Title

Knowledge, Attitudes, Beliefs and Behaviors about Physical Activity, Weight, Nutrition and Health in Young, Low-income Latina Adults

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Knowledge, Attitudes, Beliefs and Behaviors About
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by

Jeneva Gularte

DISSERTATION

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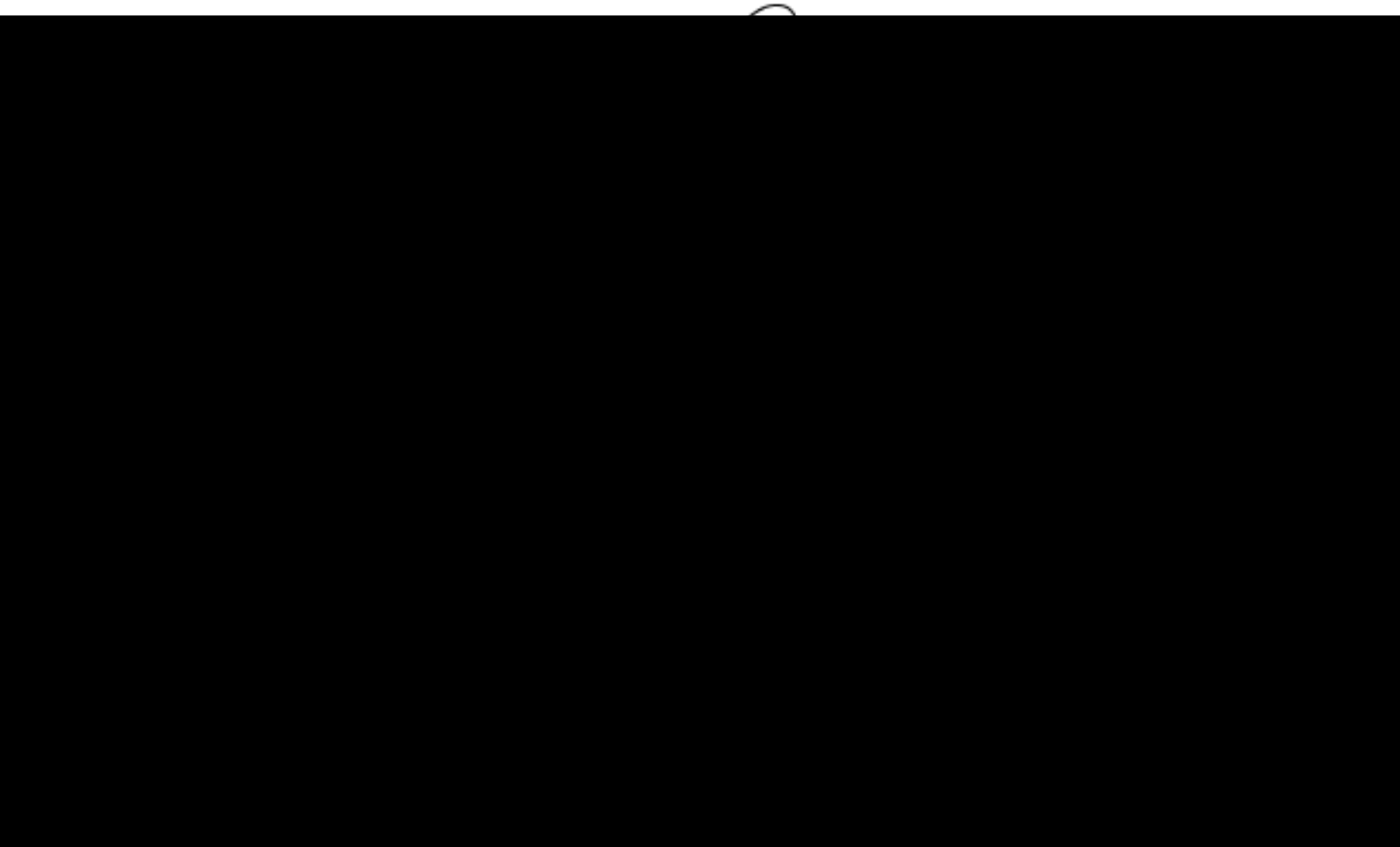

Knowledge, Attitudes, Beliefs and Behaviors about Physical Activity, Weight, Nutrition, and Health in Young, Low-Income Latina Adults

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ABSTRACT

Purpose: The purpose of this study was to critically examine the knowledge, attitudes, beliefs and behaviors about physical activity (PA), weight, nutrition, health, depression, social support, self efficacy, acculturation and fatalism to better understand excess weight in young, low-income Latina adults.

Significance: The health consequences due to overweight and obesity (excess weight) are extensive. Although obesity is a global epidemic, an increasing proportion of individuals in the United States (US) are obese, especially Latinos. Specifically in the US, Mexican American women have the second highest prevalence of obesity and Mexican Americans have the highest reported prevalence of leisure time physical inactivity.

Design: cross-sectional study

Methods: A convenience sample (n=132) who consented to an interview-administered questionnaire were recruited from two clinics. Inclusion criteria were: self-identified Latina women, 18 to 45 years of age, who spoke English or Spanish and lived in Northern California.

Findings: Most were born in Mexico (41%) or Guatemala (37%), had < high school education (49%), were married (44%) or partnered (31%), had a household income < $20,000, an average household size of 4 (±1), and two children. Most had lived in the US an average of 10 years (±5.5) and almost all participants (97%) had a low level of

acculturation. Two of 10 independent variables were statistically significantly associated with excess weight: current body silhouette size [OR=2.78, 95% CI: 1.28, 6.04] and receiving health information from newspapers [OR=7.31, 95% CI: 1.43, 37.35].

Conclusion: Of these Latina women, 20% had a healthy weight, 46% were overweight and 34% were obese, 83% reported meeting federal PA guidelines, and 59% indicated an insufficient PA duration necessary for weight maintenance. Most women of a healthy weight rated their health as "good", while those who had excess weight rated their health as "fair". Body silhouette size and getting health information from newspapers were statistically significantly associated with excess weight.

Implications: This study shows the need for further research on excess weight to increase awareness about healthy weight and the practices that influence healthy behaviors in young, low-income, immigrant Latinas.

Approved by Dissertation Chair: _____

Erika S. Froelicher, RN, PhD

Dedication

To my beloved husband, for your unconditional love, patience and support.

To my darling daughter, for your benevolence, warmth and love.

Acknowledgements

The successful completion of this PhD was made possible, in part, by the advice, encouragement and assistance of many talented individuals. I wish to express my heartfelt gratitude to my Dissertation Chair and mentor, Erika S. Froelicher, for your unconditional and unparalleled support, guidance, dedication and generosity. I would also like to extend my great appreciation and admiration for my other Dissertation Committee members: Dr. Catherine M. Waters, Dr. Nancy A. Stotts, and Dr. Kirsten Bibbins-Domingo for your invaluable support, advice and guidance. I would also like to thank Dr. Steve Paul for his insightful and helpful statistical consultation.

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I wish to acknowledge the financial support from the Betty & Gordon Moore Foundation, the American Association of Colleges of Nursing, the William and Jacquelyn Tobias Foundation, the California Latino Medical Association, the Deloras Jones Program and a dissertation research award from the UCSF Century Club. I wish to acknowledge the publishers and authors who have granted me permission to use the instruments contained within this dissertation.

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Common Abbreviations

AHA	American Heart Association
BMI	Body Mass Index
BRFSS	Behavioral Risk Factor Surveillance System
CDC	Centers for Disease Control and Prevention
CHD	Coronary Heart Disease
CVD	Cardiovascular Disease
cm	centimeters
CO_2	Carbon Dioxide
DEXA	Dual Energy X-ray Absorptiometry
DHQ	Diet History Questionnaire
DLW	Doubly Labeled Water
ENRICHD	Enhancing Recovery in Coronary Heart Disease
EE	Energy Expenditure
FFQ	Food Frequency Questionnaire
FR	Food Record
HPAQ	Habitual Physical Activity Questionnaire
HR	Heart Rate
Hz	Hertz
in	inches
IVNA	In Vivo Neutron Analysis
kcal	kilocalorie
kg	kilogram
LTPA	Leisure Time Physical Activity
mL	milliliter
MAS	Maximal aerobic speed
MET	Metabolic equivalent
MOS	Medical Outcomes Study
NCI	National Cancer Institute
NHANES	National Health and Nutrition Examination Survey
NHLBI	National Heart, Lung, and Blood Institute
O_2	Oxygen
PA	Physical Activity
RAND	Research and Development
RQ	Respiratory Quotient
SF-36	Short Form-36
SFT	Skin Fold Thickness
SR	Self Report
TEE	Total Energy Expenditure
UWW	Underwater Weighing
VO_2	Oxygen Consumption
WC	Waist Circumference
WHO	World Health Organization
WHR	Waist-to-Hip Ratio
24hr	24 Hour Dietary Recall

$H_2{}^{18}O$	Water
$^{2}H_2O$	Water
$^{3}H_2O$	Water
UCSF	University of California San Francisco
USDHHS	United States Department of Health and Human Services

Glossary of Key Variables and Operational Definitions

Latino or Hispanic is a classification of people by ethnic status, and not by race (CDC, 2004). Latino or Hispanic is defined as a person from Mexico, Puerto Rico, Cuba, South or Central America, or any other Spanish culture or origin. Latino often times refers to both men and women, although the most appropriate use of Latino is when referring to a man. Conversely, Latina specifically refers to a woman with any of the above Spanish cultural origins (CDC, 2004).
Knowledge is defined as the condition or circumstance where truth or fact is obtained through reasoning (Merriam-Webster, 2010).
An attitude is defined as the position that an individual cherishes and defends about objects, issues, persons, groups or institutions, commonly known as our "likes" and "dislikes" (Sherif, Sherif & Nebergall, 1965; Aikman, Min, & Graham, 2006).
A belief is defined as a enduring premise about what is accepted as true based on a subjective reality which influences biopsychosocial-spiritual structure and functioning (McLeod & Wright, 2008; Wright, Watson, & Bell, 1996).
Physical activity (PA) is defined as bodily movement that is generated from muscle contraction and results in increased energy expenditure (Allison & Baskin, 2009).
Weight is defined as a unit of mass. BMI is defined as the ratio of an adult's weight in relation to their height, expressed as kilograms (kgs) divided by meters squared (m^2) (CDC, 2009). The four commonly accepted BMI categories defined by the CDC include "underweight" for a BMI below 18.5 kg/m^2, "normal or healthy weight" for a BMI between 18.5 kg/m^2 and 24.9 kg/m^2, "overweight" for a BMI between 25 kg/m^2 and 29.9 kg/m^2, and "obese" for BMI of 30 kg/m^2or above.
Nutrition is used interchangeably with diet, and is defined as the nourishment of the body with food, including the process by which food is used to provide energy, maintenance and growth (Miller-Keane, 1997).
Health is defined as the state of complete physical, mental and social well-being and is not constituted merely by the absence of disease or infirmity (World Health Organization (WHO), 1948) and is often used interchangeably with well-being (McDowell, 2006).
Depression is defined as a common mental disorder with the following clinical presentation: depressed mood, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, low energy and poor concentration (WHO, 2011).
Social support is defined by Cobb (1076) as the information leading one to believe that they are cared for and loved, esteemed, and a member of a network of mutual obligations.
Self efficacy refers to the belief about a person's capability to organize and execute the actions necessary to achieve a desired outcome (Bandura, 1997).
Acculturation is defined as the adoption by a minority group of the values, attitudes and behaviors of the society they are entering into (Dergrance, Mouton, Lichtenstein, & Hazuda, 2005).
Fatalism is defined as the belief that events are destined or caused by external forces and that little, or nothing, can be done to change their course (Florez, Aguirre, Viladrich, Cespedes, De La Cruz, & Abraido-Lanza, 2009).

