisted of a 15 item tool with a dichotomous response set (yes/no). Each “yes” response was given a score of one and all “no” responses received a score of zero. The overall score for each participant was summed. A higher score indicated a higher degree of cancer fatalism (Lopez-McKee et al., 2007).

The English language instrument, developed by Powe (1995), was designed to assesses cancer related fatalism among elderly Caucasians and African Americans and was guided by the Powe Fatalism Model and Pender’s Health Promotion Model (Powe, 1995). The English PFI was pilot tested with a low income low educational subpopulation of older adults ($\alpha = 0.84$). All items loaded on one factor (fatalism). Content validity was established by three nursing experts. All items were tested with an additional 192 participants after which the investigator reported that the model explained 38% of the variability and was statistically significant ($df = 5, F = 19.5, p = 0.001$) (Powe, 1995). The alpha coefficient reliability estimate for the PFI was .80 (Powe, 1995).

PFI has been used to compare perceptions of cancer fatalism among African American patients and their providers (Powe, Daniels, & Finnie, 2005); to examine beliefs about HIV/AIDS and fatalism in West Africa (Hess & McKinney, 2007); and, to compare perceptions of cancer fatalism and cancer knowledge among rural elders and African American women (Powe, 2001; Powe, Hamilton, & Brooks, 2006; Powe &

Weinrich, 1999). In 2005, the PFI was translated into Spanish by six Mexican American translators through three independent forward translations into English and three independent back translations. The Spanish version of the tool was named the Spanish Powe Fatalism Inventory (Lopez-McKee et al., 2007). An expert panel of three bilingual/bicultural Mexican Americans evaluated the translated versions to arrive at a consensus of wording and items to be included. Two focus groups were conducted with bicultural and bilingual community members, after which culturally suggested modifications were made (Lopez-McKee et al., 2007).

A convenience sample of 175 Mexican American persons with a range of 13-21 years of education and fluent in English and Spanish completed the English and Spanish PFI in random order during one session (Lopez-McKee et al., 2007). The alpha coefficient reliability estimate was .80 for the Powe Fatalism Inventory (PFI) and .81 for the SPFI. Content validity was 1.0 and was established using the Lynn Content Validity Index (Lopez-McKee et al., 2007). Five factors evolved through principal component analysis and each explained 57% and 59% on the English and Spanish formats respectively. Factors included “predestination”; “pessimism”; “imminent death”; and, “fear”. No statistical difference was identified between the total mean score of the PFI and SPFI. The SPFI has been used to examine factors that affect repeat mammography screening among low-income Mexican American women (Lopez-McKee et al., 2008).

The authors of the PFI and the SPFI have granted permission for the use of their tools in this study. Scale readability was rated at a 6th grade reading level. It took approximately 5 minutes to complete the SPFI. When reliability analysis was conducted,

two items performed poorly on multiple indices and were removed from further analysis. Removal of these items did not change the acceptability of the reliability coefficient, but slightly lowered to overall scores.

Cultural Cancer Screening Scale (CCSS)

The Cultural Cancer Screening Scale (CCSS) is a 20 item questionnaire that was developed to measure affective response related to breast cancer screening and cervical cancer screening among foreign-born Mexican women (Betancourt et al., 2010). The authors of the CCSS recommend that the tool be administered separately for breast cancer screening and cervical cancer screening (personal communication, P. Flynn, July 12, 2011). For this study, only the instrument worded to assess breast cancer screening was used.

This 20 item questionnaire consists of five factors: “catastrophic disease expectations” (CDE) [questions 1-2]; “cancer screening fatalism” (CSF) [questions 3-5]; “sociocultural deterrents” (SCD) [questions 6-10]; “symptomatic deterrents” (SD) [questions 13-15]; and, “negative beliefs about health professionals” (NBHP) [questions 16-20] (Betancourt et al., 2010). Questions one through five and sixteen through twenty are rated on a 7 point Likert scale where 1 = totally disagree and 7 = totally agree. Questions six through fifteen are rated on a 7 point Likert scale where 1 = “not at all” and 7 = “a lot” (Betancourt et al., 2010). For both response sets only the anchors are defined. Likert scale numbers 2-6 are not demarcated by a descriptive phrase. No items were reverse scored for this tool. Scores for CCSS were calculated by adding the sum total of responses to all questions and assessing the mean of the composite score.

Instrument development was guided by Betancourt's theoretical model for the study of culture in psychology (Betancourt, Hardin, & Manzi, 1992; Betancourt & Lopez, 1993) and was developed as a "bottom up" tool meaning that the population of interest (Latina and Anglo women) provided observations that informed the initial item development (Betancourt et al., 2010). Latinas, predominantly of Mexican culture, and Anglo American women were included in all phases of instrument development. This tool is intended to depict a "profile of the screening-relevant cultural factors for a particular population or community" that could inform "evidence based cultural interventions" (Betancourt, et al., 2010, p. 1005).

Reliability and validity for the CCSS were established in three phases. Phase one, consisted of open-ended bilingual semi-structured interviews with 78 Latina and Anglo American women where the Anglo American women served as a comparison group. Women were recruited from free or low cost clinics, supermarkets, churches, mobile home parks, universities and community settings (Betancourt et al., 2010). Interviews were transcribed and coded by "monolingual English and bilingual Spanish-speaking judges using standard content analyses" (Betancourt et al., 2010, p. 995). Themes elicited from content analysis identified cultural factors related to breast and cervical cancer screening.

In the second phase of the CCSS development, cancer related cultural themes were employed to develop 60 similarly worded questions for the breast and cervical cancer scale. This pilot version was administered to 161 Latina and Anglo women. A double back-translation procedure was used to evaluate equivalence of the English and

Spanish formats. Finally, a blind back translation was completed (Betancourt et al., 2010). Based on statistical analysis and participant suggestions 22 items were eliminated. Questions that were worded as dichotomous variables were eliminated or changed to support a 7-point Likert scale and internal consistency was “adequate” (Betancourt et al., 2010, p. 996).

Phase three consisted of a multi-stage stratified sample yielding 314 Latina and Anglo women who had never been diagnosed with breast or cervical cancer. One hundred fifty-eight women (84 Latina, 74 Anglo) completed the breast cancer version of the tool while 156 (84 Latina, 74 Anglo) completed the cervical cancer version. “The mean score for each factor from the breast cancer section was not significantly different from the mean score on the corresponding factor for the cervical cancer section” (Betancourt et al., 2010, p. 998). Thus, according to the investigators, questions for the two sections could be collapsed into one instrument. The total variance accounted for by this instrument was 65.11% ($\alpha = .84$) and 62.55% ($\alpha = .83$) for the Latina and Anglo sample respectively. Betancourt and colleagues (2010) found that women who scored higher on the CCSS had a lower likelihood of being compliant with mammogram screening and an increased likelihood of having negative emotions related to mammography, clinical breast exams and breast cancer (Betancourt et al., 2010).

Permission to use this tool was received from the second author, P. Flynn. The CCSS Flesch-Kincaid Grade Level for this instrument equals 6.7. The estimated time to complete this tool was 10 minutes. When reliability analyses were conducted two items performed poorly on multiple indices and were removed from further analysis. Removal

of these items did not change the acceptability of the reliability coefficient, but did slightly lower the overall scores.

Interpersonal Trust in Physician (IPTP)

The Interpersonal Trust in Physician (IPTP) tool (Hall, et al., 2002) was used to measure affective support of the healthcare provider as perceived by the women in this study. This tool assessed client view of physician behaviors that facilitate trust based on competence, compassion, reliability, integrity, and open communication. IPTP was scored on a five-point Likert scale where 1 = strongly agree and 5 = strongly disagree. Three negatively worded items (items 2, 3, 8) were reverse scored per instructions from the author of the tool. Next, the responses to all items were calculated to determine the degree of trust that each participant perceived in their healthcare provider. Trust scores may range from 10 – 50, with a higher score indicating a higher degree of perceived trust in a healthcare provider.

Initially, 78 items were generated based on review of existing scales and expert panel suggestions (Hall et al., 2002). These items were grouped into four dimensions: fidelity, competence, honesty, or confidentiality. Based on focus group input, pilot testing and factor analysis, 26 items were retained. These items were tested through a random digit dial national telephone survey after which two items were deleted due to non-response. The remaining 24 items were tested with a regional sample and then a subsample of HMO members in North Carolina. Results from the North Carolina sample were subjected to review by scree plot, absolute loadings, maximum likelihood factor analysis, exploratory factor analysis (EFA) and CFA. Excellent reliability ($\alpha = .93$) and

very good test-retest reliability ($r = 0.75$) were ascertained (Hall et al.). It was determined that a single factor best explained the trust construct and ten items were retained. The IPTP scale has been used among minority and non-minority groups to examine patient's trust in their provider (Barkin, Balkrishnan, Manuel, & Hall, 2003; Bonds, Foley, Dugan, Hall, & Extrom, 2004; Hall et al.) and has been psychometrically tested and translated into Dutch (Bachinger, Kilk, & Smets, 2009). It has been used to inform other trust scales (Berrios-Rivera et al., 2006). An abbreviated version of the IPTP exists and demonstrates adequate reliability and validity (Dugan, Hall, & Trachtenberg, 2005). The full version was used in this study.

No formal Spanish translation of the IPTP exists. The author of this scale granted permission for the tool to be translated into Spanish (M. Hall, personal communication, May 24, 2011). A native bilingual Spanish speaker translated the tool and a bilingual native English speaker back-translated the instrument for use in this study (Berry, 2002). Readability is at the 7th grade level. This instrument took approximately 5 minutes to administer.

Communication Assessment Tool (CAT)

The Communication Assessment tool (Makoul, Krupat, & Chang, 2007) was used to measure foreign-born Mexican women's perception of provider professional/technical competency. This tool is comprised of 15 items on a 5-point Likert scale where 1 = poor, 2 = fair, 3 = good, 4 = very good and 5 = excellent. Items one through fourteen represent the "communication" factor. Item fifteen does not focus specifically on communication, but rather evaluates the respondent's perception of the overall care received. The authors

suggest that it not be included in the final scoring of the communication factor. The total summed score of items one through fourteen were used to measure women's perception of the professional/technical competency. A higher score on items one through fourteen indicates that the respondent perceived a higher degree of communication competency from their healthcare provider.

This tool was developed through a systematic scale development process (Makoul et al., 2007). The authors of this instrument evaluated previous communication skills tools and identified 30 communication tasks. Fifteen items were eliminated based on a series of four focus groups with diverse populations. Next, the tool was administered to 1,011 Wisconsin residents via a University of Wisconsin survey. Twelve items that were designated as "very important" by at least 70% of the respondents were retained (Makoul et al.). In addition to the 12 items the investigators introduced three items that represented gaps in the tool. Pilot tests were conducted to choose the most psychometrically appropriate response scale; a poor-excellent scale was selected (Makoul et al.). Six hundred patients from a medical group participated in a second pilot study of the 15 item questionnaire. Information from the completed surveys was compared to existing patient satisfaction data collected by the medical group and demonstrated sound validity. Finally, 950 patients from 38 different medical groups completed the CAT to assess feasibility of administering the tool by telephone or internet in a non-controlled setting. Respondents or their caregiver (who assisted the respondent with completing the tool) reported that the instructions were easy to follow. Confirmatory factor analysis (CFA) supported that the

first 14 items of the CAT loaded on one factor: communication with the doctor (Makoul et al.). The remaining item is designated as a “staff-oriented item”.

This tool has been used in hospitals (Ferranti et al., 2010; Mercer et al., 2008) and medical residency programs (Myerholtz et al, 2008). Ferranti and colleagues administered the tool to 700 patients age 18 and older in a large urban academic medical center. Myerholtz and colleagues tested the tool with 81 patients who were cared for in an emergency department of a large urban academic hospital. Readability was at the 4th grade level. It took less than 5 minutes to administer this tool to each of the women in this study.

Dependent Variables

Health outcomes were the dependent variables and preventive health screening recommendation were the focus for adherence and utilization. The researcher and research assistants asked participants if they had ever obtained a Pap smear, mammogram, CBE, diabetes screening or blood pressure screening in the previous five years and, if so, the number of exams obtained and month or year of their most recent exam. The first dependent variable (TOT_UTIL) was comprised of the cumulative number of screening exams each women had obtained in the previous five years (i.e. may have received more than one pap smear, mammogram CBE, diabetes screening or blood pressure check in previous five years). Utilization of Pap exam screening services was limited to women age 21 – 65 (excluding those who had had a hysterectomy for non-cancerous reasons) who reported that they obtained the exam at least once in their lifetime. Mammography utilization consisted of women 40 years of age or older and

women less than 40 years of age with a positive family history of breast cancer who received at least one mammogram in their lifetime based on ACOG guidelines (2009b). All of the women were included to assess utilization for CBE screening, and diabetes and blood pressure screening. These utilization markers and measurement are similar to previous national health interview items such as those used in NHANES (CDC, 2011d), and NHIS (CDC, 2011e).

The second primary outcome variable (UTILEVER) consisted of the number of specific types of health screening services (Pap smear, mammogram, CBE, diabetes screening and blood pressure screening) that each woman had obtained in the previous five years. Dichotomous variables were created to distinguish those who had ever had any of the exams (yes) from those who had never had an exam (no). A composite score (0-5) was calculated to determine the number of specific health screening services each woman had obtained at least once in the previous five years.