Chapter 1

Introduction

Obesity is defined as body mass index (BMI) equal to or greater than 30 kg/m^2, a proportion consisting of weight divided by height squared (The Centers for Disease Control and Prevention (CDC), 2009). According to the US Department of Health and Human Services (USDHHS) (2001), obesity is a risk factor associated with a higher morbidity and mortality, as compared to individuals of a healthy weight. The Office of the Surgeon General reports the many health consequences of obesity (see Table 1.1). Notably, the risk of premature death from all causes is increased for obese individuals by 50-100%, compared to those with normal BMI and is responsible for an estimated 300,000 premature deaths per year.

Table 1.1 *Health Consequences of Obesity*

Premature death: 50-100% increased risk from all causes, compared to healthy weight individuals
Heart disease: a. increased incidence of heart attack, congestive heart failure, sudden cardiac death, angina and arrhythmias b. high blood pressure c. elevated triglycerides and decreased HDL cholesterol
Diabetes incidence increases with a weight gain of 11 to 18 pounds
Increases risk for endometrial, colon, gallbladder, prostate, kidney and postmenopausal breast cancer.
Respiratory problems including sleep apnea and asthma
Arthritis risk increases with increase in weight
Reproductive complications can include: a. irregular menstrual cycles, b. infertility, c. increased risk of maternal hypertension, d. Increased risk of gestational diabetes, e. problems with labor and delivery, f. increase risk of infant birth defects and g. death for both the mother and infant
Gallbladder disease risk increases
Incontinence increases
Surgical risk increases
Depression increases
Decreased quality of life though decreased physical endurance and limited mobility and/or discrimination

Ad**a**pted from USDHHS. Overweight and Obesity: Health Consequences. October 30, 2009 URL: http://www.surgeongeneral.gov/topics/obesity/calltoaction/fact_consequences.html

Obesity is a complex health problem, and is the result of a combination of numerous factors, including behavior (World Health Organization (WHO), 2006; USDHHS, 2010), and low socioeconomic status (Winkleby, Gardner, & Taylor, 1996; CDC, 2009). Physical activity (PA), nutrition and weight are essential aspects in the study of obesity, as are knowledge, attitudes and beliefs, as they directly influence health behaviors and health outcomes. The study of knowledge is important in obesity research as knowledge deficits may contribute to higher rates of obesity, especially in economically disadvantaged people (Klohe-Lehman et al., 2006) where higher education is limited. Therefore, knowledge, attitudes and beliefs about PA, nutrition and weight in those with low socioeconomic status is necessary in the study of obesity. For purposes of clarity, a glossary of terms and operational definitions of key variables are provided (xiii).

Globally, 1 in 10 adults are obese, totaling 400 million obese adults world-wide in 2005 (World Health Organization (WHO), 2006). By 2015, it is projected that 700 million adults will be obese globally. In the US, based on the National Health and Nutrition Examination Survey (NHANES) data from 2003 to 2006, 74.1 million adults, age 20 years and older, were obese, of whom 34.7 million were men and 39.4 million were women (American Heart Association (AHA), 2009). Data from the Behavioral Risk Factor Surveillance System (BRFSS) shows a rapid increase in the obesity epidemic, from 15.9% obese adults in the US in 1995 to 26.6% in 2008 (CDC, 2009).

The United States (US) has a high prevalence of obesity. Based on the most current statistics, the US National Health and Nutrition Examination Survey (NHANES) 2008 data show that 27% of men and 26% of women were obese in the US (CDC, 2009).

NHANES data demonstrate a rapid increase in the obesity epidemic in the US. Yet, there is a disproportionate rise in the prevalence of obesity in the Latino and African American populations (Cossrow & Falkner, 2004). The "Hispanic or Latino Epidemiological Paradox" is a term introduced in the 1980s by Markides and Coreil (1986) to describe the phenomenon where Latinos had lower mortality rates than African Americans with similar levels of income and access to health insurance and experienced longer life expectancy than Caucasians (Braunstein, 2010). Although this paradox was coined in the 1980s, it fails to explain differences among Latinos (based on culture or origin) and most importantly, the prevalence of obesity in Latinos today. Therefore, further exploration is needed into knowledge, attitudes, beliefs and behaviors of PA, nutrition and weight as a possible explanation for the increasing trends in overweight and obesity, hereafter referred to as "excess weight" .

In particular, a large race-ethnic disparity in obesity prevalence exists especially in women (Ogden, Carroll, McDowell & Flegal, 2007) and particularly in the Latino population. The most common data reported is for the group of Mexican Americans, Latinos from Mexico. Mexican American women have the second highest prevalence of obesity (42%), following non-Hispanic black women with the highest (53%) obesity rates, when compared to all men and women in the US over 20 years of age (National Center for Health Statistics (NCHS), 2007; AHA, 2010). Also, 33% of Mexican-American women age 20 and older have cardiovascular disease (CVD) (AHA, 2009). Obesity rates increase with age. However, because mortality rates for CVD have not been separately evaluated for the Mexican-American population (AHA, 2010), it is impossible to estimate the number of deaths related to obesity.

Congruent with the obesity rates, Mexican Americans have the highest prevalence of leisure time physical inactivity, compared to that of the general population (Crespo, Smith, Carter-Pikras, & Andersen, 2001). Justifiably, physical inactivity is contrasted with different levels of physical activity. The levels of exertion required of different levels of physical activities are commonly measured with their respective metabolic equivalent (MET), which is the ratio of work metabolic rate to a sitting resting metabolic rate of 1.0 (4.184 kJ) x kg^{-1}x h^{-1}. Therefore, physical inactivity is expressly defined as sedentary, insufficient physical activities with a MET level of 1.0 and described as sitting quietly and watching television (Armstrong, Bauman & Davies, 2000; Ainsworth et al., 2000). Of Latinos age 18 and older, only 25% reported regular leisure time physical activity (LTPA) (AHA, 2010). Of which, only 21% of Latina women (aka Latinas) reported regular LTPA (CDC, 2010). Not surprising, such low reported activity levels of LTPA are consistent with high rates of obesity observed in Mexican Americans.

It is well documented that obesity is associated with many health consequences. Among which, obesity is highly correlated with an individual's risk of developing diabetes and although 80% of all diabetics are obese or overweight, a causal association has not been established (USDHHS, 2001). Latinos may consequently be at a higher risk of developing type II diabetes due to their high prevalence of physical inactivity and obesity. Moreover, obese individuals tend to have higher rates of hypercholesterolemia. Latina women may be at an even higher risk because they have a higher prevalence of obesity and lower rates of LTPA then Latino men. Hence, this field of research is

significant to healthcare as obesity is of tremendous detriment to the health of Latinos, especially for Latina women.

The recent data published by the WHO highlights the endemic problem of obesity, both worldwide and in the US, and especially amongst Latina women (WHO, 2010; CDC, 2010). While it is known that obesity is a result of many factors, it is unknown what proportion of obesity within the Latina population is attributable to behavior or is associated with cultural beliefs within this subgroup.

A new, emerging area of research is on excess weight, which is obesity and overweight combined. This is supported by the AHA's position that excess body fat, both from obesity and overweight, is an independent major risk factor for the development of coronary heart disease (CHD), even without the presence of other risk factors (AHA, 2011). AHA maintains that excess weight can be modified, treated or controlled by lifestyle changes or taking medicine. Therefore, as knowledge, attitudes and beliefs directly influence health behaviors, obesity research on these concepts may reveal insights into factors that contribute to Latina excess weight. Physical activity, nutrition and perceptions of health influence excess weight. Therefore, the purpose of this study was to critically examine the knowledge, attitudes, beliefs and behaviors about PA, weight, nutrition and health in Latinas.

Additionally, the USDHHS's latest national health promotion and disease prevention initiative entitled Healthy People 2020 includes several goals that address PA, weight, nutrition and health objectives (see Table 1.2). Therefore, this study addresses current health priorities and is needed to describe the state of PA, weight, nutrition and

health in Latina adults to evaluate if PA recommendations for adults (table 1.3) and Healthy People 2010 goals have been met.

Table 1.2 *Healthy People 2020 Goals Addressing Physical Activity, Weight, Nutrition and Health*

Reduce the proportion of adults who are obese.
Increase the proportion of adults who are at a healthy weight.
Increase the proportion of worksites that offer nutrition or weight management classes or counseling.
Increase the proportion of physician office visits that include counseling or education related to nutrition or weight.
Prevent inappropriate weight gain in youth and adults.
Increase the proportion of primary care physicians who regularly measure the body mass index of their patients.
Reduce consumption of saturated fat and sodium in the population aged 2 years and older.
Increase the contribution of whole grains to the diets of the population aged 2 years and older.
Increase the variety and contribution of vegetables to the diets of the population aged 2 years and older.
Increase consumption of calcium in the population aged 2 years and older.
Reduce the proportion of adults who engage in no leisure-time physical activity.
Increase the proportion of adults that meet current Federal physical activity guidelines for aerobic PA and for muscle strength training.
Increase the proportion of physician office visits for chronic health diseases in Conditions that include counseling or education related to exercise.
Increase the proportion of employed adults who have access to and participate in employer-based exercise facilities and exercise programs.
Increase the proportion of trips made by walking and bicycling.
Increase the proportion of worksites that offer a comprehensive employee health promotion program to their employees.
Increase the proportion of employees who participate in employer-sponsored health promotion activities.
Increase the proportion of persons with health insurance.
Increase in counseling on health behaviors among persons at risk with a physician visit in the past year.

Adapted from USDHHS. Healthy People 2010 & 2020 goals. October 1, 2010
URL: http://www.healthypeople.gov/hp2020/Objectives/TopicAreas.aspx

Table 1.3 *Key Guidelines for Adults from the 2008 Physical Activity Guidelines for Americans*

All adults should avoid inactivity. Some physical activity is better than none, and adults who participate in any amount of physical activity gain some health benefits.
For substantial health benefits, adults should do at least 150 minutes (2 hours and 30 minutes) a week of moderate-intensity, or 75 minutes (1 hour and 15 minutes) a week of vigorous-intensity aerobic physical activity, or an equivalent combination of moderate- and vigorous-intensity aerobic activity. Aerobic activity should be performed in episodes of at least 10 minutes, and preferably, it should be spread throughout the week.
For additional and more extensive health benefits, adults should increase their aerobic physical activity to 300 minutes (5 hours) a week of moderate-intensity, or 150 minutes a week of vigorous-intensity aerobic physical activity, or an equivalent combination of moderate- and vigorous-intensity activity. Additional health benefits are gained by engaging in physical activity beyond this amount.
Adults should also do muscle-strengthening activities that are moderate or high intensity and involve all major muscle groups on 2 or more days a week, as these activities provide additional health benefits.

Adapted from USDHHS. 2008 Physical Activity Guidelines for Adults. October 1, 2010 URL: http://www.health.gov/paguidelines/pdf/paguide.pdf

This research is paramount in understanding factors that contribute to excess weight as excess weight poses significant threats to health and is vital to understanding the factors contributing to this health problem. This is especially true in Latinos, a population currently reported as the second largest population in the US as well as California with population projections of doubling by 2050 (US Census Bureau, 2008). Not only do Latinos have an existing high prevalence of overweight and obesity, but Mexican American women have the second highest prevalence of obesity for all adults in the US over age 20 (National Center for Health Statistics (NCHS), 2007; AHA, 2010).