The third primary outcome variable, TOT_MEET, consisted of adherence to recommendations from the USPSTF (2010) recommendations for regular Pap smear, mammogram, CBE, diabetes screening and blood pressure testing. When these guidelines were not explicit, specialized national guidelines were used to evaluate adherence (ACS, 2011a; ACOG, 2009a, 2009b; ADA, 2009; NHLBI, 2003). Based on ACOG guidelines (2009a) women were considered adherent to Pap smear (meetPAP) recommendations if they had received at least one Pap smear in the past two years. Women who had a hysterectomy for a non-cancer reason and those who were less than 21 years old or older than 65 were not included in analysis of adherence to Pap smear recommendations

(ACOG, 2009a). Participants were considered adherent to CBE recommendations (meetCBE) if they were ≤ 39 years of age and received at least one CBE in the previous three years and (ACS, 2010). Women ≥ 40 years of age needed to have had the exam at least one time in the previous year to meet adherence standards (ACS, 2011a).

Mammography adherence (meetbreast) was determined based on ACOG (2009b) screening recommendations. Participants age 40-49 and women less than 39 years of age who had a family history of breast cancer were considered adherent to mammography screening if they had obtained at least one mammogram in the previous two years (ACOG, 2009b). Women who were ≥ 50 years of age and had at least two mammograms in the preceding five years were classified as adherent to mammography screening standards. Women who were less than 40 years of age who did not have a family history of breast cancer were excluded from analysis of adherence to mammography recommendations.

The ADA Diabetes Standards of Care (2009, 2010, 2011) were used to identify women who met adherence for diabetes screening (meetDIAB). The ADA advocates diabetes screening based on certain risk levels. Specifically, all persons who were not previously diagnosed with diabetes, had a BMI ≥ 25 kg/m² plus an additional risk factor (in this case high-risk race/ethnicity) met adherence standards (meetDIAB) if they had a blood glucose screening at least once in the preceding 12 months. Additionally, any participants who ≥ 45 years of age were deemed adherent if they had a blood glucose screening at least once in the preceding 12 months.

Adherence to blood pressure (meetHTN) screening was determined by the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7) report standards (NHLBI, 2003). For the purpose of this study participants who had not been diagnosed with hypertension and had their blood pressure evaluated at least once in the previous two years met adherence guidelines. In addition to the adherences for each specific type of screening, total adherence scores (TOT_MEET) (adherence to Pap exam, CBE exam, mammogram, diabetes testing, blood pressure check) were summed and analyzed as a composite score (0-5).

Clinical Measures

Clinical measures were assessed for descriptive and explanatory purposes, but were not utilized as independent or dependent variables.

Weight

Weight was measured and recorded in kilograms using the BWB-800 electronic scale. This scale has a capacity up to 200 kilograms with accuracy of 0.05 kilogram. Prior to measuring a participant's weight, the scale was placed in kilogram mode and 000.00 reading was identified (CDC, 2002). Each person was asked to remove her shoes and coat and stand in the center of the scale (CDC, 2002). To insure safety, the researcher or research assistant assisted the participant to step onto and off of the weight scale and stood beside the participant while persons were weighed.

Height

Standing height was measured using the Seca 217 scientific stadiometer and was recorded in centimeters. Each participant was asked to remove her shoes. The researcher

and research assistants instructed each participant to place her back against the vertical backboard of the stadiometer and position her heels together “with both heels touching the base of the vertical board” (CDC, 2002, p.3-3). Prior to measuring standing height the researcher and research assistants asked participants to take a deep breath and hold it while the headboard was positioned (CDC, 2002).

Body Mass Index (BMI)

Body mass index is an indicator of body obesity (CDC, 2011f). BMI was calculated by dividing the subject’s weight in kilograms by the height in meters squared (CDC, 2011f). Weight status was determined using the following guidelines: below 18.5 = underweight; 18.5 – 24.9 = normal; 25.0 – 29.9 = overweight; and 30.0 and above = obese (CDC, 2011f).

Blood Pressure

Blood pressure measurements were obtained as specified by the JNC 7 recommendations (NHLBI, 2003). Each participant was asked to “be seated quietly in a chair for at least 5 minutes with feet on the floor and arm supported at heart level” (NHLBI, p. 4). The proper sized cuff (cuff bladder to encircle a minimum of 80% of the arm) was used for each participant. Using a Littman® 3M Cardiology II stethoscope, systolic blood pressure was evaluated as the point at which the first of two or more sounds were heard and diastolic blood pressure was measured as the point of the absence of sounds (NHLBI). Mastectomy side arms were not used. Each participant had two blood pressure readings taken at least 5 minutes apart. Systolic reading one and two and diastolic reading one and two were averaged to determine the most accurate blood

pressure for each participant. Persons with an average reading of 140 mm HG/ 90 mmHG or above were classified as hypertensive (NHLBI). In addition, systolic hypertension and diastolic hypertension were assessed by the JNC 7 guidelines as listed in Table 3.

Table 3

JNC 7 Blood Pressure Classifications^a

BP Classification	SBP mmHG	DBP mmHG
Normal	<120	and <80
Prehypertension	120-139	or 80-89
Stage I Hypertension	140-159	or 90-99
Stage II Hypertension	≥160	or ≥ 100

Note. ^aSeventh report of the Joint National Committee on prevention, detection, evaluation, and treatment of high blood pressure, 2003.

Hemoglobin A1C (HbA1C)

Study participants' blood sugar was assessed using the Bayer A1C Now+ ® System, which measures the Hemoglobin A1C (HbA1C) level. The HbA1C level equates to the amount of glycolated hemoglobin in the blood. The test includes a simple, 3-step procedure. Using aseptic technique a lancet finger stick was performed to obtain a drop of blood from the first, second, or third fingertip and the drop was placed in the blood collector. The blood sample was inserted into the solution that accompanied the Bayer A1C Now+ ® System and a cassette was inserted into the A1C machine. Finally,

the blood solution was placed on the pad of the cassette. After 5 minutes, test results were displayed on the A1C machine. Accuracy and precision of this test were established through A1C Now+ fingerstick comparative testing and A1C Now+ venous comparative testing using the National Glycohemoglobin Standardization program (Bayer Diabetes Care, 2011; Bode, Irvin, Pierce, Allen, & Clark, 2007). It took approximately 7 to 10 minutes to perform this test. An A1C ≤ 5.6 was considered normal, a range of 5.7-6.4% implied that a person had prediabetes and is at high risk of developing diabetes while an A1C of 6.5% or higher indicated that a person had a glucose level indicative of diabetes.

Data Analysis

The researcher created a codebook for data input and analysis purposes, and the researcher and a trained research assistant entered the data into statistical software. Prior to data analysis, two rounds of validation were conducted. For the first round a random number was chosen and an integer of 10 was added to it so that 10% of all data was reviewed. No concerns were noted. In the second validity check a random number was chosen and an integer of 20 was added meaning that an additional 5% of all data were reviewed for accuracy and completeness. No concerns were noted by the two researchers. All data was assessed for assumptions of normality, missing and extreme outliers, skewness, homoscedasticity assumptions of normality and linearity, and no concerns were noted. Statistical data was generated using the Statistical Package for Social Sciences (SPSS), version 18.0 (SPSS, Inc., Chicago, IL). Descriptive statistics (frequencies, means, proportions and ranges) were used to characterize the sample participants CS, CPI, and health outcome indicators. Tool scores were calculated

according to the respective author's recommendations and mean, median, mode, range and standard deviation were determined. Reliability of tool items was evaluated using measures of internal consistency (Cronbach's alpha coefficients or Kuder Richardson coefficient). Variables were analyzed according to the appropriate level of measurement. The first level bivariate correlations were deemed significant if all assumptions were met and $\alpha < .05$.

Measures of multicollinearity were evaluated and no concerns of multicollinearity were found. Multiple linear regression analysis or logistic regression analysis was employed to examine the association between the independent variables and dependent variables. For research question 1-3 an a priori power analysis with 12 independent variables, a minimum sample of 81 and an R^2 of .20 provided at least 80% power at $\alpha = 0.05$ level of statistical significance. Multiple logistic regression analysis was based on having at least ten participants per independent variable (Peduzzi, Concato, Kemper, Holford, & Feinstein, 1996). The independent variables age, acculturation levels, income and insurance demonstrated minimal variance and were not included in any of the regression models. Marital status responses were dichotomized as not married/partnered or married/partnered. Education responses were dichotomized as completed less than high school or high school or more. Specific analysis for each research question is detailed below.

RQ 1): Does client singularity influence health outcomes among foreign-born Mexican women?

RQ 1 a): Multiple linear regression analysis was employed to examine associations between the client singularity independent variables of demographic characteristics (married/partnered), social influence (marianismo), environmental resources (high school education), affective response (fatalism, cultural cancer screening beliefs) cognitive appraisal (blood pressure knowledge), and the dependent variable total health care screening utilization (TOT_UTIL) which incorporates the total composite number of services used over the previous five years (Pap smear, mammogram and \geq age 40, CBE, diabetes testing and blood pressure check).

Additionally, multiple linear regression analysis was used to assess the associations of the client singularity variables and the number of the five screening exams (Pap smear, mammogram, CBE, diabetes testing and blood pressure check) that the participant had ever used (UTILEVER).

RQ 1 b): Multiple Linear regression analysis was employed to examine associations between the client singularity independent and the dependent variable adherence to nationally recommended screening standards (TOT_MEET) [total composite number of Pap smear, CBE, mammogram if age \geq 40 or \leq 39 with family history of breast cancer, diabetes testing and blood pressure checks in the previous 5 years] (ACOG, 2009a, 2009b; ACS, 2011a; ADA, 2009; NHLBI, 2003).

RQ 2): Does the client-professional interaction influence health outcomes among foreign-born Mexican women?

RQ 2 a): Multiple linear regression analysis was employed to examine associations between the predictor variables of affective support (trust) and

professional/technical competencies (communication) and the dependent variable TOT_UTIL. Similarly, multiple linear regression was used to assess the association between trust, communication and UTILEVER.

RQ 2 b): Multiple regression analysis was employed to examine associations between the predictor variables of affective support (trust) and professional/technical competencies (communication) and the dependent variable (TOT_MEET).

RQ 3): Does client singularity and the client-professional interaction influence health outcomes among foreign-born Mexican women?

RQ 3 a): Multiple linear regression analysis was employed to examine associations between the client singularity and client-professional interaction predictor variables and the outcome variable TOT_UTIL. A separate multiple linear regression analysis was used to assess the association between all independent variables (entered simultaneously) and the outcome variable UTILEVER.

RQ 3 b): Multiple logistic regression was executed to determine the association between all independent variables and the dichotomous outcome variable meetPAP. A separate multiple logistic regression was used to assess the independent variables with each of the following: meetbreast; meetCBE; meetDIAB; and meetHTN.

Multiple linear regression analysis was employed to examine associations between the independent variables of client singularity and the client-professional interaction as they were related to the dependent variable TOT_MEET.

Qualitative Data Analysis

Qualitative data consisted of responses to the following questions: 1) Tell me what your doctor or nurse has told you about the Pap exam; 2) Tell me what your doctor or nurse has told you about a clinical breast exam (performed by the doctor or nurse); 3) Tell me what your doctor or nurse has told you about mammography; 4) Tell me what your doctor or nurse has told you about the test for diabetes; and 5) Tell me what your doctor or nurse has told you about a blood pressure check. Basic content analysis was used to descriptively code the women's responses. The codes were determined independently by the researcher and a nursing expert in qualitative methods. A third nurse researcher further validated the findings (Richards & Morse, 2007).

Summary

A descriptive correlational cross sectional design was employed to examine elements of client singularity, the client-professional interaction, and health outcomes derived from the IMCHB. This study was conducted in central and western North Carolina in rural and urban settings. A convenience sample of 97 foreign-born Mexican women between the ages of 20 and 71, who had lived in the U.S. for at least one year and who had seen a healthcare provider within the previous three years, were recruited. Sites for recruitment included a health department, churches, grocery stores, beauty parlors, restaurants, and trailer parks. Additionally, social nomination was used to recruit women. Eight data collection tools were used. Analyses consisted of measures of central tendency, descriptive statistics, correlations and logistic and linear regression. Preventive health screenings were defined as: Pap smear, CBE, mammogram, diabetes testing, and

blood pressure check. Adherence to these screening exams was assessed using national recommended guidelines.

CHAPTER IV

RESULTS

Findings from the descriptive correlational study are presented in this chapter. A report of the participant characteristics and qualities as defined by the Interaction Model of Client Health Behavior (IMCHB) are outlined and findings from the analysis of the research questions are presented.

Elements of Client Singularity

Sample Characteristics

Participants ($N = 97$) were women between the ages of 20 and 71 ($M = 37.46$, $SD = 9.07$) who self-identified as Mexican, reported that they were born in Mexico, and had seen a health care provider at least once in the previous three years. Almost two-thirds (64.6%) of the women were between 20-39 years of age. The women in this study reported living in the U.S. between two and twenty four years ($M = 11.86$, $SD = 4.81$, range 2-24). Based on the woman's self-report of place of birth, 60.6% were from Central Mexico (Aguascalientes, Guanajuato, Federal District, Michoacán, Mexico state, Puebla, Querétaro, San Luis Potosi), 17.0% from Northern Mexico (Chihuahua, Durango, Sinaloa, Tamaulipas, Zacatecas), 12.8% from the Pacific coast of Mexico (Guerrero, Jalisco); 8.5% from Southern Mexico (Veracruz), and 1% from Baja California. The state with the greatest representation was Guanajuato (22.8%), followed by Michoacán (12.8%).

The majority of the women were married or partnered (83.3%). The women lived with their husband and children (68.0%) or only their children (11.3%). A majority of the women (92.8%) reported that they had at least one child. More than one fourth (28.9%) reported having three children, another 13.4% had four children, 7.2% had five children and one participant stated that she had seven children. Demographic characteristics and environmental resources are summarized in Table 4.

Table 4

Demographic Characteristics and Environmental Resources (N = 97)

Variable	<i>n</i>	%
Age		
20 - 29	17	17.7
30 - 39	45	46.9
40 - 49	25	26
50 - 59	6	6.3
≥60	3	3.1
Marital Status		
Single	9	9.4
Married/Partnered	80	83.3
Separated/Divorced	5	5.2
Widowed	2	2.1
Education (highest level attained)		
Less than grade school	9	9.4
Grade School	37	38.5
Middle School	12	12.5
High School	27	28.1
Trade/Technical School	6	6.3
College Degree	5	5.2
Income		
\$0 - \$5,000	23	26.1
\$5,001 - \$9,999	23	26.1
\$10,000 - \$19,999	29	33.0
\$20,000 - \$29,999	11	12.5
\$30,000 - \$39,999	1	1.1
\$40,000 - \$49,999	0	0
≥ \$50,000	1	1.1
Insurance		
No Insurance	86	89.6
Private	8	8.3
Medicare	1	1
Other	1	1

Social Influence

Social influence was measured using the Short Acculturation Scale for Hispanics (SASH) tool and the Marianismo Beliefs Scale (MBS). In this study the reliability coefficient (Cronbach's alpha) of the SASH tool was acceptable ($\alpha = .869$). The mean score was 1.59 ($SD = .489$; range 1.0-3.25; $n = 92$). Findings for acculturation revealed that 94.8% of the women had a low level of the acculturation.

The reliability coefficient (Cronbach's alpha) for the MBS scale was .851. The mean score was 2.59 ($SD = .302$, range 1-5, $n = 92$). Women's scores indicated that they had a moderate affinity to marianismo beliefs. In areas related to the family, the women agreed or strongly agreed with statements about motherhood such as "A Latina must be the source of strength for her family" and "A Latina mother should teach her children to be loyal to the family" but disagreed or strongly disagreed with statements about a woman's sexual role including "A Latina should satisfy her partner's sexual needs without argument" and "A Latina should not talk about sex."

Environmental Resources

All of the women had received some type of formal education and 93.8% attended school in Mexico. In the Mexican school system, grade school is considered completed after the sixth year of education, middle school is completed after the ninth grade of education and high school is completed after the 12th year of schooling. School attendance is mandatory through the 9th grade. The majority of the women in this study (59.8%) reported that they had less than a high school education; nine women (9.3%) attended less than five years of schooling. Additional details are noted in Table 4.

Income distribution for this sample was skewed at the lower end of the designated income brackets (see Table 4). More than half of the women (52.2%) reported that their annual income was less than \$10,000 per year. In fact, 26.1% reported an annual income of \$5,000 or less. More than 80% of the women who participated in this study reported that they earned less than \$20,000 per year. The majority of women approximately nine out of ten women (89.6%) reported that they did not have any form of health insurance.

Cognitive Appraisal

Responses to the Check Your High Blood Pressure Prevention checklist revealed a wide variation in the women's understanding of basic blood pressure information. The mean score was 7.08 ($SD = .1.67$; range 3-11; $n = 97$). More than half (53.6%) of the women responded correctly to at least seven of the twelve questions while 14.4% of women in this study answered half or less than half of the questions correctly. Only 7.2% answered 10 or 11 of the questions correctly and no one in this study answered all twelve questions correctly. Participants gave the highest percentage of correct answers (95.9%) to the question "If you're overweight, you are two to six times more likely to develop high blood pressure" followed by "High blood pressure is not life-threatening" (87.6%), and "Americans eat two to three times more salt and sodium than they need" (84.9%). Questions most frequently answered incorrectly included: "You have to exercise vigorously every day to improve your blood pressure and heart health" (88.7% incorrect), followed by "Stress causes high blood pressure" (76.3% incorrect) and "High blood pressure has no symptoms" (72.6% incorrect).

Affective Response

The Spanish Powe Fatalism Inventory (SPFI) and the Cultural Cancer Screening Scale (CCSS) measured affective response. The SPFI was used to measure overall level of cancer fatalism (not specific to any type of cancer). The reliability coefficient (Kudar Richardson) for the Spanish Powe Fatalism Inventory was .757. The mean score of 4.28 (*SD* 2.90; range 0-12; *n* = 97) suggests a low level of cancer fatalism for the women in this study.

The CCSS addressed beliefs about breast cancer and breast cancer screening. The alpha coefficient for the CCSS was .825, an acceptable degree of internal consistency. The mean score for study participants was 2.26 (*SD* .877; range 0.50 – 5.0; *n* = 96) out of a possible seven. A lower score indicated fewer perceived obstacles towards obtaining breast cancer screening, a lower sense of breast cancer fatalism, and a higher level of confidence in health professionals who perform breast screening exams (CBE and mammogram).

Elements of Client-Professional Interaction

Affective Support

Affective support was measured using the Interpersonal Trust in a Physician (IPT) scale and the reliability coefficient (Cronbach's alpha) was .863. The mean trust score for the study participants was 36.6 (*SD* 6.81; range 18-49; *n* = 95). A score of 50 indicates the maximum level of trust in one's physician. Thus, this sample perceived a moderate level of trust in their physician.

Professional/Technical Competencies

The Communication Assessment Tool was used to measure professional/technical competencies. The alpha reliability coefficient for the Communication Assessment Tool (CAT) was .971 indicating excellent internal consistency. The mean score was 49.5 (*SD* 13.17; range 16–70; *n* = 95) indicating that the women perceived that their provider had moderate to high communication abilities.

Utilization and Adherence of Preventive Health Screening Recommendations

The women were asked if and how often they had five specific preventive health screenings (Pap exam, CBE, mammogram, diabetes screening, blood pressure screening); where they had the screenings; and who encouraged, suggested or told them to have the screenings. The responses allowed determination and classification for each woman's total utilization of screenings over the past five years (TOT_UTIL), number of specific type of screenings over the past five years (UTILEVER), adherence to national recommendations (TOT_MEET), and site of screenings and recommendation source(s).

Papanicolaou Exam

Virtually all of the women (96.9%) had received at least one Pap smear in their lifetime and the vast majority of women (90.5%) met adherence guidelines for the Papanicolaou exam based on ACOG recommendations (2009a). ACOG suggests that: women 21-30 years of age receive a Pap exam every two years; starting at 30 years of age women who have had three normal screenings receive the exam every third year; and that starting at age 65 or 75 screenings are no longer necessary. Approximately three fourths (78.7%) of the participants who had a Pap exam revealed that their most recent

pap smear took place within the past year and more than half (55.5%) of the women reported having an annual Pap exam. Ninety point five percent of the women met adherence guidelines based on the ACOG (2009a) national recommendations. Women who met the guidelines shared the following characteristics: 83.7% were married/partnered; 62.8% had not graduated from high school; 90.6% did not have health insurance; and 84.2% earned less than \$20,000 per year.

The local health department was the most common venue for the Pap exam (45.2%) followed by community or hospital clinics (34.4%). Four women reported having their most recent Pap exam in Mexico. Recommendations to have the Pap exam came from the women's healthcare provider (58.8%), a female relative (7.2%), a friend or neighbor (5.2%) or a community health worker (2.1%). One-tenth of the women reported that "they knew" to have the exam, and 8.2% revealed that no one had ever recommended that they have a Pap exam.

Clinical Breast Exam

When participants were asked if they had ever received a CBE, 92.5% of the women reported having at least one CBE in their lifetime. American Cancer Society guidelines (2011a) recommend that women 20 to 39 years of age should have a clinical breast exam preferably every 3 years and women ≥ 40 years should have a CBE annually. More than three-fourths (78.3%) of the women requiring a clinical breast exam (CBE) received at least one exam within the recommended time frame and were considered adherent with current recommendations. Of those women who were adherent, 85.7%

were married/partnered, 62.5% had not graduated from high school, 90.3% were uninsured and 82.1% reported earning less than \$20,000 per year.

Predominantly, women received their CBE at the health department (44.6%) or at a community health center (27.7%). Thus, 72.3% relied on publicly funded resources to obtain this exam. Fifty- nine point three percent of women stated that their healthcare provider (nurse or physician) advised them to have a CBE. A small proportion of women (4.7%) reported that a TV/radio ad campaign, their sister, a friend or neighbor or a community health worker suggest that they have a CBE and 4.7% disclosed that “I knew” to have a CBE. Almost one fourth of women (23.3%) revealed that no one had ever suggested that they should have a CBE.

Mammogram

The researcher and research assistants asked women about their utilization of mammography services. Based on ACOG (2009b) guidelines, nine women (14.8%) \leq 39 years of age should have had a mammogram based on family history of mother or sister having breast cancer. Additionally, women age 40 – 49 who had received a mammogram in the previous two years or less, and women age 50 – 65 that had an annual mammogram were included in the category of women who should have a mammogram. Findings revealed that 59.5% of the women who needed mammography screening based on recommendations ($n = 42$) were adherent to the guidelines (ACOG, 2009b). Characteristics of the women who met adherence guidelines indicated that 84% were married or lived with their partner, almost three quarters of the women (72%) had not

graduated from high school, the majority of the women (84%) were uninsured and 83% had incomes below \$20,000.

Sixty-two point five percent of the women reported receiving a mammogram at a hospital outpatient department or other radiology clinic. A small portion (5.1%) of women revealed that they had their most recent mammogram at a “mobile clinic”, “at work” or in Mexico. Fifty-nine percent revealed that the recommendation to obtain a mammogram came from the healthcare provider. The remainder of the women reported that a poster campaign, media advisements, or a friend or neighbor explained to them that they should have a mammogram. One participant conveyed that her mother advised her to have a mammogram. However, 15.4% of the women stated that no one had ever advised them to have a mammogram.

Diabetes Screening

Regarding diabetes screening, 90.7% of the study participants had received at least one blood glucose screening in their lifetime. ADA guidelines state that asymptomatic adults who have $BMI \geq 25 \text{ kg/m}^2$ and have additional risk factors should be screened for pre-diabetes and diabetes (ADA, 2009). Those persons who are “members of a high-risk population (e.g. ... Latino...)” or who have a first degree relative diagnosed with diabetes are included in the risk factor category. Additionally, the ADA (2009) recommends that persons whose $BMI < 25$ should begin testing at 45 years of age. It is suggested that persons with negative results (for pre-diabetes and diabetes) be tested at 3-year intervals. Women who fell into one of these categories were considered a candidate for pre-diabetes or diabetes screening. Seventy-eight point nine percent of the

women met adherence guidelines for blood glucose evaluations. The women who met diabetes adherence shared the following characteristics: 92.9% were married/partnered; 71.9% had not completed high school; 87.5% reported that they did not have health insurance; and 87.8% reported an annual income of less than \$20,000.

Health departments (28.7%) or community health centers (25.3%) comprised the most frequent location for these tests followed by a private physician's office (20.7%) or a hospital clinic. Of note, 11.5% of the women reported having their blood glucose tested at a health fair and 5.2% were tested as part of a previous research study. While 49.5% of women reported that their healthcare provider (nurse or physician) had recommended that they have their blood glucose tested. Twelve point one percent of the women disclosed that a female relative, a friend, a neighbor or a community health worker directed them to have their blood glucose checked and 4.4% stated that "I knew" to have it tested. Twenty-eight point six percent reported that no one had ever counseled them to have the test.

Blood Pressure Screening

Women were asked if they had ever had their blood pressure assessed. A large majority of the women (95.9%) reported having their blood pressure evaluated at least once in their lifetime. The NHLBI guidelines recommend screening all persons at least 18 years old who have not been diagnosed with hypertension and that those with a blood pressure < 120/80 be screened every 2 years and persons with a systolic blood pressure of 120-139 mmHG or diastolic reading of 80-89 mmHG be screened annually (2003). The majority of the women (94.1%) were adherent with national recommendations for

preventive blood pressure screening. Similar to the other preventive screening exams, 85.7% of the women were married/partnered and 63.5% had less than a high school education. Ninety point five percent of the women reported that they did not have health insurance and 82.1% earned less than \$20,000 per year.

Twenty-seven point two percent of the women obtained their blood pressure screening at a community health center and an additional 34.8% were screened at the health department. Seven percent of women reported that their most recent blood pressure screening was performed at a health fair, a church, or local YMCA. More than one-half (52.3%) reported that their physician made the recommendation while 9.3% of women stated that a friend, a neighbor, or a community health worker prompted them to have their blood pressure checked. Five women stated that “I knew” to have it checked and almost one-third of women (31.4%) revealed that no one had ever suggested that they needed to have their blood pressure evaluated.

Clinical Measures

The following clinical measures were assessed: height (cm), weight (kg), body mass index (BMI kg/m^2), blood pressure, and HBA1C. The women’s mean BMI was $29.81 \text{ kg}/\text{m}^2$ (SD 5.69). A minority of the women’s weight were within the normal range (18.9%) and the majority were either overweight (43.2%) or obese (37.9%). The women’s mean A1C level equaled 5.66% which, is extremely close to the level of pre-diabetes (5.7%). Almost one-third of the women’s A1C level (30.4%) was in the pre-diabetes range and 15.2% had an A1C level consistent with a diagnosis of diabetes. The majority of the women’s mean systolic blood pressures (71.6%) were normal, more than

one-fourth (26.1%) of the women had systolic readings consistent with pre-hypertension and 2.1% had a systolic blood pressure that equated to stage 1 hypertension. Diastolic readings suggested that the majority (86.4%) of the women were normotensive, 12.5% were pre-hypertensive and 1.1% had a reading consistent with stage 1 hypertension. Details of clinical measures are listed in Table 5.