While it is known that obesity is a result of many factors, it is unknown what proportion of obesity within the Latina population is attributable to each factor or is a result of distinct cultural beliefs within this subgroup. As knowledge, attitudes and

beliefs directly influence health behaviors, an exploration of these concepts may reveal insights into Latina excess weight. Additionally specific psychosocial factors were included to address excess weight in this study. These include depression, social support (SS), self efficacy (SE), acculturation, and fatalism. The rationale for which include the association between depression, SS, SE and excess weight, the need to study acculturation in immigrant populations and expressly studying fatalism in Latinas. This study had three aims and seven objectives. The objectives of this study in Latina adults were:

(1) To describe:

-Sample characteristics.

-Knowledge, attitudes, beliefs and behaviors (KABB) about PA, weight, nutrition and health.

-Psychosocial variables.

(2) To estimate in Latina adults the relationship between:

-Demographics and excess weight.

-KABB about PA, weight, nutrition, health and excess weight.

-Psychosocial variables and excess weight.

(3) To estimate in Latina adults the relationship between:

-Demographics, KABB about PA, weight, nutrition and health, psychosocial variables and excess weight.

A literature review about obesity in Latina adults follows in chapter 2.

Chapter 2:

Literature Review: Obesity in Latina Adults

This literature review includes studies of obesity in Latina women that used quantitative methods that reported “knowledge”, “attitudes”, or “beliefs”, “obese” and some measure of “weight” or “obesity”. For the purposes of this paper, the concept of weight will include weight in terms of pounds or kilograms (kgs), or body mass index (BMI), as well as consequences of weight, taking into account weight loss practices and the women’s perceptions of weight such as body image & self-concept will also be reviewed. Furthermore, covariates in the study of obesity considered in this literature review include type II diabetes, smoking, physical inactivity and psychosocial variables: depression, social support, self efficacy, acculturation, and fatalism.

For purposes of clarity, the main definitions of key variables will be given. Latino or Hispanic people are classified by ethnic status, and not by race (CDC, 2004). Latino or Hispanic is defined as a person from Mexico, Puerto Rico, Cuba, South or Central America, or any other Spanish culture or origin. Latino often times refers to both men and women, although the most appropriate use of Latino is when referring to a man. Conversely, Latina specifically refers to a woman with any of the above Spanish cultural origins (CDC, 2004). Knowledge is defined as the condition or circumstance where truth or fact is obtained through reasoning (Merriam-Webster, 2010). An attitude is defined as the position that an individual cherishes and defends about objects, issues, persons, groups or institutions, commonly known as our “likes” and “dislikes” (Sherif, Sherif & Nebergall, 1965; Aikman, Min, & Graham, 2006). A belief is defined as an enduring premise about what is accepted as true based on a subjective reality which influences biopsychosocial-spiritual structure and functioning (McLeod & Wright, 2008; Wright, Watson, & Bell, 1996). Weight is defined as a unit of mass. BMI is defined as the ratio

of an adult's weight in relation to their height, expressed as kilograms (kgs) divided by meters squared (m^2) (CDC, 2009). The four commonly accepted BMI categories defined by the CDC include "underweight" for a BMI below 18.5 kg/m^2, "normal or healthy weight" for a BMI between 18.5 and 24.9 kg/m^2, "overweight" for a BMI between 25 and 29.9 kg/m^2, and "obese" for BMI of 30 kg/m^2or above. Acculturation is defined as the adoption by a minority group of the values, attitudes and behaviors of the society they are entering into (Dergrance, Mouton, Lichtenstein, & Hazuda, 2005).

Knowledge, attitudes and beliefs are important in the study of obesity as these dimensions impact health behavior and health outcomes. The amount of knowledge that an individual has on a particular subject can impact their comfort level with decision making. The study of knowledge is important in obesity research as knowledge deficits may contribute to higher rates of obesity in economically disadvantaged people (Klohe-Lehman et al., 2006), as are most of the minority Latinas.

As obesity is accompanied with overconsumption of calories, the study of underlying attitudes about food is important. Attitudes are inferred from distinctive and consistent modes of behavior towards persons, places and things (Wright, Watson, & Bell, 1996). Attitudes guide and sometimes predict behavior, so it is critical to examine the information underlying those attitudes (Aikman et al., 2006) in obesity research. Beliefs are strongly based on the truth of a statement, which influences the way we interact with the world and impacts affective and physiological responses (Wright et al., 1996). Beliefs affect how we approach the world and are different from perceptions and thoughts, which are based on observation and are changeable (Wright et al., 1996). Perceptions can directly and indirectly motivate behavior. As such, perceptions can

influence attitudes. The Health Promotion Model developed by Pender (1982) recognizes five perceptions related to behavior based on the perceptions of one's control of health, health status, self-efficacy, benefits and barriers.

A PubMed search was conducted in the medical, nursing, and nutrition literature searching for studies that addressed knowledge, attitudes or beliefs of overweight or obese Latinas. Additional studies were selected from references in the articles obtained from the PubMed search. Studies were included that were written in the English and Spanish language and addressed adults 19 years or older. All years since 1966 were included. Studies that addressed relationships unrelated to knowledge, attitudes and beliefs about obesity or weight were excluded from this review.

The original search produced 244 studies. All but 13 were excluded due to the exclusion of overweight or obese populations along with some measure of weight. This review included 13 studies which addressed knowledge, attitudes or beliefs with a measurement of weight in obese Latinas. The literature search about obesity in Latinas yielded one study about knowledge, eleven studies about attitudes, one study about beliefs, and one of these studies detailing both attitudes and beliefs. Governmental reports will be addressed first, as these report results from cross-sectional studies, followed by studies focused on knowledge, attitudes and then studies that included both attitudes and beliefs.

Secondary Studies from Governmental Databases

Kuchler and Variyam (2003) reported data from 1988-1994 National Health and Nutrition Examination Survey (NHANES) III database that identified misperceptions of weight status. Misperceptions were categorized as underassessment or overassessment

based on the accuracy of an individual's weight assessment. This cross-sectional study essentially examined the belief concerning weight status. Underassessment was defined as individuals who are overweight or obese but perceive themselves as being of healthy weight or underweight. Over-assessment is defined as individuals who are of healthy weight or underweight who perceive themselves as overweight. Individuals who are, in fact, overweight or obese, but who under assess their weight status were studied. In this NHANES III sample of 16,209 subjects, 8,451 were women. Seven percent of obese Latinas and 31% of overweight Latinas under-assessed their weight status ($p<0.05$) whereas 33% of healthy or underweight Latinas over-assessed their weight status ($p>0.05$). This suggests a bidirectional disparity among Latinas to accurately assess their weight.

Mack et al. (2004) reported data from the 2000 BRFSS. Attitudes were assessed by self-rated health as well as perceived ideal weight, desired weight and desired weight loss. Smoking status, diabetes, LTPA, and clinician advice regarding weight loss were also assessed. In this sample of 6,978 Latinas, 57% were above an ideal weight, with 24% classified as obese and 33% as overweight. Among these Latinas, 70% had a perceived ideal weight in the normal BMI category. The mean age of this sample is not reported, although it is stated that subjects were 18 years or older. Perceived health status was rated as excellent in 14%, very good in 21%, good in 34% and fair or poor in 32%. The majority of Latinas (69%) wanted to weigh less, with the largest proportion, 29%, having a desired weight loss of 20 to 49 pounds. Among overweight and obese Latinas, 47% desired a weight loss between 20 and 40 pounds. The majority of Latinas who reported their intention to lose weight (55%) were between the ages of 30 and 39 years.

Among overweight Latinas, 60% reported an attempt to lose weight, as did 72% of obese Latinas. Interestingly, 97% of women classified as having a normal BMI, held a desired weight for themselves that kept them in the normal range.

Of those who had seen a healthcare professional within the past year, 75% percent of Latinas reported not receiving any advice concerning their weight. Specifically, of these, only 23% of overweight and 43% of obese Latinas reported they were advised to lose weight. Only 20% of all Latinas reported they received advice from a healthcare professional to lose weight. Only 9% of Latinas reported having been diagnosed with diabetes and 74% denied ever smoking. The absence of these risk factors suggests that excess weight was the most prominent risk factor present, although inadequately addressed during their health care encounters.

Ahluwalia, Ford, Link, and Bolen (2007) analyzed acculturation, weight and weight-related behaviors in Mexican Americans between 2001-2002 (NHANES years). In this sample of 1,301 Mexican Americans living in the US, 51% (n= 664) were women. Acculturation was measured by assessing and scoring language used when reading and speaking, when they were children, at home, and when thinking or speaking to friends. Participants were then categorized as highly acculturated if their score was > 10, and less acculturated if their score was < 10. Body weight was ascertained by BMI and central obesity was assessed as a weight-related variable associated with metabolic syndrome. Central obesity was defined as having a waist circumference ≥80 cm for women or ≥ 90 cm for men in the Latino population (International Diabetes Foundation (IDF), 2005). Weight perceptions were assessed concerning each person's attitudes about current weight, desired weight and attempts to lose weight.

The literature on acculturation status was as follows. Of the Latinas who had a low acculturation status, 37% were obese, 37% were overweight and 26% were normal weight. For Latinas who had high acculturation status, 34% were obese, 28% were overweight and 37% had a normal weight. A higher proportion of healthy weight Latinas were highly acculturated, compared to those with low acculturation status ($p<0.05$). Perception of weight differed by acculturation, as 89% of Latinas with high acculturation scores had a perception of being overweight, as compared to 79% of Latinas who had low acculturation scores ($p<0.05$). Only 11% of Latinas with high acculturation scores had a perception of being the ideal weight or underweight, as compared to 21% of Latinas who had low acculturation scores. There was a statistically significant difference between Latinas with high acculturation scores, with 92% having had a desire to lose weight, compared to 84% of Latinas with low acculturation scores ($p<0.05$). There was also a statistically significant difference between Latinas with high versus low acculturation scores in attempts to lose weight with 62% having attempted to lose weight in the past 12 months, as compared to 44% of Latinas with low acculturation scores($p<0.05$). The authors concluded that Latinas with low acculturation scores were 60% less likely to have attempted weight loss in the past 12 months (OR= 0.40; 95% CI = 0.15, 1.08). However this finding was not significantly different.

In the study by Kuchler and Variyam (2003), 31% of Latinas under-assessed their weight status and 33% of healthy or underweight Latinas over-assessed their weight status. This inaccurate perception influenced their attitude about their weight status. One might conclude that one's perception of weight is not an accurate estimate of weight status either. Mack et al. (2004) found that only 42% of their sample had a normal BMI.

Among those who wanted to lose weight (69%), most were in their 30s and wanted to lose 20 to 49 pounds. Sixty percent of overweight Latinos and 72% of obese Latinos were reportedly trying to lose weight. Twenty three percent (of the 63%) of overweight Latinos and 43% (of the 72%) of obese Latinos had weight loss recommended by a healthcare professional within the past year's visit. The women were eager to lose weight, with a large number reporting having tried to lose weight. It is possible that insufficient weight reduction was achieved due to lack of supervision by healthcare professionals or lack of knowledge and resources. Ahluwalia et al. (2007) reported nearly identical proportions of Latinas as obese, independent of acculturation status, but those with low acculturation were 60% less likely to have attempted weight loss. These findings suggest that acculturation is not the origin for weight perception, although a likely contributor.