Table 5

Clinical Measures

	<i>N</i> = 95	%
BMI		
Normal weight range (BMI ≥ 18.5 ; ≤ 24.9)	18	18.9
Overweight (BMI > 25 ; ≤ 29.9)	41	43.2
Obese (BMI ≥ 30)	36	37.9
Hgb A1C	<i>N</i> = 92	
Normal (4.8% - 5.6%)	50	54.4
Pre-diabetes (5.7% - 6.4%)	28	30.4
Diabetes (≥ 6.5)	14	15.2
Blood Pressure/Systolic	<i>N</i> = 88	
Normal (< 120)	63	71.6
Pre-hypertension (120-139)	23	26.1
Stage 1 Hypertension (140-159)	2	2.3
Stage 2 Hypertension (≥ 160)	0	0
Blood Pressure/Diastolic	<i>N</i> = 88	
Normal (< 80)	76	86.4
Pre-hypertension (80-89)	11	12.5
Stage 1 Hypertension (90- 99)	1	1.1
Stage 2 Hypertension (≥ 100)	0	0

Note. BMI (CDC, 2011f). A1C, (ADA, 2011). BP classification, (NHLBI, 2003).

A family history of diabetes was reported by 62.9% of all women, and over half (55.3%) of the women reported having a blood relative with hypertension. Sixteen and

one half percent disclosed that a family member had an abnormal Pap smear and 3.1% reported a blood relative had been diagnosed with cervical cancer. A positive family history of breast cancer was reported in 15.6% of the women.

The women in this study were asked to rate their health as excellent, good, fair or poor. Twenty-nine point nine percent of the women perceived their health as “good”. More than one half (54.6%) designated their health as “fair” (see Table 6). When questioned about where they sought health services when they were ill, nearly two-thirds (64%) of the women reported that they received services from the health department, a federal or state funded primary care clinic or a hospital affiliated free screening clinic (for Pap smear and mammography). Other sources of care were the emergency department and a private physician’s office. Two women revealed that they did not use healthcare services, saying “I don’t get sick” and “I cure myself”.

Table 6

Self-rated Health

Health Rating	<i>n</i>	Frequency %
Excellent	8	8.2
Good	29	29.9
Fair	53	54.6
Poor	7	7.2

Note. *N* = 97.

Women reported the types of medications that they consumed regularly. Approximately one half of the women (49.0%) reported taking vitamins on a regular

basis and 29.5% of the women used calcium. More than one-quarter (25.3%) of the women reported using a method of birth control. None of the women reported using any type of hormone replacement therapy. Less than ten percent (9.5%) of the women reported taking one or more blood pressure medications and a small number revealed that a healthcare provider had prescribed a heart medicine for them. Six women (6.3%) took medications for diabetes; three women reported using an oral hypoglycemic agent, one woman reported using both oral hypoglycemic and insulin and one woman reported that she was not taking any diabetes medications. Additional medications that women reported using included antidepressants, gastrointestinal medication, fish oil, iron, and thyroid medicine.

RQ 1): Does client singularity influence health outcomes among foreign-born Mexican women?

RQ 1 a): What is the association between demographic characteristics (age, marital status), social influence (acculturation, marianismo), environmental resources (insurance, income, education), cognitive appraisal of blood pressure, affective response (fatalism, cultural cancer screening beliefs) and utilization of health services: Papanicolaou testing, CBE, mammography, diabetes testing, and blood pressure screening among foreign-born Mexican women?

Acculturation and insurance status responses had minimal variation and were not included in any of the analyses in the research questions. Age was included in criteria for each screening exam and was not entered a second time. To answer this research question, a first level bivariate analysis was performed using the client singularity

independent variables (married/partnered, Marianismo, education/high school, blood pressure knowledge, fatalism, cultural screening beliefs and the dependent variable total utilization of screening exam (TOT_UTIL) which consists of the cumulative number of preventive screening exams (Pap smears, CBE's, mammograms, blood glucose tests, and blood pressure checks) that the participant obtained in the previous five years. Pearson's *r* correlation coefficient revealed a significant negative correlation between CCSS and total utilization (see Table 7). This finding indicates that a lower score on the CCSS is associated with a higher cumulative number of screening exams obtained in the previous five years. A lower score indicated the women had fewer perceived obstacles towards obtaining breast cancer screening, lower breast cancer fatalism, and higher confidence in health professionals who perform breast screening exams (CBE and mammogram).

Table 7

Pearson's r Correlation Coefficients between Client Singularity Variables and Sum of Total Utilization

Variables	1.	2.	3.	4.	5.	6.	7.
1. Married/Partnered	-	-.066	.076	-.006	-.097	-.229*	.049
2. Marianismo		-	-.085	-.204*	.134	.186	.037
3. High School			-	.129	.066	-.146	-.048
4. BP Knowledge				-	-.180	-.241*	.138
5. Cultural Cancer Beliefs					-	.270**	-.268**
6. Fatalism						-	-.038
7. TOT_UTIL							-

Note. $n = 94$

*Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Using multiple linear regression (See Table 8) the association between client singularity variables and total utilization (TOT_UTIL) was evaluated. The regression model that considered client singularity and client-professional interaction variables as related to total utilization did not show significance. A post-hoc power analysis (nQuery Advisor version 7) revealed insufficient power (56%) to identify associations.

Table 8

Multiple Linear Regression Summary for Client Singularity and Total Utilization

	Standardized Coefficients β	95% Confidence Interval for β	<i>t</i>	<i>P</i>
Married/Partnered	.044	[-2.887, 4.658]	.421	.675
Marianismo	.089	[-2.679, 6.858]	.842	.402
High School	-.035	[-3.086, 2.685]	-.340	.735
Blood Pressure Knowledge	.126	[-.470, 1.310]	1.172	.244
Fatalism	.052	[-.404, .645]	.464	.644
Cultural Cancer Beliefs	-.265	[-3.745, -.443]	-2.461	.016

Note. $n = 94$; $R^2 = .090$; $R^2_{adj.} = .028$; $F = 1.457$; $p = .203$

*P-value significant at the 0.05 level (2-tailed).

**P-value significant at the 0.01 level (2-tailed).

Next, the client singularity variables were evaluated for correlation with the second utilization dependent variable UTILEVER, the number of specific types of health screening services (Pap exam, mammogram, CBE, diabetes screening, blood pressure check) each women obtained at least once in the previous five years (possible range 0-5) [See Table 9]. The Pearson's r correlation coefficient indicated that blood pressure knowledge (TOT_BPQ) was positively correlated with UTILEVER, meaning that higher knowledge of blood pressure was associated with having a higher number of preventive screening exams ($r = .224$). None of the other variables were related to the outcome.

Table 9

Pearson's r Correlation Coefficients between Client Singularity Variables and UTILEVER

	1.	2.	3.	4.	5.	6.	7.
1. Married/ Partnered	-	-.066	.076	-.006	-.097	-.229*	.000
2. Marianismo		-	-.085	-.204*	.134	.185	.060
3. High School			-	.129	.066	-.146	-.169
4. BP Knowledge				-	-.180	-.241*	.224*
5. Cultural Cancer Beliefs					-	.270**	-.186
6. Fatalism						-	.110
7.UTILEVER							-

Note. $n = 94$

*Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Multiple linear regression was performed to examine the association between client singularity variables and the outcome variable UTILEVER (number of specific types of health screening exams in previous five years). Independent variables were entered simultaneously. The overall model was significant ($p = .031$). The regression analysis revealed a significant association between blood pressure knowledge and UTILEVER, indicating that a higher level of blood pressure knowledge was associated with obtaining a higher number of screening exams. Additionally, a higher perceived

sense of fatalism was significantly associated with a higher number of specific types of exams received. The remaining predictor variables in the model were not significant. A small portion of variance ($R^2 = .143$) was explained by this model. A post-hoc analysis (nQuery Advisor version 7) indicated that there was adequate power (83%) to model this variance. Regression statistics are listed in Table 10.

Table 10

Multiple Linear Regression Summary between Client Singularity and UTILEVER

	Standardized Coefficients β	95% Confidence Interval for β	t	P
Married/Partnered	.063	[-.259, .494]	.621	.536
Marianismo	.124	[-.186, .766]	1.212	.229
High School	-.124	[-.464, .112]	-1.216	.227
Blood Pressure Knowledge	.262	[.022, .199]	2.471*	.015
Fatalism	.219	[.001, .105]	2.013*	.047
Cultural Cancer Beliefs	-.197	[-.321, .008]	-1.886	.063

Note. $n = 94$; $R^2 = .143$; $R^2_{adj.} = .084$; $F = 2.446$; $p = .031$

*P value significant at the 0.05 level (2-tailed).

**P value is significant at the 0.01 level (2-tailed).

RQ 1 b): What is the association between demographic characteristics, social influences, environmental resources, cognitive appraisal of blood pressure, affective response and adherence to preventive screening recommendation guidelines for

Papanicolaou testing, CBE, mammography, diabetes testing, and blood pressure screening among foreign-born Mexican women?

To answer this research question, a bivariate analysis was performed using the client singularity variables and the dependent variable TOT_MEET (total composite number of Pap smear, mammogram if age ≥ 40 or ≤ 39 with family history of breast cancer, CBE, diabetes testing and blood pressure checks in the previous 5 years) [ACOG, 2009a, 2009b; ACS, 2011; ADA, 2009; NHLBI, 2003] with a possible value of 0 - 5. Pearson's r correlation coefficients revealed that education was significantly correlated with TOT_MEET ($r = -.264$) [See Table 11]. This finding suggests that not completing high school is related to adhering to a higher number of screening exams (Pap exam, CBE, mammogram, blood glucose test, blood pressure check) as recommended by national standards.

Table 11

Pearson's r Correlation Coefficients between Client Singularity Variables and TOT_MEET

	1.	2.	3.	4.	5.	6.	7.
1. Married/Partnered	-	-.066	.076	-.006	-.097	-.229*	.151
2. Marianismo		-	-.085	-.204*	.134	.186	.111
3. Education/ High School			-	.129	.066	-.146	-.264**
4. BP Knowledge				-	-.180	-.241*	.054
5. Cultural Cancer Beliefs					-	.270**	-.113
6. Fatalism						-	.101
7. TOT_MEET							-

Note. $n = 94$

*Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

A multiple linear regression analysis was performed to explore the relationship between the client singularity predictor variables and the dependent variable sum total adherence to preventive recommendation guidelines for the five screening exams in the previous five years (possible range 0-5) [TOT_MEET]. Independent variables were entered simultaneously. The overall model was significant ($p = .044$). Two of the predictor variables were associated with sum total adherence to the screening exams. Women who were married/partnered were adherent to a greater number of the five

screening exams ($\beta = .209$; $p = .044$). Persons who had less than a high school degree demonstrated greater adherence to the screening exams ($\beta = .234$; $p = .024$) which may be indicative of the large percentage of women who had not completed high school (60.4%). This model explained a small proportion of the variance. A post-hoc analysis (nQuery Advisor version 7) indicated that there was 79% power to model this variance. The regression statistics are presented in Table 12.

Table 12

Multiple Regression Summary for Client Singularity and TOT-MEET

	Standardized Coefficients β	95% Confidence Interval for β	t	p
Married/partnered	.209	[.017, 1.244]	2.042*	.044
MBS	.115	[-.340, 1.211]	1.117	.267
High school	-.234	[-1.010, -.072]	-2.292*	.024
Blood pressure knowledge	.094	[-.081, .209]	.882	.380
Fatalism	.145	[-.029, .142]	1.321	.190
Cultural screening beliefs	-.119	[-.422, .115]	-1.137	.259

Note. $n = 94$; $R^2 = .134$; $R^2_{adj} = .075$; $F = 2.267^*$; $p = .044$

*P value significant at the 0.05 level (2-tailed).

**P value is significant at the 0.01 level (2-tailed).

RQ 2): Does the client-professional interaction influence health outcomes among foreign-born Mexican women?

RQ 2 a): What is the association between affective support (trust) and professional/technical competencies (communication) with utilization of these services: Papanicolaou testing, CBE, mammography, diabetes testing, and blood pressure screening among foreign-born Mexican women?

In order to answer this question, a bivariate analysis was performed using the client-professional interaction variables (trust and communication) and the cumulative number of screening exams (Pap smears, CBE's, mammograms, diabetes screening and blood pressure checks) that a woman received in the previous five years (TOT_UTIL). The analysis indicated two significant correlations. A higher level of trust in provider was positively associated with utilizing a higher number of preventive screening exams (TOT_UTIL) [$r = .395$]. Similarly, a higher rating of the provider's communication skills was related to using a higher number of preventive screening exams (TOT_UTIL) in the previous five years ($r = .306$). The correlations coefficients are listed in Table 13.

Table 13

Pearson's r Correlation Coefficient between Client-Professional Interaction and Total Number of Screening Exams in Previous Five Years (TOT_UTIL)

	1.	2.	3.
1. Trust	-	.568**	.395**
2. Communication		-	.306**
3. TOT_UTIL			-

Note. n = 93

*Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

After assessing the bivariate correlations, a multiple linear regression analysis was conducted between the client-professional interaction predictor variables and total utilization (TOT_UTIL) [cumulative] of the screening exams. The test for the model was significant ($p < .001$). Trust was associated with total utilization ($\beta = .321$; $p = .007$) denoting that a perceived higher trust in the healthcare provider was correlated with a higher total number of screening exams in the previous five years. A small proportion of variance was explained by this model. A post-hoc analysis (nQuery Advisor version 7) indicated that there was sufficient (97%) power to model this variance. Regression statistics are presented in Table 14.

Table 14

Multiple Linear Regression Summary between Client-Professional Interaction and Total Utilization

	Standardized Coefficients β	95% Confidence Interval for β	<i>t</i>	<i>p</i>
Trust	.321	[-7.288, 6.946]	2.758*	.007
Communication	.129	[-.052, .185]	1.111	.270

Note. $n = 93$; $R^2 = .167$; $R^2_{adj} = .148$; $F = 9.093$; $p < .001$

*P value significant at the 0.05 level (2-tailed).