Knowledge about Latina Obesity

Klohe-Leman et al. (2006) assessed the impact of an 8-week intervention that consisted of physical activity, dietary and behavioral changes. The investigators conducted an intervention to improve knowledge about weight in 141 low-income mothers who had a mean age of 28 (± 6) years, were obese or overweight, 95 of whom were Latinas with a mean BMI of 36 (± 7) kg/m^2. Pregnancy status at time of participation was not reported in this study. Questionnaires assessing nutrition knowledge were administered at 0 and 8 weeks and measured knowledge at baseline and after the intervention. Furthermore, a 33-item questionnaire was administered to these women to obtain demographic information and additional questions were asked to ascertain current practices used to lose weight. A nutrition knowledge test was constructed by the

investigators. This test consisted of 25 items and demonstrated internal consistency reliability with a Kuder Richardson's (KR-20) value of 0.6. In addition, participants were asked to complete 7-day food records and wear pedometers 3 days each week. Nutrition education topics included weight loss and exercise goals; energy content of different foods; personalized meal plans and menus; fats detailing the different types, sources and health effects, low-fat cooking demonstrations, tips for healthy eating when short of time, emotional eating, stress reduction, techniques for maintenance of weight loss and child nutrition, for those cooking for children. A 500-kcal deficit in diet was promoted for weight loss.

The Social Cognitive theory was to the foundation for the treatment that was used to elicit behavioral changes in a person's thoughts, environment and behaviors. The mean weight loss in this sample was 2.5 kg, which is why 2.3 kg was chosen as the responder criterion. Individuals who lost 2.3 kgs or more were termed "responders", versus individuals who lost less than 2.3 kg, who were termed "non-responders". Additionally, individuals who gained weight were termed "weight gainers". Responders included 41 of the possible 95 Latinas who lost 2.3 kgs in 8 weeks. Findings showed an increase in nutrition knowledge in all groups. Nutrition knowledge increased by 20% in Latinas, 36% in African Americans, and 11% in Caucasians. Although scoring and scale are not reported for the nutrition knowledge test, Caucasians had a significantly higher pre-test knowledge score (72) as compared to African Americans (56) or Latinos (60), indicating a greater knowledge of nutrition at baseline.

The authors found that greater initial knowledge was not a good indication of better initial weight control because pretest scores in normal weight, overweight and

obese participants were not significantly different (Klohe-Lehman et al., 2006). After receiving the intervention, Latinas experienced a 20% increase in nutrition knowledge from baseline; however this was not a statistically significant difference it was most likely due to an insufficient sample of Latinas. Findings from this study showed that "weight gainers" had more children in the household ($p<0.05$), were more likely to skip meals ($p<0.05$), less likely to be Caucasian ($p<0.05$) and more likely to have weighed less before pregnancy ($p<0.05$). In this study, the analysis was not reported by ethnicity; rather the researchers reported their results by weight loss category or nutrition knowledge score.

Definitive conclusions about nutrition knowledge cannot be drawn concerning obesity in Latinas from this study. This study used one group to test the intervention, making it difficult to determine the effects of the intervention without using a control group to make comparisons. This intervention included multiple modalities such as physical activity, diet and behavioral changes, thus making it difficult to determine which specific intervention accounted for the weight loss seen in 41 Latinas. The authors found that greater initial knowledge did not predict better weight control in obese and overweight mothers. Still, the increase seen in nutrition knowledge is an encouraging finding for the development of further nutrition knowledge interventions. This nutrition knowledge test was constructed by the authors, suggesting the need for evaluation of the psychometric properties of the instrument, its appropriateness in the overweight and obese population, and its role in postpartum health.

Attitudes about Latina Obesity

Viladrich, Yeh, and Bruning (2009) studied paradoxical body images to assess perceptions about body shape by using the body shape scale in Latinas whose mean BMI was 28 (± 7) kg/m^2. In this sample of 44 Latinas, 30% were born in the US. Of the 70% born outside the US, 47.7% were from the Dominican Republic, 4.5% from Mexico and 18.2% were born in another country. Perceptions about body shape reveal their attitudes regarding their own body size and shape in relation to current status, desired status, what they view as attractive and what they perceive the opposite sex views as attractive. Viladrech et al. (2009) found that as current size and shape increased, BMI increased for both ideal body shape scores, as well as the body shapes that these women viewed as being attractive.

Kepka, Ayala, and Cherrington (2007) studied attitudes about (self rated) health in 110 Latina women from a sample of 202 Latino immigrants, 86% of whom were from Mexico. In this sample of immigrant Latinos, the highest proportion was overweight (41%), followed by obese (30%), and followed by normal weight (29%). Self rated health status was a measure whereby the subject assessed their own health as excellent, very good, good, fair or poor. In this study, the majority of women (62%) were in the normal weight, overweight and obese BMI categories all perceived their health status to be "good" to "excellent". This analysis was unadjusted for other variables and did not report a significance value, making interpretation difficult.

Respondents reporting their self rated health as good to excellent also reported greater daily consumption of vegetables and fruits and less television watching ($p<0.01$) and engaging in more physical activity in the past month ($p<0.05$) compared to those who

reported their health as fair to poor (Kepka et al., 2007). On the contrary, 56% of the sample did not engage in LTPA in the past month, 13% met physical activity recommendations and 13% met dietary guidelines for consuming 5 vegetables and fruits each day. Additionally, this sample reported a mean of 2.6 (± 2) hours of watching TV per day, which is reported to increase the risk of obesity for both men and women when watching more than 2 hours per day (Bowman, 2006). No analysis by gender was provided. This study analyzed acculturation in relation to health status change since arrival to the United States. A majority (59%) of the sample reported no change in overall health, 41% reported no change in diet, 38% reported improved diet, 60% reported higher weight and 69% reported improved quality of life.

Cachelin, Rebeck, Chung, and Pelayo (2002) studied body image and body assessments in a sample of 1, 229 men and women who were Hispanic, African American, Asian and Caucasian. Of the 548 Hispanic participants, 379 were women. The researchers studied attitudes about body dissatisfaction, attractiveness of figures for both women and men, acceptable body sizes for women and perceptions of the four BMI categories by using the silhouette figure ratings (Stunkard, Sorenson, & Schlusinger, 1983) as shown in figure 2.1. Body sizes ranged from severe emaciation, scored as 1, to severe obesity, scored as 9. Participants were asked to rate their current and ideal shape and size, the smallest size and shape they felt they could realistically attain, the size shape they felt was most attractive for women and men and, as well as the size and shape that most women found attractive in men and the size and shape that most men would find attractive in women.

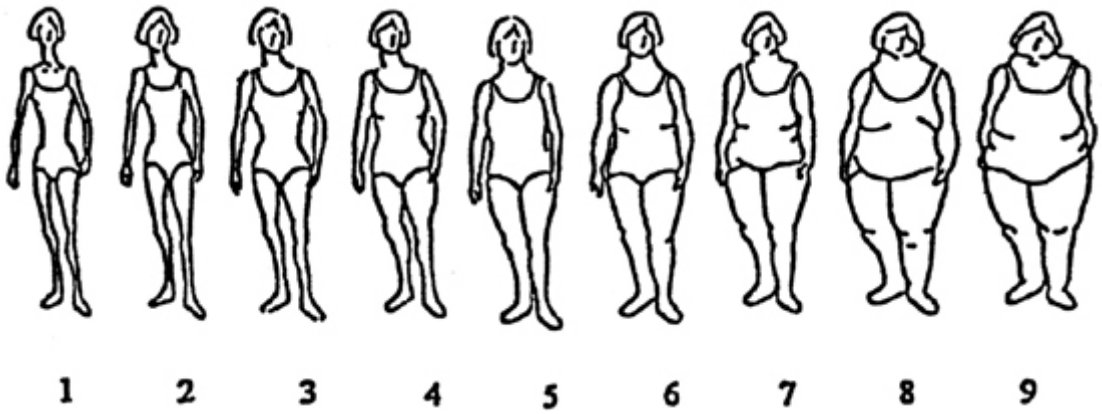

Figure 2.1

Figure Rating Scale. Permission obtained from Dr. Stunkard.

Body dissatisfaction was defined as the number computed when subtracting the ideal size from current size. the Latina women surveyed (n=379) had a mean age of 21 (±5) years, mean BMI in the healthy weight range equal to 24.5 (± 5) kg/m^2 and mean education being some college. On a scale from 1 to 9 measuring body size, the current mean figure score in Latinas was 3.9, with an ideal mean figure score of 2.9, yielding a body dissatisfaction score of 1. Latina women's mean score of body size and shape that were seen as attractive to men was 2.7. The heaviest size and shape that was acceptable to Latinas was a mean score of 5.1.

Findings showed that demographic characteristics influenced attitudes about body image, body dissatisfaction, as well as perceptions about attractive and acceptable sizes for women. Those with more education chose larger attractive figures. Those that were heavier not only chose larger attractive figures, but also larger acceptable figures for women. Although it has been hypothesized that differences in partner size exist by ethnicity, this study found that acceptable body size was not significantly different by any of the four ethnic groups, when controlling for age, education and BMI.

Sanchez-Johnson et al. (2004) assessed body image in a sample of 234 Latinas and 271 African American adults using the Figure Rating Scale comprised of schematic figures displayed in mixed order to measure body size. Of the Latina subjects, 147 were born in Mexico, 65 in the US, and 25 elsewhere. The mean BMI among these Latinas was 29.6 (± 6) kg/m^2, half earned a family income less than $16,000, and 41% earned less than $35,000. This study used the figure rating scale ranging from 1 to 9 to measure body size. Acculturation was assessed using the Short Acculturation Scale for Latinos, using language to determine status of acculturation with 1 representing low and 5 representing high acculturation status. A discrepancy score was computed from the silhouette ratings to represent the difference between ideal and current body image. Importance of weight and shape was assessed using one question, "During the past 6 months, how important has your weight or shape been in how you feel about or evaluate yourself as a person compared with other aspects of your life…" from the Questionnaire on Eating and Weight Patterns (Spitzer, Yanovski & Wadden et. al, 1993).

Nearly 60% of Latinas denied engaging in regular physical activity, 97% denied attending an organized weight loss program, and 68% denied weight and shape as being important or playing a part in their self evaluation. These Latinas watched an adjusted mean of 2.27 (± 0.2) hours of television per day, were physically active an average of 4 times in the last week for a mean time of 42 (± 4) minutes, or perceived physical exertion during physical activity as a mean of 5.4 using the 0 to 10 category Borg exercise intensity scale (Borg, 1992). After controlling for BMI, parity, education and marital status, the adjusted mean for Latina women's current body image was 5 with an ideal body image of 3.1 and a final body image discrepancy of 1.8. After controlling for BMI,

parity, education and marital status, the adjusted mean for African Americans was 4.6 with an ideal body image of 3.5, and a final body image discrepancy of 1.1. The body image discrepancy was the highest among Latinas. In this study, African Americans had the highest mean BMI (31.4 kg/m^2), although Latinas weighed less, Latinas perceived their current body image as heavier and reported greater body image dissatisfaction than their African American counterparts. These attitudes about body image will inform approaches and interventions for obesity in Latinas.

Dergance et al. (2005) conducted a study of 394 Mexican Americans and 355 European Americans, ages 64 to 79 years, to describe how mediators of ethnic differences affect LTPA. A number of variables were assessed (including depression, education, fat avoidance), as well as two dimensions of acculturation (family attitude and structural assimilation). Fat avoidance was assessed using the Saturated Fat/Cholesterol Avoidance scale to assess the degree to which six dietary sources of saturated fat/cholesterol were avoided, ranging from 0 to 6. A higher fat avoidance score represents greater avoidance of dietary fat sources. Depression was assessed using the Geriatric Depression Scale score, with a range of 0 to 30, with depression scores less than 9 indicating no depression, 10 to 19 is mildly depressed and 20 to 30 is severely depressed. Among the factors impacting attitude were self esteem, mastery and perceived health control. Self esteem was measured with the Rosenberg self esteem scale to denote the degree to which an individual perceives themselves as possessing positive characteristics and abilities. Mastery was assessed using 7 dichotomous questions, with scores ranging from 7 to 35 (Pearlin & Schooler, 1978) to denote the extent to which an individual perceives control over their own life events, versus being subject to external forces. A

higher mastery score represents a perception of greater mastery over one's environment. Perceived health control was assessed using a three-item Likert scale, ranging from 3 to 15, to capture the degree to which individuals believe that their actions have a significant influence on their health. Higher perceived health control scores represent a perception of greater perceived health control. The Minnesota Leisure Time Physical Activity (LTPA) Questionnaire was used to measure physical activity.