**P value is significant at the 0.01 level (2-tailed).

Additionally, a bivariate analysis between communication, trust and UTILEVER (number of specific types of screening services each women obtained at least once in the previous five years (possible range 0-5) suggested a significant positive association for one of the predictor variables. A higher level of perceived trust in provider was related to ever receiving preventive screening exams ($r = .231$). The predictor variable communication was not significant in the model. Correlations are listed in Table 15.

Table 15

Pearson's r Correlation Coefficient between Client-Professional Interaction Variables and UTILEVER

	1.	2.	3.
1. Trust	-	.568**	.231*
2. Communication		-	.170
3. UTILEVER			-

Note. n = 93

*Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

A multiple linear regression analysis was conducted between the client-professional interaction predictor variables and the number of specific types of health screening services each woman had obtained at least once in the previous five years (UTILEVER) [possible range 0-5]. The overall model was not significant ($p = .074$). A post-hoc analysis (nQuery Advisor version 7) indicated that there was insufficient power (53%) to model the small variance. See Table 16 for the regression statistics.

Table 16

Multiple Linear Regression Summary between Client-Professional Interaction and the Number of Health Screening Exams in Previous Five Years (UTILEVER)

	Standardized Coefficients β	95% Confidence Interval for β	t	p
Trust	.200	[-.005, .046]	1.617	.109
Communication	.056	[-.010, .016]	.449	.655

Note. $n = 93$; $R^2 = .056$; $R^2_{adj} = .035$; $F = 2.686$; $p = .074$

*P value significant at the 0.05 level (2-tailed).

**P value is significant at the 0.01 level (2-tailed).

RQ 2 b): What is the association between affective support and professional/technical competencies with adherence to preventive recommendation guidelines for Papanicolaou testing, CBE, mammography, diabetes testing, and blood pressure screening among foreign-born Mexican women?

The first level of association for this question, the bivariate analysis, demonstrated that there were no significant correlations between the independent variables trust and communication and the sum total adherence to preventive recommendation guidelines for the five screening exams in the previous five years (possible range 0-5) [TOT_MEET].

Correlation statistics are listed in Table 17.

Table 17

Pearson's r Correlation Coefficient between Client-Professional Interaction and Adherence to Preventive Recommendation Guidelines (TOT_MEET)

	1.	2.	3.
1. Trust	-	.568**	.098
2. Communication		-	.138
3. TOT_MEET			-

Note. n = 93

*Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

The multiple linear regression model between the client-professional interaction variables and the dependent variable specific number of five screening exams in the previous five years (possible range 0-5) [TOT_MEET] was not statistically significant ($p = .403$). A post-hoc analysis (nQuery Advisor version 7) indicated that there was insufficient power (20%) to model this variance. Regression statistics are exhibited in Table 18.

Table 18

Multiple Linear Regression Summary between Elements of Client-Professional Interaction and TOT_MEET

	Standardized Coefficients β	95% Confidence Interval for β	t	p
Trust	.035	[-.036, .048]	.281	.779
Communication	.117	[-.011, .032]	.931	.354

Note. $n = 93$; $R^2 = .020$; $R^2_{adj} = -.002$; $F = .917$; $p = .403$

*P value significant at the 0.05 level (2-tailed).

**P value is significant at the 0.01 level (2-tailed).

RQ 3): Does client singularity and the client-professional interaction influence health outcomes among foreign-born Mexican women?

RQ 3 a): What is the association between demographic characteristics, social influences, environmental resources, cognitive appraisal of blood pressure, affective response, affective support and professional/technical competencies with utilization of Papanicolaou testing, CBE, mammography, diabetes testing, and blood pressure screening among foreign-born Mexican women?

A bivariate analysis between the independent variables (client singularity and the client-professional interaction) and total utilization (TOT_UTIL) indicated two significant correlations. Trust was positively correlated with total utilization, indicating that a higher perceived trust in provider was associated with women having a higher number of screening exams in the previous five years ($r = .395$). Cultural cancer

screening beliefs (measured by the CCSS) were negatively correlated with total utilization ($r = -.268$). Thus, fewer perceived obstacles towards obtaining breast cancer screening, lower breast cancer fatalism, and a higher level of confidence in health professionals who perform breast screening exams (CBE and mammogram) were correlated with higher utilization of screening exams over the five year period (TOT_UTIL). Also, higher levels of perceived trust in provider were correlated with higher utilization of screening exams over the five year period (TOT_UTIL). [See Table 19].

Table 19.
*Pearson's r Correlation Coefficient between Elements of Client Singularity,
 Client-Professional Interaction, and Total Utilization of Screening Exams (TOT_UTIL)*

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Married/ Partnered	-	-.066	.076	-.006	-.229*	-.097	-.016	-.168	.049
2. Marianismo		-	-.085	-.204*	.186	.134	.131	.083	.037
3. High School			-	.129	-.146	.066	.074	-.010	-.048
4. BP Knowledge				-	-.241*	-.180	.173	.091	.138
5. Fatalism					-	.270*	-.043	.084	-.038
6. Cultural Cancer Beliefs						-	-.248*	.068	-.268 **
7. Trust							-	.568**	.395 **
8. Communication								-	.306
9. TOT_UTIL									-

Note. $n = 94$

*Correlation is significant at the 0.05 level (2-tailed).

**Correlation is significant at the 0.01 level (2-tailed).

A multiple linear regression analysis was used to further answer this question and the overall model was significant ($p = .005$). The predictor variable Cancer Cultural Screening Beliefs was negatively associated with total number of (TOT_UTIL) of recommended health screenings over the past five years ($\beta = -.238$, $p = .033$), indicating that a lower degree of cancer cultural beliefs was associated with a higher total number of exams obtained in the previous five years. The model explained 22.3% of the variance. A post-hoc analysis (nQuery Advisory version 7.0) indicated that there was sufficient power (96%) to model this variance. Regression statistics are listed in Table 20.

Table 20.

Multiple Linear Regression Summary between Elements of Client Singularity, Client-Professional Interaction, and Total Utilization of Screening Exams (TOT_UTIL) in Previous Five Years.

	Standardized Coefficients β	95% Confidence Interval for β	t	p
Married/Partnered	.083	[-2.101, 5.099]	.828	.410
Marianismo	.052	[-3.388, 5.749]	.514	.609
High School	-.014	[-2.970, 2.591]	-.136	.892
Blood Pressure Knowledge	.042	[-.679, 1.021]	.400	.690
Fatalism	.059	[-.360, .642]	.558	.578
Cultural Cancer Beliefs	-.238	[-3.509, -.153]	2.170*	.033
Trust	.209	[-.046, .470]	1.635	.106
Communication	.210	[-.018, .235]	1.710	.091

Note. $n = 92$; $R^2 = .223$; $R^2_{adj} = .149$; $F = 3.006$; $p = .005$

*P value significant at the 0.05 level (2-tailed).

**P value is significant at the 0.01 level (2-tailed).

A bivariate analysis conducted between client singularity variables, client-professional interaction variables and the number of health screening services each women obtained at least once in the previous five years (possible range 0-5) [UTILEVER] revealed two significant correlations. (See Table 21). Blood pressure knowledge was positively correlated with UTILEVER, signifying that a higher degree of blood pressure knowledge was associated with receiving more specific types of preventive screenings ($r = .224$). Additionally, a higher perceived level of trust in a healthcare provider was associated with obtaining a higher number of preventive screenings ($r = .231$).

Table 21

Pearson's r Correlation Coefficient between Client Singularity, Client-Professional Interaction, and Number of Health Screening Exams Obtained in Previous Five Years.

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Married/ Partnered	-	-.066	.076	-.006	-.229*	-.097	-.016	-.168	.000
2. Marianismo		-	-.085	-.204*	.186	.134	.131	.083	.060
3. High School			-	.129	-.146	.066	.074	-.010	-.169
4. Blood Pressure Knowledge				-	-.241*	-.180	.173	.091	.224*
5. Fatalism					-	.270*	-.043	.084	.110
6. Cultural Cancer Beliefs						-	-.248*	.068	-.186
7. Trust							-	.568*	.231*
8. Communication								-	.170
9. UTILEVER									-

$n = 92$

*Correlation is significant at the 0.05 level (2-tailed).

**Correlation is significant at the 0.01 level (2-tailed).

A multiple linear regression analysis was conducted between the independent variables client singularity, client-professional interaction and the number of specific types of health screening exams obtained at least once in the previous five years (UTILEVER). The test for the overall model was significant ($p = .034$). A higher degree of blood pressure knowledge was associated with more specific types of preventive screenings in the previous five years ($\beta = .238$; $p = .029$). A minimal proportion of variance was accounted for by the independent variables. A post hoc analysis indicated that there was sufficient power (87%) for the model. Regression statistics are listed in Table 22.

Table 22

Multiple Linear Regression Summary between Client Singularity, Client-Professional Interaction, and Number of Specific Types of Preventive Screenings Obtained at Least Once in the Previous Five Years (UTILEVER)

	Standardized Coefficients β	95% Confidence Interval for β	<i>t</i>	<i>p</i>
Married/Partnered	.081	[-.233, .534]	.782	.437
Marianismo	.097	[-.260, .713]	.926	.357
High School	-.139	[-.495, .097]	-1.338	.185
Blood Pressure Knowledge	.238	[.10, .192]	2.217*	.029
Fatalism	.207	[-.003, .104]	1.889	.062
Cultural Cancer Beliefs	-.164	[-.228, .066]	-1.449	.151
Trust	.126	[-.014, .041]	.954	.343
Communication	.081	[-.009, .018]	.637	.526

Note. $n = 92$; $R^2 = .174$; $R^2_{adj} = .096$; $F = 2.215$; $p = .034$

*P value significant at the 0.05 level (2-tailed).

**P value is significant at the 0.01 level (2-tailed).

RQ 3 b): What is the association between demographic characteristics, social influences, environmental resources, cognitive appraisal of blood pressure, affective response, affective support, professional/technical competencies to adherence to preventive recommendation guidelines for Papanicolaou testing, CBE, mammography, diabetes testing, and blood pressure screening among foreign-born Mexican women?

A bivariate analysis between client singularity variables, client-professional interaction variables and total adherence to preventive health screening exams (TOT_MEET) was performed (see Table 23). The Pearson's r correlation coefficient indicated that education was negatively correlated with adherence to preventive screening recommendations (TOT_MEET) [$r = -.264$]. This correlation suggests that less than a high school education is correlated with a higher adherence to preventive recommendation guidelines for the five screening exams.

A test of the multiple linear regression model of the association between client singularity variables, client-professional interaction variables and the dependent variable TOT_MEET (sum total adherence to preventive recommendation guidelines for the five screening exams in the previous five years [possible range 0-5]) was examined. The overall model was not significant ($p = .052$). A post-hoc analysis indicated sufficient power (83%) to assess this model. See Table 24 for regression statistics.

Table 24

Multiple Linear Regression Summary between Client Singularity, Client-Professional Interaction, and Total Adherence to Preventive Health Screening Recommendations TOT_MEET

	Standardized Coefficients β	95% Confidence Interval for β	t	p
Married/Partnered	.238	[.092, 1.337]	2.284	.025
Marianismo	.110	[-.374, 1.206]	1.048	.298
High School	-.244	[-1.045, -.083]	-2.333	.022
Blood pressure knowledge	.078	[-.093, .201]	.724	.471
Fatalism	.118	[-.040, .133]	1.070	.288
Cultural cancer screening beliefs	-.138	[-.466, .114]	-1.208	.231
Trust	-.043	[-.052, .037]	-.324	.746
Communication	.175	[-.007, .037]	1.375	.173

Note. $n = 92$; $R^2 = .163$; $R^2_{adj} = .083$; $F = 2.037$; $p = .052$

*P value significant at the 0.05 level (2-tailed).

**P value is significant at the 0.01 level (2-tailed).

A multiple logistic regression was conducted between the independent variables for client singularity and client-professional interaction and adherence to guidelines for Pap exam (meetPAP), CBE (meetCBE), mammogram (meetbreast), diabetes screening (meetDIAB), and blood pressure screening (meetHTN). None of the models were significant. Summary statistics are presented in Table 25.

Table 25

Logistic Regression Model Summary Statistics

	Chi-square	df	Sig.
meetPAP	14.389	8	.072
meetCBE	13.261	8	.103
meetbreast	2.219	8	.974
meetDIAB	6.975	8	.539
meetHTN	10.428	8	.236

Note. meetPAP = adherence to ACOG (2009a) guidelines.
meetCBE = adherence to ACS(2011) guidelines.
meetbreast = adherence to ACOG (2009b) guidelines.
meetDIAB = adherence to ADA (2011) guidelines.
meetHTN = adherence to NHLBI (2003) guidelines.

Due to the lack of significance in the logistic regression models an alternative analysis descriptive in nature was conducted. This analysis depicts the percentage of women who met the standards for adherence (Table 26) and describes the characteristics associated with the group(s) of women who met adherence guidelines for each screening

exam (Table 27). The proportion and mean score of each CS and CPI indicator variable were similar among the individual adherence screening, suggesting a large degree of homogeneity among the women in this study.