In this sample, 227 of the 394 Mexican Americans were women. These women had on average 9 years of formal education, an average annual income of $15,000, a mean mastery score of 24 (± 4) , a mean fat avoidance score of 4 (± 1), a mean depression scale of 7 (± 6), with 36% deemed as sedentary, 20% active, and the remaining 44% as very active. Hence, this sample had a moderate to strong level of mastery, reportedly avoided four fat sources, were not depressed and were overall inactive. Neither dimension of acculturation was significantly associated with LTPA. Using multiple regression, the final model showed that gender (p <0.001), self esteem (p =0.002), BMI (p =0.001), and depression (p=0.01) had an independent effect on LTPA. Perceived health control did not mediate LTPA when contextual and SES variables were added to the model (p=0.07). Fat avoidance was found to be associated with LTPA (p =0.049), holding all other variables constant. It is noteworthy that BMI, smoking history, and depression were negatively associated with LTPA.

The authors found that fat avoidance, BMI, depression and smoking history may have been partial mediators of LTPA. In this sample, Mexican Americans reported less LTPA than European Americans, yielding a moderate effect size of clinical significance

(Cohen's d= 0.7-0.8). The analysis was not reported by gender but by ethnicity which makes interpretation difficult.

Durant, Bartman, Person, Collins, and Austin (2009) analyzed the influence of patient provider communication on attitudes concerning the health effects of obesity. This research analyzed attitudes about an individuals' current weight dependent upon whether healthcare provider advice was given. Of the 1,071 subjects, 849 were women 59% were obese and 41% were overweight. The authors concluded that patients' perceptions of the effect of their weight on their health were strongly related to provider communication and ethnicity. Without provider advice, Latino overweight or obese persons are 32% less likely to see their weight as damaging to their health. Latinos experienced a more positive impact of provider advice on their perception that current weight is damaging to their health (p= 0.01) when compared to Caucasians. The authors assert that Latinos were particularly responsive to provider advice, such that the odds of being Latino and being told by their health care provider that they were overweight were 36 times the odds (OR= 36.2, 95% CI: 15, 88) to report that their weight was damaging to their health as compared to the odds of being Latino and not told by their provider that they are overweight. Results of this study should be interpreted with caution as the authors reported their results separately for Caucasians and Latinos and provider advice status, and not by gender.

Hubert, Snider and Winkleby (2005) conducted a cross-sectional survey similar to the BRFSS in 901 Latino adults from the community and agricultural labor camps in California which assessed attitudes on perceived health status. The majority of this sample (98%) was Mexican-American. Results for the 380 Latina women from the

community sample were reported. Health behaviors, acculturation status, sociodemographic characteristics, chronic disease risk factors and the role of healthcare providers were analyzed in association with BMI status. Health behaviors analyzed included exercise, television watching, dietary practices, alcohol and smoking. Acculturation was assessed by generational status, years lived in the US, and primary language spoken at home. Chronic disease risk factors assessed included high blood pressure, high cholesterol, and diabetes.

Perceived health status was rated fair or poor by 25% of Latinas with normal BMI, 29% who were overweight, and 46% who were obese, adjusting for age. The mean number of doctors visits per year increased with increasing BMI category, as did rates of high blood pressure and diabetes. The majority of women in the normal BMI category were born outside the US (70%). More first and second-generation Latinas had higher BMI suggesting that greater acculturation is associated with higher BMI. Several factors were associated with overweight or obesity including education, age, income and marital status ($p \leq 0.05$), as well as generational status, a proxy for acculturation ($p \leq 0.001$) and the health behaviors which included having less than 2.5 hours per week of exercise, watching TV regularly, drinking whole milk, eating chips or fried snacks and not eating fruit the day prior ($p \leq 0.05$).

Obese Latinas had unique perceptions of weight, made attempts to lose weight and often discussed weight with healthcare providers. Of obese Latinas in the community, 83% perceived themselves as overweight, with 72% reporting attempts to lose weight. Of obese Latinas trying to lose weight, 94% tried to lose weight by dieting, and 52% tried losing weight by exercising. Among obese Latinas who perceived

themselves as overweight, 88% discussed diet or exercise with a healthcare provider, as did 74% of those who were actively trying to lose weight.

These findings have significant implications. Higher acculturation status, diet, exercise and the sociodemographic factors including age, education, income and marital status were related to overweight or obesity in Latinas. It was of note that the rates for poor perceived health status did increase with increasing BMI. More fried fast food was consumed along with less fruit for those with higher BMIs than for those with normal weight BMIs. Of those who perceived themselves as overweight (83%), the majority reported attempts to lose weight (72%), and consulted with a healthcare professional about diet or exercise (74%). These findings suggest appropriate attitude changes concerning health status in response to BMI increases. Yet, weight loss and diet changes were inadequate when healthcare provider consultation was sought.

Seo and Torabi (2006) conducted a study of 981 participants, 193 of which were Latino, assessing attitudes towards obesity among US adults. Latinas had a mean BMI of 27.4 ($\pm$ 0.6) kg/m^2 in this sample. Obesity was present in 26.9% of Latinas and a combined 54% were overweight and obese. The investigators assessed attitudes to six perceptions about obesity. The researchers did not report results according to sex.

Among US adults, the attitude that "obesity is a major burden on society in terms of healthcare costs" was shared by 20% of Latinos. The attitude that "obese people can do something about their weight" was shared by 63% of Latinos. The attitude that "obese people can lose weight by watching their eating habits" was shared by 79% of Latinos. The attitude that "obese people have a higher chance of getting various forms of cancer" was shared by 68% of Latinos. The attitude that "there is a difference in life expectancy

between those who are and who are not obese" was shared by 55%. Among US adults, the attitude that "obesity is a serious health problem in the US" was shared by the majority (88%) of Latinos. From this data, it can be suggested that the impact of obesity on health is recognized by the majority of Latinos.

Attitudes and Beliefs about Latina Obesity

A study by Tsai et al. (2009) investigated beliefs about the efficacy of prescription medications and the efficacy and safety of OTC supplements in the treatment of weight loss. Also, attitudes about practices related to weight and weight control were studied. In this study of 1,437 subjects, 68 were Latina, 47% of whom reported themselves as being obese and 38% as overweight. Regrettably, the researchers did not perform the analysis by ethnicity or gender, therefore conclusions about the beliefs and attitudes that Latinas have concerning weight loss treatments cannot be drawn.

Nonetheless, results demonstrated that there were differences by ethnicity and education. In general, Latinos had a 62% greater chance of reporting use of over the counter (OTC) weight loss products ($p<0.005$) and a 50% lower chance for reporting use of commercial weight loss programs, ($p<0.002$) as compared to Caucasians. Even after controlling for numerous factors, education was found to have a significant effect on the use of weight loss treatments. African Americans and Latinos with some college or more had a 36% decreased odds (OR=0.64, 95% CI= 0.47, 0.88) of using OTC weight loss products. African American and Latinos who completed college had a 91% increased odds (OR= 1.91, 95% CI: 1.46, 2.50) of using commercial weight loss programs. The researchers suggest that this difference may be the result of difficulty accessing formal

weight loss treatment programs, cultural views about weight or lower levels of education about weight management or less marketing of OTC products to minorities.

Synthesis of Findings

The literature review of knowledge, attitudes and beliefs about obesity in Latinas is limited. Thirteen studies were reviewed that addressed knowledge, attitudes, and/or beliefs about obesity in Latinas as measured by weight. Of these, nine were cross sectional studies, two were longitudinal studies, one was a randomized controlled trial (RCT) and one study used a mixed-methods design. Of these 13 studies, 12 are descriptive studies and one is an RCT, therefore limited cause and effect can be inferred. With descriptive studies, relationships can be described, but causality cannot be determined. While limited, other studies provide important descriptive correlational data. In addition to considerations about the strengths of study design, the analysis reported in these studies have limited application in the Latina population as analysis was not reported by gender and ethnicity in 11 of the 13 studies. Although cultural and regional differences exist between different Latina subgroups, only four of these studies reported results according to sub-group. Furthermore, because analysis including subgroups did not report by gender, these data cannot be used to detect differences between men and women within different Latina subgroups.

Knowledge was assessed in relation to weight in the study by Klohe-Lehman et al. (2006) with a 25-item nutrition questionnaire developed by the investigators. The longitudinal study researchers concluded that greater initial knowledge was not a reliable indicator of better initial weight control, independent of BMI. The one longitudinal study was unable to document a significant increase in nutrition knowledge perhaps due to an

insufficient sample size. Limited conclusions about the impact of knowledge on obesity can be drawn from this one study. This suggests the need for further research on how Latina's knowledge affects weight, BMI, weight loss, and weight maintenance in interventions combining knowledge, diet, physical activity and behavior lasting 8 weeks and longer. In general, it has been well documented that knowledge alone, while important, is not sufficient to produce behavioral changes (Harris, Smith, & Veale, 2005). Further research is needed to understand what knowledge areas produce the best outcomes in obese Latinas, addressing more comprehensive topics besides nutrition and physical activity in isolation. Limited conclusions can be made from this study indicating that learning did occur but further research is required to learn how the increase in knowledge affects weight, BMI, weight loss, and weight maintenance. Further research is needed in the area of knowledge of nutrition and physical activity in overweight and obese Latinas.

In this review, measurement is a considerable issue. Each study used a different instrument to measure its phenomenon, with one exception of self-perceived health status. The ordinal scale used to measure self-perceived health status including five descriptors; "excellent", "very good", "good", "fair" or "poor" was used in the studies conducted by Mack and colleagues (2004) and Kepka and colleagues (2007). Perceived and desired ideal weights were measured differently in two studies. Current weight status was measured differently in four studies. Body image and perception of body size and attractiveness was measured differently from the silhouette figure ratings in the study by Cachelin (2002) to the Figure Rating Scale in the study by Sanchez-Johnson et al. (2004). Self esteem was measured using the Rosenberg self esteem scale, mastery using a

standardized scale and perceived health control using a three-item Likert scale developed by the authors (Dergance et al., 2005). Acculturation was measured differently in four studies. Hence, it is not only difficult to compare results, as different studies used different instruments to measure the same phenomenon, but it is also challenging to making conclusions.

In this review, attitudes about obesity in Latinas were assessed by measuring the domains of body image, self-rated perceived health status, perception of body size and attractiveness, self esteem, mastery and perceived health control. Perception of weight was inaccurate for both women of a normal weight or underweight individuals who over-assessed their weight (33%), as well as for overweight (31%) and obese (7%) Latinas who under-assessed their weight (Kuchler & Veriyam, 2003). This suggests a disparity for Latinas, independent of weight category, to accurately assess their weight. An inaccurate perception of weight may influence weight maintenance and weight loss goals. Therefore, further study is required about the perception of weight amongst Latinas.

Furthermore, findings from two studies suggest that perception of weight influences actual BMI category. This is evidenced by Latinas who had a normal BMI also desired a weight in the normal weight range (Mack et al., 2004). Mexican Americans with higher rates of overweight and obesity and low acculturation status had higher rates of perceived ideal weight or underweight (Ahluwalia et al., 2007). An inaccurate perception of normal weight prevents an individual from acknowledging when they are actually overweight or obese and has implications for the development of weight loss goals.

As expected, a desire to lose weight was associated with weight loss attempts. In one study (Ahluwalia et al., 2007), there was a statistically significant difference between women who desired and attempted to lose weight by acculturation status. However, different results were reported concerning BMI and acculturation status. Low acculturation status was associated with lower rates of wanting or attempting to lose weight, and higher rates of overweight and obesity (Ahluwalia et al., 2007). Yet, these results were inconsistent with another study where high acculturation status was associated with higher BMI (Hubert et al., 2005).

There were conflicting results in the evidence concerning healthcare providers' discussions about diet and physical activity in Latinas. Findings from Mack et al. (2004) demonstrate a disparity between overweight and obese Latinas receiving advice to lose weight, when clearly indicated. Of these Latinas, most were in their 30s with the largest proportion wanting to lose 20 to 40 pounds. However, 75% of Latinas reported not receiving any advice concerning their weight. From a prevention standpoint, a great opportunity was missed to counsel these patients on this cardiovascular health risk by using BMI status, especially when the desire to lose weight was present in these young Latinas. On the contrary, another study reported that discussions about diet or exercise with healthcare providers occurred in 80% of Latinas living in the community. Not surprising, 88% of obese Latinas in this sample reported perceiving themselves as overweight and 74% were reportedly trying to lose weight (Hubert et al., 2005). However, this study did not report results by BMI, but only for obese Latinas, making it difficult to discern if the same rates of weight and diet counseling were given to Latinas of normal weight, and those who were overweight and obese. This data suggests that a

disparity may exist for healthcare providers to engage in diet and physical activity counseling in obese Latinas or expressly between overweight and obese Latinas.

There is a lack of conclusive information detailing the knowledge, attitudes and beliefs about obesity in Latina women. Better understanding is needed to appreciate how overweight and obesity is viewed by Latinas to develop and implement effective programs to combat obesity. This understanding may influence choices concerning nutrition and physical activity which may impact weight management, weight gain and ultimately cardiovascular risk. An improved understanding of Latinas' perceptions and beliefs about obesity can be used to tailor interventions to improve efficacy of treatment. An improved understanding of knowledge, attitudes and beliefs about obesity particularly in Latinas can benefit not only this segment of society directly, but will likely have a positive impact on future generations of Latina children. There were conflicting results for the role of acculturation with BMI, with one study reporting that Latinas with higher acculturation had higher BMIs, while another study reporting that Latinas with a high acculturation status had a higher proportion of healthy weight, as compared to those with low acculturation status.

In conclusion, several gaps were identified in the literature about knowledge, attitudes and beliefs about obesity in Latinas. Data do not exist that offer explanations about the impact of cultural norms within the Latina culture on activity, nutrition and obesity. Further data are needed to explain misperception of weight amongst Latinas and the extent to which it is affected by acculturation. Finally, further research is needed to understand why healthcare providers do not discuss diet and physical activity with overweight and obese Latinas.

Filling these gaps the literature would inform the development and implementation of obesity interventions. Cultural implications in the development and implementation of PA and nutritional recommendations must be explored. One area requiring further exploration is the efficacy of culturally-tailored physical activity (PA) and nutrition interventions. The extent to which the healthcare providers were bilingual and/or bicultural and this having influenced the effectiveness of the interventions is not reported. Additionally, the extent to which health information was available in Spanish has not always been explicated. Another area of study is the effect of acculturation on diet and physical activity. Lastly, further study is required to understand the reasons in favor and in opposition to actively engaging in physical activity and nutrition.

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Chapter 3:

Theoretical Framework: Self Efficacy, Fatalism and Obesity

Current practice guidelines for the management of overweight and obesity contain program recommendations for diet, exercise and behavioral therapy (Fabricatore, 2007). Although behavioral therapy, and not cognitive therapy, is incorporated into current management guidelines, obesity researchers and providers recognize and utilize both cognitive and behavioral approaches in the treatment and management of obesity. Accordingly, appropriate theoretical frameworks are used to achieve weight loss and weight management in the overweight and obese. Total lifestyle modification is the goal of current program recommendations in the obese population. The literature has clearly substantiated that achieving and maintaining weight loss are significant challenges that necessitate the use of cognitive therapy in combination with behavioral therapy.

Several theories have been used to implement weight reduction strategies in the overweight and obese including Prochaska's (1997) Transtheoretical Theory Model (TTM) (Johnson et al, 2008; Andres et al., 2009), Bandura's (1977) self efficacy theory (Hochbaum, Soreson, & Lorig, 1992), the health promotion model (HPM) (Pender, 1982) and the health belief model (Rosenstock, 1974). The TTM, developed by Prochaska (2002), incorporates the well-known main construct, stages of change, with the constructs of decisional balance, process of change, and self-efficacy (Johnson et al., 2007; Prochaska, 2002). The HPM, developed by Pender (1982), recognizes five perceptions related to behavior based on the perceptions of one's control of health, health status, self-efficacy, benefits and barriers for behavior change. The Health Belief Model (HBM) is another theory developed in the 1950s by social psychologists working for the US Public Health Service to predict health behaviors. The HBM sought to predict health behaviors by studying attitudes and beliefs about several health constructs including perceived

susceptibility, perceived severity, perceived barriers, perceived benefits, and cues to action. Self-efficacy was added to the HBM as a construct in 1988.

Although a part of the HPM, TTM, and HBM, self efficacy is but one concept out of many used to predict health behaviors. As self efficacy is such a central tenet in the theoretical frameworks used in obesity, the work of Bandura will be discussed. Bandura's model will be presented. The cultural context of fatalism will be described and the relationship of self efficacy in this context will be discussed.

Social Cognitive Theory

Bandura developed the Social Cognitive Theory (SCT) in 1986 by incorporating beliefs about self with Social Learning Theory (SLT) (Bandura, 1997). As beliefs about self are created by a person's cognition, SCT incorporated cognition as a key ingredient to explain human adaptation and change. Cognition distinguishes learned information from that which occurs from self-regulation and self-reflection. By incorporating cognition into learning, people are viewed as reflective, self-regulating, and proactive individuals, rather than merely reactionary creatures subject to external forces (Pajares, 2002). Cognition, therefore, influences people's information processing, reality construction, self regulation and behavior modification. Furthermore, human functioning results from personal, behavioral and environmental influences (Pajares, 2002). Personal factors include cognition, affect and biological events. Reciprocal determinism is a key tenet introduced in the SCT that describes the relationship between personal factors, behavior, and environment. The strength of influence for each factor will vary dependent upon each activity and circumstance (Bandura, 1997).

Bandura created a model to demonstrate the association between efficacy beliefs and outcomes to show how alterations in efficacy beliefs can effectively change outcomes. Behavior determines outcomes, which are dictated by efficacy beliefs. Efficacy beliefs vary in level, strength and generality for each task and are responsible for directly influencing behavior. Accordingly, outcome expectancies are contingent upon efficacy beliefs. Outcome expectancy is a judgment about the effect that a given behavior will produce, specifically physical, social and self-evaluative effects, which is also helpful when changing behavior. Consequently, behaviors are associated with outcome expectations, which, together, produce outcomes. Outcome expectancies are the anticipated physical, social and self-evaluative effects of behavior.

Self-Efficacy Theory

Development.

Self efficacy is a concept that originated from the pursuit for stability in one's future, and materialized into theory by Bandura in 1977. Throughout history, the future of civilization has been subject to external forces which completely or partially controlled their destiny. External forces included environmental controls, beliefs in deities and supernatural forces. Still, people aspired to have more influence over the events that controlled their lives. The pursuit of knowledge was needed to predict events and thereby, wield some control over them. Subsequently, people sought to influence the determinants which affected their lives and their futures. Self- efficacy is a central belief in this pursuit.

Description of self efficacy theory.

Self-efficacy refers to the belief about a person's capability to organize and execute the actions necessary to achieve a desired outcome (Bandura, 1997). Self efficacy is important in understanding human behavior as one's beliefs about their capabilities influences outcomes. In fact, people's actions, motivations, and affective states are based more on what they believe they are capable of, rather than the true extent of their capabilities (Bandura, 1997). For this reason, accomplishments can be better predicted by a person's self-efficacy beliefs than by their knowledge, skills or previous attainments. This premise explains why two people who possess the same capabilities may demonstrate different behavior and experience different outcomes as a result. Self efficacy, combined with skill, is pivotal to achieving a desired outcome.

Sources of self-efficacy.

The sources of self efficacy are important in understanding how the process of selection, interpretation, and integration of efficacy information is translated into personal efficacy evaluation. Four sources of information that create self-efficacy beliefs have been identified: enactive mastery experiences, vicarious experiences, verbal persuasion and physiological and affective states.

Enactive mastery experience.

The principle source of information comes from enactive mastery experiences, which serves as the best evidence of whether a person has what it takes to succeed. Enactive mastery experience requires a person to actively engage in a challenge in order to acquire a mastery experience. Bandura asserts that difficult experiences provide an unparalleled opportunity to learn how to turn failure into success by sharpening one's

capabilities to exercise better control over events. Efficacy is gained through conquering difficult situations, especially when success is experienced through adversity, making a person more resilient for subsequent challenges (Bandura, 1997). Perseverance through difficulties and setbacks establishes efficacy, which teaches a person that sustained effort may be required to experience success. This active process is the best way for an individual to create and strengthen their efficacy beliefs, in contrast to other approaches including vicarious experience, cognitive simulation or verbal instruction (Bandura, 1997).

Efficacy beliefs are developed through enactive mastery experiences, which require the acquisition of cognitive, behavioral and self-regulatory skills to organize and execute the necessary actions for effective performance. Cognitive ability is developed by breaking down complex skills into simple skills that can easily be mastered and ordered by level of importance. Developing efficacy not only requires the creation of effective rules and strategies, but also the encouragement for consistent application. Improvements in execution last longer when beliefs of personal efficacy are raised during skill development.

Not only are knowledge and skill required to produce achievement, but also validation. Validation increases a person's beliefs of personal efficacy, which results in improved performance (Bandura, 1997). It follows that improved performance typically increases a person's beliefs of personal efficacy, but not always. Apart from the degree of performance success, what is consistently responsible for changing a person's beliefs of perceived efficacy are the cognitive processing and the meaning of capability that is conveyed from those performances.

Appraisal of self efficacy cannot be measured solely by performance success, but rather, it is an inferential process that must take into account the ability and inability factors that contribute to performance success and failures (Bandura, 1997). Therefore, the degree of perceived efficacy change depends not only upon a person's preconceptions of their capabilities, but are also dependent upon many factors related to each accomplishment including perceived difficulty, the amount of energy spent, the amount of external assistance received, the circumstances under which they perform, temporal pattern of their successes and failures and how their enactive experience is cognitively cataloged and recreate in memory (Bandura, 1997).

Vicarious experience.

Vicarious experiences are mediated through modeled attainments and serve as an additional source of information about a person's capabilities. Modeling is a tool to promote personal efficacy. Given that people evaluate their capabilities by comparing their attainments to the attainments of others, social comparison largely influences a person's self appraisal of their capabilities (Bandura, 1997). The self efficacy appraisal of one individual is dependent upon the capabilities of the individuals used for comparison. Accordingly, efficacy beliefs are increased when outperforming the contender, but decreased when being outperformed.

Verbal persuasion.

Verbal persuasion is a tool used to provide encouragement and positive appraisal to others in order to strengthen their beliefs that they are capable of achieving their desired outcomes (Bandura, 1997). This approach is used to help increase perceived efficacy to master a given task rather than focusing on deficiencies when difficult

situations arise, helping them to mobilize and sustain the hard work necessary to attain their desired outcome. Moreover, self- affirming beliefs endorse the development of skills and personal efficacy needed to attain the desired outcome. Verbal persuasion is most likely to be successful with people who possess a good reason to believe that they can achieve the desired outcome. If the positive appraisal is within reason, it can reinforce self change, but done alone, however, it has limitations for producing long lasting increases in perceived efficacy.