Table 26

Adherence to Screening Recommendations

	n	% Adherence to national recommended screening recommendations
Pap exam	95	90.5
CBE	92	78.3
Mammogram	42	59.5
Diabetes Screening	71	78.9
Blood pressure screening	68	94.1

Table 27

Characteristics of Women Who Met Adherence for Specific Preventive Health Screening Recommendations

	meetPAP n = 86	meetCBE n = 72	meetbreast n = 25	meetDIAB n = 56	meetHTN n = 63
Married/Partnered	83.7%	80.6%	84%	92.9%	85.7%
Education/High School +	37.2%	37.5%	28%	28.6%	36.5%
Marianismo	<i>M</i> = 2.60 (<i>SD</i> .308)	<i>M</i> = 2.59 (<i>SD</i> .300)	<i>M</i> = 2.62 (<i>SD</i> .291)	<i>M</i> = 2.62 (<i>SD</i> .308)	<i>M</i> = 2.59 (<i>SD</i> .327)
Blood Pressure Knowledge	<i>M</i> = 7.08 (<i>SD</i> 1.60)	<i>M</i> = 7.26 (<i>SD</i> 1.61)	<i>M</i> = 7.48 (<i>SD</i> 1.81)	<i>M</i> = 7.05 (<i>SD</i> .1.73)	<i>M</i> = 6.91 (<i>SD</i> 1.73)
Cultural Cancer Beliefs	<i>M</i> = 2.23 (<i>SD</i> .859)	<i>M</i> = 2.15 (<i>SD</i> .802)	<i>M</i> = 2.07 (<i>SD</i> .878)	<i>M</i> = 2.30 (<i>SD</i> .846)	<i>M</i> = 2.31 (<i>SD</i> .327)
Fatalism	<i>M</i> = 4.14 (<i>SD</i> 2.90)	<i>M</i> = 4.18 (<i>SD</i> 2.89)	<i>M</i> = 4.68 (<i>SD</i> 2.90)	<i>M</i> = 4.50 (<i>SD</i> .2.68)	<i>M</i> = 4.53 (<i>SD</i> 2.88)
Trust	<i>M</i> = 36.90 (<i>SD</i> 6.92)	<i>M</i> = 37.76 (<i>SD</i> 6.43)	<i>M</i> = 38.04 (<i>SD</i> 7.97)	<i>M</i> = 36.40 (<i>SD</i> 6.40)	<i>M</i> = 35.73 (<i>SD</i> 6.91)
Communication	<i>M</i> = 50.71 (<i>SD</i> 12.48)	<i>M</i> = 50.96 (<i>SD</i> 12.74)	<i>M</i> = 51.32 (<i>SD</i> 14.21)	<i>M</i> = 49.53 (<i>SD</i> 12.56)	<i>M</i> = 48.53 (<i>SD</i> 11.91)

Qualitative Data Findings

An analysis of responses to the qualitative questions concerning what their doctor or nurse told them about a Pap exam, a CBE, a mammogram, a blood glucose test, and blood pressure screening revealed several focus topics. In the majority of cases the women reported that they received little or no health education on preventive health

screening exams. For example one woman stated that “Tuve que preguntarles por qué yo tenía la presión arterial alta o ellos probablemente no lo habrían explicado” (‘I had to ask them why I had high blood pressure or they probably would not have explained it’) while another reported “nunca explican que es normal” (‘They never explain what normal is’ [blood pressure check]). Additional comments that support this finding are as follows: “Ellos me dieron folletos. El doctor no me dijo nada” (‘they gave me pamphlets. The doctor did not tell me anything’ [about diabetes screening]); “Ellos no me explicaron nada. Sólo que yo lo tengo [presión arterial alta] y necesito la medicina, nada más.” (‘they did not explain anything to me. Just that I have it [high blood pressure] and I need medicine, nothing else’). “No me dijeron nada” (‘they did not tell me anything’ [about mammogram]). “Ellos dicen que van a hacer una Papanicolaou, pero no explican algo más ‘they say they are going to do a Papanicolaou but do not explain anything else.’” “Nada. Ellos sólo lo hacen [Examen de Papanicolaou] y si algo es malo es lo que le dicen. Si es normal ellos no le digan los resultados” (‘Nothing. They just do it [Papanicolaou exam] and if something is bad that is what they tell you. If it is normal they do not tell you the results’).

Regarding a Pap exam, 52.1 % ($n = 50$) of the 96 women who responded stated that their healthcare provider told them “nada” (‘nothing’) or that “ellos no me explican nada” (‘they do not explain anything to me’). More than half (51.0%, $n = 49$) of the women reported that their healthcare provider conveyed a simple statement of the results. Common responses for the results topic include “que todo es bueno” (‘they say it is good’) “todo es normal” (‘it is all normal’) or “ellos me envían un papel que todo es

regular” (‘they send me a paper to say it came out normal’). Three women (3.1%) reported that their provider explained the exam to them. More than a quarter of the women (27.1%, $n = 26$) stated that their healthcare provider told them that the Pap exam was done to check for cancer or an infection. Fifteen women (15.6%) reported that their healthcare provider instructed them on the frequency of the exam.

Of the 93 women who responded to the question “Dígame que le han dicho el doctor/doctora o enfermera sobre el examen del seno por doctor/a o enfermera” (‘Tell me what your doctor or nurse told you about when the doctor or nurse examines your breast’) 18.3% ($n = 17$) reported that their healthcare provider did not tell them anything about the CBE exam and 39.5% ($n = 33$) stated that they were told that their results were normal. Almost one-third of the women ($n = 28$, 30.1%) reported that they were told to check their breasts every month for lumps or abnormalities. Ten women (10.8%) were told that checking their breasts was to prevent cancer and six women (6.5%) stated that they were taught how to do a breast-self exam (BSE). Two women’s responses indicated that the information they were given was inaccurate or possibly that they did not understand what they were told. These responses were “necesita chequearse el pecho cada noche (‘you need to check your breast every night’) and that a CBE is “para prevenir malformaciones” (‘to prevent malformations’).

Concerning mammograms, 42 women were eligible to have the exam based on screening guidelines and 39 of these women answered the question “Dígame que le han dicho el doctor/doctora o enfermera sobre la mamografía” (‘tell me what your doctor or nurse has told you about a mammogram’). Among this group, 7.7% ($n = 3$) women

(7.7%) stated that their doctor or nurse explained what would take place during the exam and 25.6% ($n = 10$) of the women reported that they were told the results without further explanation. Twelve (30.8%) of the women reported that the purpose of a mammogram to see if one has cancer and six women (15.4%) were told the frequency with which to have a mammogram. Seven (17.9%) of the women stated that they had a breast problem (pain, lump, inverted nipple) and obtained a mammogram because of the problem; all of the results were normal. Eight women (20.5%) stated that they were told “nothing” about having a mammogram.

Among women who had not been diagnosed with diabetes ($n = 81$) 79 women answered the question “Dígame que le han dicho el doctor/doctora o enfermera sobre la prueba de diabetes” (‘tell me what your doctor or nurse has told you about blood sugar testing’). Fourteen women (17.7%) verbalized that their healthcare provider told them that the test was to check for “azúcar” (‘sugar’) or diabetes. Many women (40.5 % $n = 32$) stated they were given their test results (“todo es normal” [‘it was normal’], “que salió bien” [‘it came out well’] “es okay” [‘it is okay’]). Ten point one percent of women ($n = 8$) reported that their provider shared information about a healthy diet or weight management and two of the eight women were told the numeric range of normal and abnormal results. Almost one-third (32.9%, $n = 26$) of the women stated that their healthcare provider had told them “nada” (‘nothing’) about diabetes screening.

Fourteen women reported that they had been diagnosed with diabetes and each of them answered the question. Four of the fourteen women (28.6%) stated that they were told they had gestational diabetes during a past pregnancy. Another four women reported

receiving information on a healthy diet, and an equal number stated that their doctor talked with them about exercise. Two women (14.3%) stated that their provider explained long term consequences of the disease. Additionally, one woman reported that her healthcare provider told her that “...que todos tienen [diabetes]... algunas personas lo desarrollan debido ser asustadas o enojado.” (‘...that everyone has it [diabetes]... but some people develop it more because of being frightened or angry’). Finally, one woman stated that, “en mi opinión, no hay educación” (‘in my opinion, there was no education’).

Among the 79 women who were told they did not have high blood pressure 76 responded to the question “Dígame que le han dicho el doctor/doctora o enfermera sobre chequeo de presión arterial” (‘tell me what your doctor or nurse has told you about blood pressure checks’). Twenty-nine women (38.2%) stated that they were not told anything about blood pressure screening and 31 of the women (40.8%) were told that their results were “normal” “okay” or “bien” (‘good’) but received minimal or no additional information. Seventeen point one percent of the women ($n = 13$) reported that they received an explanation of the purpose of the exam, symptoms of high blood pressure or long term consequences (heart attack or stroke). Eighteen women reported that they had been diagnosed with hypertension. Among these women, one-third ($n = 6$) stated that their doctor or nurse had provided information to control their blood pressure either through taking medication, weight management, physical activity, healthy diet or some combination of these strategies. Another third of the women stated that they were told “nada” (‘nothing’) “que tiene presión alta” (‘that you have high blood pressure’) or received a simple explanation of the results: “Todo es bien” (‘it is good’); “es malo” (‘it

is bad'). Four women described potential complications related to hypertension (“puede causar un estroke” [‘It can cause a stroke’]; “para que no tiene un ataque del corazón” [‘...so that you do not have a heart attack’]). One woman expressed doubt about the information she received stating “A veces me dicen que es alta, a veces que es okay. ¿Quién sabe?” (‘sometimes they tell me it is high and sometimes that it is okay. Who knows?’). Only one woman conveyed that she was “well informed” about normal and abnormal results.

Summary

Sample characteristics were assessed and revealed that the women were similar in their marital status, acculturation level, educational attainment, income, and insurance status. Specifically the majority of women were married/partnered, had low levels of acculturation, limited education, low income and no health insurance. Scores on the MBS revealed that the women had a high affinity toward marianismo beliefs, and based on the SPFI their level of cancer fatalism was low. The results of the CCSS indicated that the women perceived few obstacles towards obtaining breast cancer screening, a lower sense of breast cancer fatalism, and a higher level of confidence in health professionals who perform breast screening exams (CBE and mammogram). Concerning blood pressure knowledge, almost all of the women knew that being overweight increased their risk of developing hypertension and the majority were aware that high blood pressure may be life threatening. Additionally, the women expressed a moderate to high level of perceived trust and perceived communications skills with their provider. Clinical measures indicated that the women have higher rates of overweight and obesity compared to other

foreign-born women living in the U.S. and that more than half of the women rated their health as fair or poor.

Multiple linear regression and multiple logistic regressions were performed to answer the three research questions. A higher degree of blood pressure knowledge and a higher perceived sense of fatalism were associated with the number of specific types of health screening exams in previous five years. Being married/partnered and having a lower level of educational attainment were associated with adherence to a greater number of the five screening exams. Perceived trust was a significant predictor of a higher total number of screening exams obtained in the previous five years. Each model explained a small proportion of variance. A descriptive alternative analysis showed that the women's characteristics and mean scores on the tools were similar for adherence to Pap exam, CBE, mammogram, diabetes screening and blood pressure screening. Basic content analysis of qualitative data revealed that a large proportion of women were told nothing about the screening exams or were told their test results, but received no additional information about the test.

CHAPTER V

DISCUSSION

The purpose of this study was to examine the elements associated with foreign-born Mexican women's understanding, utilization and adherence to five preventive health screening exams: Pap exam, CBE, mammogram, diabetes screening and blood pressure screening. Specifically, elements of client singularity (age, marital status, acculturation, marianismo, education, income, insurance, blood pressure knowledge, fatalism and cultural cancer beliefs) and the client professional interaction (trust and communication) were examined in their relationship to utilization and adherence to outcome variables. A discussion of the findings and implications for education, research, practice, policy and systems are presented. Limitations of findings are examined and a final summary of this study is provided.

Elements of Client Singularity

The majority of women in this study were married/partnered. More than two-thirds of the women were of child-bearing age (20 – 40 years of age) and one-quarter were 41 – 50 years of age. By comparison to national and state data sources, the foreign-born Mexican women in this study are less educated and have higher rates of poverty and uninsurance when compared to the total population of foreign-born Mexican women living in the U.S. (Annual Update of the HHS Poverty Guidelines, 2011; DeNavas-Walt, Proctor, & Smith, 2011; Pew Research Center, 2011c; U.S. Census Bureau, 2010b,

2011c). For those women who reported their income and the number of persons supported by that income (n = 77), 87% lived below the 2011 HHS Poverty Guidelines (2011b). This proportion is almost three times the national rate of Mexican women who live below the poverty level (29.9%) [(U.S. Census Bureau, 2011a] and is consistent with recent findings that the median net worth of Hispanic households has decreased by 66% since 2005 (Pew Research Center, 2011). The majority of the women (89.6%) reported that they do not have health insurance, which is more than twice the U.S. and N.C. rate of uninsurance among all Mexican women 65 years old or less (U.S. Census Bureau, 2010b, 2011a).

The women in this study were similar in many features including their acculturation level. Almost all of the study participants (99%) were classified in the low acculturation level based on the SASH tool (Marín et al., 1987). Approximately nine out of ten women (93.8 %) reported that they spoke only Spanish or Spanish better than English, and almost three-quarters (72.2%) stated that Spanish was the only language spoken in their household. Additionally, they showed a greater affinity towards aspects of *marianismo* related to their role as a Latina and a mother but expressed disagreement with statements that supported subservience to their male partner. While *marianismo*, a socially influenced gender role, was not a predictor variable in any of the models, it should be considered when communicating with foreign-born Mexican women.

Having knowledge of blood pressure and its symptoms may increase seeking treatment. In this study, a higher level of blood pressure knowledge was associated with obtaining a higher number of the specific types of health screening exams (Pap exam,

CBE, mammogram, diabetes screening, blood pressure screening) [UTILEVER].

However, Vijayaraghavan and associates (2010) found that foreign-born Mexicans were less likely to be aware of their blood pressure status compared to U.S. born Hispanics.