Physiological and affective states.

Physiologic states are those pertaining to the health and function of the body, while affective states pertain to feelings or emotions (Merriam-Webster, 2010). A person's emotion and physical states affect the body through various mechanisms and thereby influence efficacy beliefs. Physiologic and affective states are especially important in health functioning and stress management and physical achievement. Heightened states of arousal and stress can negatively impact performance and cause distress, either of which bears consequences on efficacy. Physical symptoms such as fatigue, dyspnea, and aches and pains influence efficacy beliefs about strength and stamina. Affective states also influence efficacy beliefs. Therefore, efficacy beliefs are modified by improving physiologic and affective states through decreasing stress, improving physical status, decreasing negative feelings and emotions and improving interpretations of physiologic states.

Self Efficacy and Obesity

Fatalism

The concept of self efficacy is one that may be contradictory to the prevalent

Latina notion of fatalism. Fatalism is a central theme in many Latina cultures. Fatalism is defined as the belief that events are destined or caused by external forces and that little, or nothing, can be done to change their course (Florez, Aguirre, Viladrich, Cespedes, De La Cruz, & Abraido-Lanza, 2009). Fatalism has been explored in the literature as it relates to various patient groups with cancer such as: breast, ovarian, cervical, colorectal and skin, in addition to HIV/AIDS, depression, breastfeeding and trauma; however, it has not yet been described in relation to obesity. Research seeks to identify unique culture based factors that may account for differences in outcomes. There is good reason to believe that fatalism may qualify as such a difference.

Fatalism is a principle that influences attitudes, beliefs and values in Latinas, and to some extent, in the African American culture (Powe, Cooper, Harmond, Ross, Mercado, & Faulkenberry, 2009). As a central belief in the Latina culture, fatalism serves as a culturally based premise that may serve to explain differences in health care practices and health outcomes, including obesity.

Fatalism is a contradictory belief to that of self efficacy. When viewing obesity through a fatalistic approach, a person would believe that they are meant to be obese and there is nothing that can be done to change their weight. Conversely, when viewing obesity thought the lens of self-efficacy, a person would believe that they are capable of taking action to improve their weight and health status, and are capable of proactively shaping their future. Implementing self-efficacy as the framework for obesity interventions has the potential to change beliefs and thereby improve outcomes. By substituting fatalism with the tenants of self-efficacy, the obesity battle would change

from indomitable to a realistic pursuit where weight loss and weight maintenance can be achieved.

Application of Self Efficacy in Obese Populations

Self efficacy is used to assess nutrition and physical activity behaviors and patterns in the obese. Self efficacy is addressed in the varied cognitive behavioral interventions with weight loss as its primary goal. Interventions address self efficacy through weight loss strategies for regulating eating habits and exercise activities through adherence. In a study of overweight and obese women, researchers found that low exercise self efficacy, and more frequent diet attempts, stringent weight loss evaluations were associated with poorer long-term outcomes (Teixeira et al., 2005). This data suggests that the use of self efficacy as a theoretical framework for interventions designed for overweight and obese women could increase self efficacy and be used to develop more effective management and treatment goals for weight loss.

Another aspect that is important to the treatment of obesity lies in the constant vigilance regarding weight. Obese individuals have vast experience with fluctuating weight, weight loss interventions and challenges attaining long-term weight loss. The hard-won challenge of weight loss is defeated with weight regain. Even still, Bandura (1997) asserts that personal efficacy is still improved in those who regain much of what they lost, as compared to those who continue to gain weight without experiencing some self-regulatory control, because partial success was gained from the initial weight loss experience. Self regulation assists and maintains the habit changes required for weight loss. Yet, more research is needed to effectively combat the epidemic of obesity. In addition to weight gain, weight loss maintenance is an area requiring more research as

data shows most people who lose weight will also experience weight regain (Elfhag, & Rossner, 2005; Turk, 2009).

Conclusion

Self efficacy is an appropriate theory to be used in obesity research as data suggests low self-efficacy, among other factors, is associated with behavior which interferes with the ability to lose and maintain weight, and return to obesity status (Byrne, 2002). Additionally, fatalism may partially explain the prevalence of obesity in Latinas, as weight loss and weight maintenance would be unrealistic goals if an individual holds the belief that would negate the very premise for implementing an intervention. Lastly, the tenets of self efficacy uphold the goals of weight loss and weight maintenance, whether incorporated into commercial or individually-led programs. Therefore, this review of self efficacy demonstrates a clear indication for use in the Latina overweight and obese. Self efficacy provides a framework for an overweight population, as it upholds the necessary tenets to overcome weight loss and weight maintenance challenges.

The myriad of interventions targeted to reduce weight and prevent weight regain will accomplish nothing if an overweight person has low perceived self efficacy. In addition, if the challenges of being overweight, compounded with cultural beliefs make the prospect of these goals impossible, treatment must begin with self efficacy to retrain the person to believe that they are capable of achieving such goals. Healthcare professionals must take inventory of self efficacy in an overweight or obese individual prior to counseling in order to develop appropriate and manageable goals. Failure to do so may result in producing unrealistic goals for an overweight person, which may

consequently decrease self efficacy, further complicating treatment and undermining long-term treatment goals.

Chapter 4:

Methodology

Chapter four provides a description of the methods for this study including design, setting, sample, recruitment, measurements and data collection procedures as well as ethical considerations. This chapter is concluded with a description of the data management, data coding and the data analysis plan.

Study Design

This study used a cross sectional design to describes the knowledge, attitudes, beliefs and behaviors about physical activity, weight, nutrition and health in young, low-income Latina adults

Setting and Sample

Setting

The setting for recruitment of study subjects took place in two clinics (the Women, Infants and Young Children (WIC) clinic and the RotaCare Free Medical Clinic in San Rafael). Subjects were primarily recruited from these two clinics. Data collection occurred from February 08, 2011 to April 14, 2011.

These settings were chosen because of their high concentration of Latinas. The most recent data stated that the Latino population in the San Rafael community was 13,070 or 23.3% of the total population (US Census Bureau, 2000), as compared to the national average of 12.5%. Since a low SES is associated with greater health risks, this is an underserved population requiring study. Additionally, this site was desirable to conduct this doctoral dissertation study, because of the close proximity to the researcher's residence in the East Bay area, increasing the feasibility of recruiting the necessary number of subjects, in addition to having clinic staff that were eager to participate and supportive of research about overweight and obesity.

Sample

For this convenience sample, subjects were asked to participate in this study if they met the following inclusion criteria: self-identified Latina women, 18 to 45 years of age, low-income, living or residing in Northern California, spoke English or Spanish and who gave written informed consent. Low income was defined as having a gross income at or below the 185% Federal Poverty Level (WIC, 2011) [i.e. less than $40,793 for a family of four]. Exclusion criteria were as follows: women who were lactating, currently pregnant, or within 6 months post-partum.

Sample Size Calculation

To estimate the proportion of subjects who reported physical inactivity/ sedentary lifestyle, proportions with a 95% confidence interval (CI) were calculated and reported. Utilizing an expected proportion of 0.20 and a total width of the CI of 0.15, the required sample size was 109, determined by the tabled value for estimating sample sizes for descriptive studies (Hulley et al., 2007). Twenty percent oversample of subjects was added to account for the possibility of missing data. A required final sample size of 131 subjects was the total number of subjects required, as calculated using the equation by Hulley and colleagues (2007, p. 91). An estimated 400 people were screened to meet this sample size calculation.

Recruitment

A variety of ethnically relevant recruitment strategies were used for subject recruitment including flyers, brochures and posters in English and Spanish (Appendix A). The clinic managers notified potential subjects about the study and provided the contact information located on the flyers for further questions and instructions about

participation. At clinic sites, recruitment occurred where privacy could be maintained, in or near the lobby or waiting area, following check-in.

The procedure for participant recruitment was the same at both sites. First an clinic employee approached the potential study subject to discuss if they were willing to hear about the study from the researcher. If the subject was willing to discuss the study, the researcher approached the subject and offered her a flyer and/or brochure. Flyers and brochures included study description, inclusion and exclusion criteria and included a phone number they could call for further information if interested in participation.

Initial eligibility screening was conducted with all women who expressed interest. If she completed this first-level screening, an invitation to participate in the study was extended. The number and reasons that women declined participation were monitored. An explanation of the study description and the subject's rights were provided to each woman during the informational session and subjects were given the opportunity to ask questions before signing the consent form. The subject was asked to complete a written informed consent and enroll using UCSF's consent to participate in a research study (Appendix B).

Measurements

The study instruments and the rationale for their use are described here. These include measures of demographics, physical activity, nutrition, weight, anthropometry, health and psychosocial factors (depression, social support, self efficacy for physical activity and nutrition, acculturation, and fatalism) as shown in table 4.1. The following measurements were obtained using interview-administered questionnaires and anthropometric measurements.

Table 4.1 *Variables, Measurements and Instruments*

Variable	Measure & Source	Number of Items
Subject Characteristics	Socio-demographic questionnaire	17 items
Socio-demographics	Individual and Family Health History	32-items
Physical Activity	2008 PA Guidelines (Yes/No) question (USDHHS)	5-items
	Sedentary behavior/ physical inactivity questions	2-items
	Habitual physical activity questionnaire (HPAQ) (Baecke, Burema & Frijters)	16-items
	Discovery Health Media survey	2-items
	Active Partnership (AHA) Exercise Quiz	10-items
Weight	Self reported (SR) weight & waist circumference	2-items
	Discovery Health Media survey	4-items
	Perceived body weight & Ideal Body Weight	1-item
	Body dissatisfaction score (Calculated after interview)	2-items
	Figure Rating Scale (FRS) (Stunkard)	8-items
	Active Partnership (AHA) Weight quiz	1-item
	Obesity as an independent risk factor for CHD (AHA)	1-item
	Scale Weight & Ruler Height	1-item
	Calculated BMI (Calculated after interview)	1-item
	Tape measure for waist circumference	1-item
Nutrition	Discovery Health Media survey	5-items
	USDA Dietary Guidelines	6-items
	Self reported beverage consumption	3 added items
	Active Partnership (AHA) quizzes	16-items
Health	Medical Outcomes Study (MOS) (RAND) Questionnaire	2-items
	Discovery Health Media survey	4-item
	Patient Health Questionnaire-9 (PHQ- 9) (Kroenke, Spitzer, & Williams)	9-items
Psychosocial Factors		
Social support	ENRICHD Social Support Instrument (ESSI)	7-items
Acculturation	Short Acculturation Scale for Latinos (Marin, Sabogal, Marin, Otero-Sabogal & Perez-Stable)	12-items
	Hubert, Snider and Winkleby, 2005	3-items
PA Self efficacy &	Physical Exercise Self Efficacy Scale (Schwarzer & Renner)	5-items
Nutrition Self efficacy	Nutrition Self Efficacy Scale (Schwarzer & Renner)	5-items
Fatalism	Definition of fatalism asked of PA, Weight, Nutrition and Health	4-items

Demographics

Questions pertaining to demographic and health data were based on well-known, reliable and validated national surveys such as the National Health and Nutrition Examination Survey (NHANES), studying health and nutrition in adults throughout the United States (CDC, 2009).

Physical Activity

Baecke Habitual Physical Activity Questionnaire.