The majority of women in this study believed that high blood pressure has no symptoms and that stress can cause hypertension. This information is important as Eamranond and colleagues found that "...among those with CVD risk factors, Hispanics who spoke Spanish at home and lived less time in the U.S. had worse control of CVD risk factors," (2009, p.55).

Study results suggested that a lower degree of cancer cultural beliefs was associated with a higher cumulative number of preventive screening exams (Pap smears, CBE's, mammograms, blood glucose tests, and blood pressure checks) that the participant obtained in the previous five years. In other words, women with a lower score on the CCSB perceived fewer obstacles towards obtaining breast cancer screening, lower breast cancer fatalism, and higher confidence in health professionals who perform breast screening exams (CBE and mammogram). These findings are different from those of Fernandez and associates who determined that the belief that breast cancer would result in death was related to non-adherence to repeat mammogram screening (2005). This difference may be due to the women's high access to a usual source of care.

Cancer fatalism was positively associated with the number of specific types of health screening services (Pap exam, mammogram, CBE, diabetes screening, blood pressure check) each women obtained at least once in the previous five years (UTILEVER). The results indicate that the women in this study have a higher perceived

sense of fatalism which was significantly associated with a higher number of specific types of exams received. Previous research has indicated the opposite of these findings. Specifically, fatalistic beliefs may be linked to lesser use of health screenings among Hispanic women especially as related to colorectal cancer screening (Gorin, 2005; Shelton, Jandorf, Ellison, Villagra, & DuHamel, 2011). Abraída-Lanza and colleagues (2007) point out that the behavioral consequences of the belief that fatalism presents causes barriers to preventive screenings has not been adequately addressed and that results should be interpreted cautiously. The results of this study may bring into question the belief that increased fatalism is associated with obtaining fewer preventive screening exams.

Client-Professional Interaction

Interpersonal trust in one's healthcare provider is an essential element of the relationship between the client and health care professional (Kaiser et al., 2011). In this study, a higher perceived sense of trust in a provider and a higher belief in a provider's communication competencies were correlated with the cumulative number of preventive screening exams (Pap smears, CBE's, mammograms, blood glucose tests, and blood pressure checks) that the participant obtained in the previous five years (TOTUTIL). However, in the overall predictor model only trust was significant. While some studies have addressed trust in provider among minority populations (Armstrong, Ravenell, McMurphy, & Putt, 2007; Halbert, Armstrong, Gandy, & Shaker, 2006; O'Malley, Sheppard, Schwartz, & Mandelblatt, 2004), no known recent studies have assessed trust

in provider among foreign-born Mexican women nor its relationship to utilization of preventive services. Thus, the findings of this study provide new information.

Clearly, communication is an area to be improved upon based on the large number of women who reported that their healthcare provider did not explain the purpose for the screening exams or the implication of the findings. Some women expressed a desire for more information about the exams and exam results. The desire to have more information is consistent with previous findings. For example, in a study concerning a diabetes intervention women expressed a need for culturally relevant information on dietary changes, coping strategies and information concerning long-term effects of diabetes and that the health information they were currently receiving was not useful to them (Melancon et al., 2009; Vincent et al., 2006; Weiler & Crist, 2009). Latina women diagnosed with breast cancer perceived that having further health information about breast cancer and treatment options could have decreased their anxiety throughout the treatment regimen (Tejeda et al., 2009). Additionally, Hunter (2005) reported that foreign-born Mexican women rarely received a follow-up call with test results for pap and even when they were contacted, no explanation about the results was offered (Hunter).

Utilization and Adherence to Preventive Health Screening Recommendations

In this study, most women had received at least one Pap smear in their lifetime and the majority of women met adherence guidelines for the Papanicolaou exam based on ACOG recommendations (2009a). These findings are in contrast to the findings from Flores and Bencomo (2009, p. 1936) who reported that foreign-born Mexican women are

the “least likely to have had a Pap test in the previous 3 years” compared to their U.S. born counterparts. The characteristics of the women who were adherent to Pap exam screening are comparable to the findings of Gregg and colleagues (2011) who reported that among a predominantly Spanish speaking group of foreign-born Mexican women, 89% had obtained at least one Pap smear in their lifetime and 82% of the women did not have health insurance. In a similar study, Luque and colleagues (2010) found that 80% of foreign-born Mexican women had met adherence recommendations which were defined as receipt of one Pap smear in the preceding three years and another one within three years of the most recent Pap exam. The women in the study by Luque and colleagues shared similar characteristics to the women in this study in that they had a low mean educational level (8.2 years of schooling), 95% were married, none of the women had health insurance and their average income was less than \$13, 300.

In this study, the majority of the women reported that they had received at least one CBE in the previous five years and more than three-fourths of the women were adherent to guidelines for a CBE. This is in contrast to previous research and reports. Miranda and colleagues (2011) examined a national data set and concluded that “Mexican origin women” reported the lowest rate of CBE’s (54.5%) in the previous year relative to non-Hispanic whites (66%), other Latino ethnicities (58.5% - 65.2%), and black women (69.8%). Higher levels of education, income, and insurance (public and private) “decreased the relative risk of reporting both CBE use ‘beyond past year’ and ‘never use’” (p. 538). While utilization rates are similar between the participants in the

Miranda and colleagues study and the women in this study, the women in this study were more socioeconomically disadvantaged.

In this study the women who met recommendations to have regular mammogram screening were adherent to ACOG standards (2011). According to the National Cancer Institute (NCI, 2011), immigrant women and other women with lower incomes, lower levels of education without insurance, and lacking a usual health care provider are less likely to get screening mammograms. Several studies have investigated the factors associated with mammography utilization and adherence among Latina women (Borrayo et al., 2009b; Graves et al., 2008; Mack, et al., 2009; Schueler, et al., 2008). In a study conducted by Borrayo and colleagues (2009b), 790 women who self-identified as Hispanic were evaluated for adherence with mammography screening. Among the women in the study by Borrayo, 42.3% of the participants were considered adherent to screening recommendations which is lower than the 59.5% of women who were adherent to mammogram in the present study. Two similar studies reported adherence rates between 71% (Graves, et al.) and 83.9% (Mack et al.) among foreign-born Hispanic women. Similarities or differences in these findings should be interpreted cautiously as the sample size of women in the present study is much smaller. None of the previous studies focused exclusively on foreign-born Mexican women. Thus, new information was acquired.

It is noteworthy that 86% of the women who were adherent to mammography screening recommendations in the Borrayo and associates (2009b) were moderately or highly acculturated and that 87.2% had at least a high school education. Only one of the

women in the present study was considered highly acculturated and 39.6% had at least a high school education. Graves and colleagues (2008) reported that the majority of the women who met adherence guidelines in that study had public or private health insurance. Only 15% of the women in the present study had health insurance.

Diabetes

More than three-quarters of the women in this study met ADA adherence guidelines (2009; 2011) for diabetes screening based on self-report. However, almost one-third of the women reported that their healthcare provider did not offer any information about diabetes screening and two-fifths of the women stated that they were told that their test results were normal but did not receive any further information. No known prior research has evaluated adherence to diabetes screening among Hispanics or foreign-born Mexican women. Thus, new information related to foreign-born Mexican women's diabetes screening practices has been identified.

Blood Pressure

The majority of the women in this study met recommended adherence guidelines according to JNC 7 NHLBI standards but received minimal information about blood pressure management or control (2003). Among the women who had not been diagnosed with hypertension less than 20% received any information or education about blood pressure. While some studies have examined hypertension awareness and control among foreign-born Mexican men and women (Barquera, Durazo-Arvizu, Luke, Cao, & Cooper, 2008; Salinas, Eschbach, & Markides, 2008; Vijayaraghavan et al., 2010) prior research has not addressed the incidence or adherence of Hispanic persons to NHLBI

recommendations for blood pressure screening. Thus, new information has been provided.

Clinical Measures

The proportion of women in this study who are overweight exceeds the number of Spanish speaking Hispanics in North Carolina who are classified as overweight (North Carolina State Center for Health Statistics [NCSCHS], 2011). Similarly, the obesity rate for the women in this study is higher than the 24.7% state average for obese Latina women living in North Carolina (Robert Wood Johnson Foundation [RWJF], 2011a). The rate of diabetes and prediabetes in this sample is concerning. Fourteen point seven percent of the women reported that they had been diagnosed with diabetes; this finding is comparable to national data that reports that 13.3% of foreign and native-born Mexicans living in the U.S. have diagnosed diabetes (CDC, 2011f). The rate of diagnosed diabetes for the women is similar to the national average and is of concern because “approximately one-fourth of all persons with diabetes may be under diagnosed” (ADA, 2011). Additionally, North Carolina is one of the 15 states that comprise the “diabetes belt” (Barker, 2011) and has seen a 50% increase in diagnosed cases of diabetes (N.C. DHHS, 2011). In this study approximately one-third of the women had pre-diabetes and none of them indicated that they were aware of their status.

Only one woman in this study had a high blood pressure based on the average of two readings checked by the researcher. Almost one in five women reported they had been diagnosed with high blood pressure. A strong family history of diabetes and hypertension contribute to the women’s risk for these diseases. Sixteen and one half

percent of the women reported that a female relative had at least one abnormal Pap exam. This is concerning because the rate of cervical cancer is higher among Hispanics than for any other ethnicity. Fifteen point six percent of women reported that a family member had been diagnosed with breast cancer. This is important as breast cancer is the leading cause of cancer deaths among Hispanic women.

Sixty-one point eight percent of this sample rated their health as fair or poor and 38.1% of the women ranked their health as excellent or good. The rate of “poor” and “fair” responses is high when compared to the 41.3% of female Hispanics in North Carolina who speak primarily Spanish and report a fair or poor health status (NCSCHS, 2011). Also, the rate is higher than the 50% of Mexican persons living in the U.S who are ≥ 18 years of age and report that their health was less than very good (CDC, 2011e).

Despite being mostly uninsured, 80.9% of the women had a usual source of care based on their response to “when you get sick, where you go?” Women who reported that they went to a physician’s office, a community health center or the health department when they were ill were classified as having a usual source of care. Those who received care at an urgent care clinic or hospital emergency department were classified as having no usual source of care. These are the same guidelines used to define usual source of care in a similar study that evaluated adherence to mammography screening among Hispanic women (Mack et al., 2009). This finding is in contrast with findings from two previous studies that reported that between one-third (González et al., 2009) and two-thirds of foreign-born Mexican women and men (Beal, Hernández, & Doty, 2009) did not have access to a regular source of care.

Almost all of the women in this study had a low acculturation level. Less acculturated Mexican women are more likely to be foreign-born, Spanish speaking, uninsured, have no usual source of care and receive health services at a clinic or health center (Ghaddar et al., 2010). The women in this study share these characteristics except that the majority of the women reported a usual source of care.

Conclusions

The IMCHB model has provided a useful framework to assess foreign-born Mexican women's utilization and adherence to preventive health screening recommendations. The elements of cognitive appraisal and affective response facilitate the assessment of health knowledge and emotional responses to health issues as antecedents to the client-professional interaction. Previous studies have focused on a client's unique characteristics but few have included the elements of the client-professional interaction as predictors of health behaviors and health outcomes; the IMCHB provides this focus. Specifically, evaluating communication as a professional/technical competency and trust as a variable of affective support yielded valuable knowledge concerning the relationship of trust and health care utilization. These findings suggest that the IMCHB model may be valuable in identifying other variables related to utilization of healthcare services and adherence to nationally recommended health guidelines.

The majority of women in this study have many similar characteristics as they were inclined to be less educated, more impoverished, have limited income and lower levels of health insurance coverage compared to the total population of foreign-born

Mexican women living in the U.S. Descriptively, a set of demographic characteristics, social influences and environmental resources indicate that the women in this study are meeting healthcare recommendations despite having a low acculturation level, no health insurance coverage, less schooling, lower income, and higher rates of poverty than the overall population of foreign and native-born Hispanic women. While marianismo, a socially influenced gender role, was not a predictor variable in any of the models, it should be considered when communicating with foreign-born Mexican women because it may influence the way a women perceives a health problem, health information or treatment options.

Concerning cognitive appraisal, the majority of women affirmed that obesity was a risk factor for high blood pressure and that hypertension could have serious consequences. An understanding of health information may improve one's use of preventive screening exams as a higher level of blood pressure knowledge was associated with obtaining a higher number of screening exams. However, knowledge of the link between obesity and hypertension has not precluded the higher than average rate of obesity among the women in this study. These women exhibit and report multiple risks for developing diabetes, stroke, cancer of the uterus, breast, colon and kidney and osteoarthritis (NCI, n.d.; NHLBI, n.d.). Regarding affective response variables, the women demonstrated a low level of fatalism which was related to an increase in number of exams used in a previous five year time frame. Cancer cultural beliefs indicated that women did not espouse negative beliefs about healthcare professionals that conducted

breast cancer screening exams and were not deterred from screening even though cost may have been an obstacle.

One important aspect of this study was the focus on foreign-born Mexican women and the inclusion of the client-professional interaction. Previous research has not considered the elements of the client-professional interaction from the foreign-born Mexican woman's point of view. The women's perceived trust in their healthcare provider was a significant predictor of the total number of preventive screening exams obtained in the previous five years. Findings from this study suggest that among foreign-born Mexican women trust in one's provider was an essential component as it relates to the number of preventive screenings obtained. Additionally, findings from the qualitative portion of this study indicate that there is a strong need for improved health communication not only in language, but also in conveying contextual knowledge. Surprisingly, only one woman commented on the lack of interpreters or a language concordant provider as a barrier to health education. Clearly, communication is an area to be improved upon based on the large number of women who reported that their healthcare provider did not explain the purpose for the screening exams or the implication of the findings.

Regarding the five screening exams, utilization was more closely related to elements of client singularity and the client-professional interaction than adherence. The women in this study are meeting health care recommendations and in many cases exceeding national or state levels. These findings are in contrast to research that has concluded that immigrant women with lower incomes, less education, and who lack

health insurance and a usual source of care do not meet preventive health screening recommendations. One possible explanation for the higher rate of utilization and adherence to preventive health screening recommendations among these women may be that the majority of the women in this study have a usual source of care. Also, the majority of women in this study were multiparous and may have had extended contact with women's healthcare services for child-bearing purposes.

Although few predictor variables were identified, new knowledge in the data about the women who obtained and adhered to screening recommendations guidelines was found. Specifically, trust and communication are closely related with each other and trust in a healthcare provider and having a usual source of care are prominent features among women who utilize and adhere to preventive health screening exam recommendations.

Limitations of the Study

Various limitations of this study are noted. This study employed a cross-sectional design thus, causality cannot be inferred. The study findings cannot be generalized beyond the convenience sample of foreign-born Mexican women who participated in the study. Also, women who had not seen a healthcare provider at least once in the previous three years were excluded from this study which precluded a comparison of characteristics of women who had not utilized or adhered to preventive health screening recommendations.

Following is a discussion of the educational, research, policy and systems implications based on the findings from this study.

Implications for Education

Based on subjective and objective reports from women in this study, deficits exist in health promotion and disease prevention education among foreign-born Spanish speaking Mexican women. A large proportion of women in this study reported that they received little or no information about the purpose of certain health screening exams or the significance of exam findings. One woman reported that she received education concerning possible long-term complications of diabetes including kidney, eye and heart disease, but she was not offered information about how these complications occurred or what preventive measures to take. The National Prevention Strategy and the Committee on Preventive Services for Women (National Prevention Council, 2011; IOM, 2011) emphasize the importance of teaching women about preventive screening exams to promote health and prevent disease.

Clearly, culturally appropriate communication with foreign-born Mexican women is an area to be improved upon based on the large number of participants who reported that their healthcare provider did not explain the purpose for the screening exams or the implication of the findings. Broadening health professional's knowledge concerning cultural competence and collaborative care for foreign-born Mexican women represents a serious challenge for the universities and colleges that are responsible for educating health professionals and for the institutions that employ these individuals (American Association of Colleges of Nursing, 2008; Interprofessional Education and Collaborative Expert Panel, 2011; RWJF, 2011b). Students in the health professions must work in partnership to provide patient centered care, a goal consistent with the IOM

recommendations for improving quality of the healthcare system for the 21st century (IOM, 2001b). For example, nursing students and other health professional students must have opportunities beyond cursory textbook teaching to interface with disadvantaged populations and practice culturally appropriate communication skills as a means of facilitating trusting relationships. In addition to traditional healthcare environments, students should participate in community engaged scholarship projects such as preparing and providing culturally appropriate chronic healthcare education to clients receiving services at community health centers, offering health promotion teaching to underserved communities and assisting in community-wide projects that address the gaps in the multitude of social determinants of health. Institutions of scholarship can support this endeavor by rewarding faculty for community engaged scholarship.

Providing Spanish language culturally appropriate healthcare and health education in a straightforward manner is a public health strategy that requires further creativity to effectively fulfill its mission. It has been suggested that an active commitment between the health professions community and the Hispanic community may nurture Hispanics and other underrepresented groups to pursue careers in the health profession. To be truly effective, this strategy must provide active mentoring, financial and societal resources and tutoring in math and sciences years before students choose their future job or profession. Developing a cadre of culturally diverse healthcare providers, especially those who can provide patient-provider language concordance, may strengthen interactive communication and inspire trust resulting in a higher rate of adherence to preventive

health screening recommendations (CDC, n.d.; González et al., 2010; Sudore et al., 2009; Haskard-Zolnierek & DiMatteo, 2009).

Implications for Practice

This study emphasizes the relationship between trust, communication and utilization of preventive screening services. In order to promote optimal well-being and increase adherence to treatment regimens, healthcare providers and health service agencies may need to reevaluate the resources they have invested, including time and interpreters, to improve trust and communication with foreign-born Mexican women. The CLAS standards recognize that health is a cultural construct and provide guidelines and recommendations to care for limited English proficient persons, to provide language assistance and plain language educational materials in one's preferred language and to incorporate culturally relevant continuing education for healthcare providers (U.S. DHHS, 2001). These strategies are consistent with the National Stakeholder Strategy for Achieving Health Equity objectives, the American Nursing Association Code of Ethics for Nurses (ANA, 2001) and the American Medical Association Declaration of Professional Responsibility (AMA, 2001), and may increase adherence to preventive screening exam recommendations (National Partnership for Action to End Health Disparities, 2011; Sudore et al., 2009). Recently the Joint Commission endorsed new guidelines for hospitals concerning effective communication with patients which include communicating with the patient in his or her preferred language (2011).

Advance practice nurses are poised to provide a large portion of primary care health services in the upcoming years and must be knowledgeable about USPSTF and

other nationally recommended standards to guide foreign-born Mexican women in obtaining preventive health screening exams including a pap exam, CBE, mammogram, diabetes testing and blood pressure screening. The Agency for Health Research and Quality has released a plan to educate primary care providers, health professional students and faculty, especially those who care for underserved populations, about USPSTF recommendations (AHRQ, 2011). The National Prevention Strategy and the Committee on Preventive Services for Women (National Prevention Council, 2011; IOM, 2011) emphasize the importance of teaching women about preventive screening exams to promote health and prevent disease. Providing Spanish language culturally appropriate education in a straightforward manner is a public health strategy that requires further resourcefulness to fulfill its mission.

Implications for Research

Including members of minority populations in health research is paramount to identify strategies to decrease health disparities (Lau, Chang, & Okazaki, 2010; Smedley et al., 2003) yet current evidence suggests that minority populations are underrepresented in health research in part due to lack of trust in the research community (Hinz, 2011; Shaw, 2011). Given the dynamic sociopolitical context of this decade, recruiting foreign-born Mexican women for research studies can be daunting. Prior to conducting this study, enormous ongoing effort was made to establish trust with the foreign-born Mexican community and among key stakeholders and community leaders in central and western North Carolina by participating in health fairs, serving on Latino community committees, providing free health screenings and health education sessions and hosting Latino forums.

Such efforts were essential to understand the focus and needs of the Latina community and led to successful recruitment for this study. Without the establishment of trust the persons that most need to be represented in research may be marginalized by the research process and granular data on ethnicity will be lost (Hinz; IOM, 2009).

A research agenda for foreign-born Mexican women should emphasize creative designs that do not mix persons of Hispanic ethnicity, devote time and attention to the development of culturally and linguistically appropriate health measurement tools, examine utilization and adherence to preventive health screening exams and stress the healthcare provider's role on improving foreign-born Mexican women's health behaviors and health outcomes. Research that addresses the unique subcultures of the Hispanic ethnicities may provide more desirable outcomes than studies that take a pan-Latino approach to sampling strategies. Currently, few studies have evaluated methods of decreasing foreign-born Mexican women's health disparities based on long-term prospective studies. A prospective research design may prove useful to evaluate interventions that would increase utilization and adherence to screening guidelines for a Pap exam, CBE, and mammogram, improve foreign-born Mexican women's survival rate for breast and cervical cancer. This is especially important since foreign-born Mexican women have the highest rate of cervical cancer and are at increased risk for dying from breast cancer due to poverty (CDC, 2011a; DeSantis, Siegel, Brandi, & Jemal, 2011). The transient nature of foreign-born Mexican women will make this design challenging but has the potential to discover new knowledge that has been previously untapped. Measuring health outcomes and health knowledge is of particular concern among

foreign-born-Mexican women as few validated culturally and linguistically appropriate measurement tools are available (Castillo et al, 2010; Lopez-McKee, 2007). Additionally, the context of language must be considered when instruments are translated to Spanish as a simple word for word translation may convey dissimilar meanings. Researcher immersion into a Latino community will enhance trust and prevent the use of unacceptable colloquialisms. Emphasis on validating culturally relevant health measures for non-English speaking foreign-born Mexican women may yield a greater understanding of professional interactions that are related to health behaviors and health outcomes.

Implications for Policy

Health experts and policymakers have called for an increase in availability and coverage for women's preventive health services (IOM, 2011) and the Affordable Health Care Act (ACA) of 2011 has confirmed the need for these preventive services by incorporating them into its required health plan coverage guidelines and creating a prevention and public health fund (Healthcare.gov, n.d.) The purpose of this effort is to target resources to those who most need help. Under the Affordable Care Act of 2011, all new group benefit plans will be required to cover any preventive service that have received an "A" or "B" rating from the U.S. Preventive Services Task Force including cervical cancer screening, breast cancer screening, diabetes screening and blood pressure screening (USPSTF, 2010). By legislating mandatory coverage of these services, and eliminating consumer co-payments, health promotion and disease prevention services may be available to all U.S. citizens. While the Affordable Care Act (2011) may improve

the health of millions of Americans, non-citizens will not be eligible to partake of these unless immigration policies become more inclusive (Zuckerman, Waidmann, & Lawton, 2011). Thus, persons who are not U.S. citizens will continue to rely on the overburdened public health system and low-cost charitable health clinics. Creative health policy solutions to meet undocumented immigrants health needs will need to be recognized, accepted, and acted upon. This need may require a paradigm shift concerning who is entitled to healthcare services.

It has been suggested that issues that are inextricably related to health behavior and health outcomes, including social determinants of health, must be addressed within a broader context of the meaning of health in order to eradicate health disparities (Marmot & Wilkinson, 2006; Hunter, Neiger, & West, 2011; National Partnership for Action to End Health Disparities, 2011; RWJF, 2010; U.S. DHHS, 2001, 2011d; World Health Organization, 2008). Health policies that provide meaningful resolution for root causes of health disparities such as inadequate education and substandard living conditions and provide long-term funding for requisite services is needed if health outcomes are to be improved among socially disadvantaged persons (Woolf & Braveman, 2011).

Implications for Systems

The women in this study relied primarily on the public health system to meet their primary care needs but deteriorating funding for these services may jeopardize to whom services are allocated. The proportion of persons covered by private insurance has been decreasing since 2001 while the percentage of individuals insured by governmental entities has increased (DeNavas-Walt et al., 2011; U.S. Census Bureau, 2011b). Public

health services are underfunded and continue to suffer budget cuts that constrain their ability to provide even basic public health services (American Public Health Association, n.d.). A burgeoning question exists: Can the U.S. public healthcare system continue to provide primary health care services to all uninsured and underinsured persons living in the U.S.? Today's national, state, and local health systems are challenged to meet emergent needs such as disaster and emergency preparedness and are allocating less funding to chronic care (American Lung Association, 2011; Krisberg, 2010). In fact, public health departments and community health centers are "turning away" clients seeking preventive health care services, including women's preventive exams, due to inadequate funding (Center on Budget and Policy Priorities, 2011; Krisberg, 2010). Methods to insure sustainable services must be addressed in a sociopolitical context that includes healthcare providers, private insurers, governmental agencies, key stakeholders and Hispanic leaders. The healthcare community contributes conscious and unconscious bias in medical decision making which may perpetuate health disparities (Stone & Moskowitz, 2011) and demands community acknowledgement and accountability. Unfortunately, leadership in the Hispanic community has yet to be garnished and must be addressed as part of the Hispanic community's responsibility for improving its' well-being (Pew Hispanic Center, 2010). Solutions that are identified from leadership within the foreign-born immigrant community may prove to be more viable than those created outside of the community. Just as healthcare professionals must improve their ability to provide culturally relevant care, institutions need to assess their organization's ability to do the same (AHRQ, 2010).

Summary

The purpose of this study was to explore factors related to foreign-born Mexican women's understanding, utilization and adherence to preventive health screening recommendations using the Interaction Model of Client Health Behavior (IMCHB) as a guiding framework. Foreign-born Mexican women experience significant health disparities related to cervical cancer, breast cancer, diabetes and hypertension and tend to seek preventive health screening exams through publicly funded institutions. Foreign-born Mexican women's health disparities are exacerbated by low levels of educational attainment, limited employment opportunities, high uninsurance rates, citizenship status, limited income, and profound poverty.

A cross-sectional study design with convenience sampling was employed to assess client singularity, the client-professional interaction and utilization and adherence to preventive health screening guidelines. The final sample included 97 foreign-born Mexican women who were mostly married/partnered, undereducated, uninsured, had low acculturation levels and limited income. These women were recruited from churches, health departments, community leaders and social nomination and represented both rural and urban communities.

Correlational and regression models were used to examine associations between client singularity, the client professional interaction and health outcomes. Trust and communication were associated with use of and adherence to recommended preventing screening exams. The regression model between client singularity elements and the number of specific types of health screening services each woman had obtained at least

once in the previous five years indicated that a higher level of blood pressure knowledge was associated with obtaining a higher number of screening exams. The regression model between client singularity variables and higher utilization of screening exams over a five year period suggested that a lower level of cultural cancer screening beliefs was associated with a higher amount of the dependent variable. The regression model between elements of client-professional interaction and utilization of preventive screening exams showed that trust was significantly associated with the cumulative number of preventive screening exams (Papanicolaou exams, CBE's, mammograms, blood glucose tests, and blood pressure checks) that the women obtained in the previous five years. The remaining regression models did not show significant associations. New knowledge was elucidated regarding the lack of information that healthcare providers impart to foreign-born women's understanding of preventive screenings and that the vast majority of these women were accessing preventive health services. Study implications include the need for culturally relevant health promotion teaching, the importance of trust between foreign-born Mexican women and their healthcare provider and the salient need for increased public health funding or alternative solutions to provide preventive health care to this group of marginalized women.

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