Physical activity (PA) was obtained by using the Baecke PA Questionnaire, also known as the Baecke Habitual Physical Activity Questionnaire (HPAQ). The HPAQ was designed by Baecke, Burema, and Frijters (1982) to measure habitual PA with a self-administered questionnaire in young adults with different levels of education. The HPAQ consists of 16 questions. The three categories of questions are occupational/work PA (items 1-8), sport PA during leisure time (items 9-12), and habitual PA during leisure time (items 13-16). Scores for each PA category are calculated, yielding a 5-point work index score, a 5-point Sports Score, a 5-point leisure index score and a 15-point total score (Jacobs, Ainsworth, Hartman & Leon, 1992). An equation is also available to calculate a simple score for sports (Baecke, Burema & Frijters, 1982). Reliability and validity of the Baecke HPAQ has been reported in Latinas (Rauh, Hovell, Hofstetter, Sallis & Gleghorn, 1992).

The psychometric properties of the HPAQ are robust. Baecke, Burema, and Frijters (1982) report reliability to be good with test-retest reliability of 0.74-0.88. Jacobs, Ainsworth, Hartman & Leon (1992) further confirmed the test-retest reliability with values ranging between 0.78 and 0.93 after 12 months, and a correlation between the

Baecke sports score and a four week physical activity history related to heavy intensity activity (r= 0.71) and a light intensity leisure activity (r= 0.69). The correlation was good between the Baecke total score and the treadmill test reporting cardio-respiratory fitness (r= 0.53). The correlation reported between percent body fat and the Baecke leisure and total scores was -0.37> r> -0.44) (Jacobs, Ainsworth, Hartman & Leon, 1992).

For the purposes of this cross sectional study, Self report measures were considered most feasible. Additional items in this section were obtained from the Physical Activity Guidelines for Americans issued by the USDHHS (2009), An Active Partnership issued by the AHA (2007), as well as How America Measures Up, a national survey conducted by Discovery Health Media (1999) published in Newsweek and two questions assessing physical inactivity constructed by the study's investigator.

Weight & Anthropometry

Weight data were obtained using both self report measures of weight perception as well as anthropometric measurements. Weight is reported as pounds. Several sources were selected to obtain data about knowledge about weight and beliefs.

Self reported weight and body image perception.

The participants were asked to report their weight and waist circumference in pounds and inches and asked to classify themselves into one of the following weight categories "underweight", "ideal", "overweight", or "obese". Perceptions about body size were obtained by the Figure Rating Scale (FRS).

The FRS was developed in 1983 by Stunkard and colleagues as a self-report measure of body image assessment using a scale of nine body silhouettes ranging from one to nine representing body sizes from very thin to very obese. The FRS was used to

obtain three self-report ratings including an individuals' current size, desired size and a discrepancy score (current-desired), commonly referred to as a body dissatisfaction score. Reliability and validity of the FRS is good with a test-retest reliability coefficient of 0.89 and 0.71 for current and actual body size, respectively (Thompson & Altabe, 1991). Statistically significant correlations have been reported between FRS and measured overweight percentages (r= 0.79) (Stunkard, Sorensen, & Schulsinger, 1983). In a Caucasian sample with high correlations between measured and self-reported height (0.94) and weight (0.98) for women, the classification of obesity was characterized by the sixth silhouette and thinness by the fourth silhouette (Bulik et al., 2001). Furthermore, Cardinal, Kaciroti and Lumeng (2006) have reported strong correlations (r=-.87) between figure ratings obtained by observers viewing videotapes of subjects standing (0.91) and sitting silhouettes (0.85) and BMI.

Weight Measurement.

Anthropometric measurements were obtained from the following: body weight, body height and waist circumference. Weight measurement was obtained by the Electronic Tanita BWB-800S digital scale. The features and specifications of the BWB-800S are located in table 4.2. The properties of the Tanita BWB-800S digital scale are detailed as graduation and tolerance specifications. The graduation refers to the increments in which the scale will read the weight. The tolerance specification is the acceptable variation at a specific weight. Two ranges of tolerance are commonly provided for verification of weights, differing in tolerance ranges for verification a low range (i.e.. 0-110 lb) and a high range (i.e.. 111-440 lb). This digital scale is calibrated with a machine at the Tanita facility using metric weights throughout a full range of

values: 50kg, 100kg, 150kg, and 200kg. The procedure for measuring weight is outlined in table 4.3.

Table 4.2 *Technical Features and Specifications of the Tanita BWB-800S Digital Scale*

Technical Specifications	Technical Features
Maximum Capacity: 200 kg (440 lbs)	lb/kg switch
Increments: 0.2 lb (0.1 kg)	Display: 1" (25 mm)
Display Size: 6.25" x 7.9" x 1.4" (16 x 20 x 3.5 cm) w/ 1.1" LCD	Weighing System: Single-point load cell
Platform Dimensions: 11.8" x 13.3" x 3.1"	Easy-to-read 5-digit, 1 inch display
Graduation: 100 g (0.2lb)	Auto center zero
Tolerance Specifications: 0-50 kg (0-110 lb) +/- 100 g (+/- 0.2 lb)	Unit Weight: 15 lb
Tolerance Specifications: 51-200 kg (111-440 lb) +/- 200 g (+/- 0.4 lb)	Power Supply: AC adapter: 9V, 300mA, 6 AA batteries
	Weight Lock

Adapted from Tanita. BWB-800S Digital Scale. November 6, 2010. URL: http://www.tanita.com/en/bwb-800s/

Table 4.3 *NHANES III Procedure for Weight Measurement*

Weight Electronic Scale	1. The electronic digital scale should be in the kilogram mode. If not, press the LB/KG key on the keyboard face. The digital LED readout should show 000.00 before weighing a sampled person. If it does not, press the zero key on the keyboard scale to zero the scale. 2. Have the sampled person stand on the center of the weight scale platform. Record the weight in kilograms in the automated system or on the body measurement exam form in the appropriate space.

Adapted from CDC. Body Measurements. November 6, 2010. URL: http://www.cdc.gov /nchs/data/nhanes/nhanes3/cdrom/NCHS/MANUALS/ANTHRO.PDF

Height Measurement.

The Seca 242 was the digital ruler used for height measurement. The features and specifications of the Seca 242 are located in table 4.4. The procedure for measuring height is outlined in table 4.5.

Table 4.4 *Technical Features and Specifications of the Seca Digital* Ruler

Data from the measuring rod can be read in a separate remote LCD display
Measuring range: 62 - 210 cm (25 – 82.6 inch) (2.08'-6.88')
Graduation: 1 mm
Dimensions: 11.8 x 86.6 x 9.1 inch / 300 x 2200 x 232 mm
Weight: 4.2 lbs (1.9 kg)
Power supply: Battery
Functions: Wall fastening essential/possible / Automatic switch-off / cm/inch switch-over / User-defined zero setting
Uses a head piece to indicate accurate head placement with slide positioner and heel positioner to indicate accurate feet placement
Instructions for use are found on the website

Adapted from: Seca. Seca Digital Ruler. November 18, 2010. URL: URL: http://www.seca.com/english/us/home/products/details/seca/product/height_ measuring_instruments_266/seca_242/#specials

Table 4.5 *NHANES III Procedure for Standing Height Measurement*

Height (barefoot)	Have the sampled person (SP) stand erect on the floor board of the stadiometer with his or her back to the vertical backboard of the stadiometer. The weight of the participant is evenly distributed on both feet. The heels of the feet are placed together with both heels touching the base of the vertical board. Place the feet pointed slightly outward at a 60 degree angle. The buttocks, scapulae, and head are positioned in contact with the vertical backboard. The SP is asked to inhale deeply and to stand fully erect without altering the position of the heels. The SP's head is maintained in the Frankfort Horizontal Plane position while the examiner lowers the horizontal bar snugly to the crown of the head with sufficient pressure to compress the hair. The examiner needs to make sure that the hair of the SP does not obscure the scale when the photograph is taken. After the measurement is read by the examiner and recorded by the recorder to the nearest cm.

Adapted from CDC. Body Measurements. November 6, 2010. URL: http://www.cdc. gov/ nchs/data/nhanes/nhanes3 /cdrom/NCHS/MANUALS/ANTHRO.PDF

A digital scale and ruler were used to measure weight and height. These two measurements were used to calculate BMI and categorize subjects into established BMI categories (table 4.6).

Table 4.6 *Adult BMI Categories*

Underweight	BMI <18.5 kg/m^2
Normal or healthy weight	18.5< BMI < 24.9 kg/m^2
Overweight	25.0 < BMI < 29.9 kg/m^2
Obese	BMI > 30.0 kg/m^2

Adapted from CDC. Defining Overweight and Obesity. October 30, 2009. URL: http://www.cdc.gov/obesity/defining.html.

BMI is an indicator of body fat, a calculated proportion consisting of weight divided by height squared, used to determine weight categories and to estimate body fat (CDC, 2009; National Heart, Lung, and Blood Institute (NHLBI), 2010; Gutierrez, 2009). Not only is BMI a more accurate measure for cardiovascular risk assessment than weight alone, but there is no advantage to using bioelectric impedance or height-weight tables to using BMI in the clinical management of adult patients, in both men and women (NHLBI, 2000). In this study, height and waist circumference were measured by metrics: meters, or more commonly centimeters (cm) and inches (in), using a ruler.

Other items to assess weight included questions from the Active Partnership, a program endorsed by the AHA (2007), CHD risk factors (AHA, 2009), How America Measures Up, a national survey conducted by Discovery Health Media (1999) and reported in Newsweek, and two questions constructed by the study investigator to obtain self reported weight.

Fat Deposition

The importance of body fat distribution, predominantly that of adipose tissue, is used as a marker of increased health risk in addition to excess weight. The body is comprised of weight from bones, organs, skeletal and connective tissues, fat and water. Weight is directly impacted by regulating fat. The fat cells are comprised primarily of adipose tissue. Adipose tissue is one of seven different types of connective tissues. The

primary role of adipose tissue (aka fat tissue) is to store lipids. The adipose cell structure contains large fat compartments beneath the skin to protect and insulate the body (Thibodeau & Patton, 2005). Physiologic data about fat deposition was obtained by waist circumference in this study.

Waist circumference.

Waist circumference (WC) was measured using a flexible tape measure and was reported as inches. WC is an anthropometric measure of abdominal obesity which is considered to be a more sensitive predictor for identifying cardio-metabolic risk than BMI (Schneider, 2010) and is an appropriate measure to identify people in need of weight management (Lean, Han, & Morrison, 1995). Measuring waist circumference is informative for the identification of individuals that are at high risk of developing obesity-related conditions when the waist circumference exceeds 35 (88 cm) in non-pregnant women (CDC, 2009). However, ethnicity and sex-specific values for waist circumference exist, specifying waist circumference parameters for Latinos as 31 in (80 cm) for women.

Waist circumference (WC) is not only a better marker for abdominal fat content than waist to hip ratio (WHR) (NHLBI, 2000), but it is the best anthropometric predictor measure to evaluate visceral fat (Han, Sattar & Lean, 2006). In addition, WC was developed for use in health promotion (Han et al., 2006) and is the most practical tool to evaluate abdominal fat both before and during weight loss treatments (NHLBI, 1998). Waist circumference is as good an indicator of total body fat as Skinfold thickness (SFT) or BMI (Han et al., 2006). WC is a simpler measure and superior to BMI in that it can predict metabolic and vascular complications; it is also a superior measure to WHR as a

better predictor of visceral and total fat (Han et al., 2006). A plastic measuring tape, calibrated in standard metric inches, was used to measure waist circumference. The procedure for waist circumference is outlined in table 4.7 and figure 4.1.

Table 4.7 *NHANES III Procedure for Waist Circumference Measurement*

Abdominal Waist Circumference	The sampled person (SP) is in a standing position. The SP is asked to hold up his gown. The examiner stands behind the SP and palpates the hip area for the right iliac crest. The examiner marks a horizontal line at the high point of the iliac crest and then crosses the line to indicate the midaxillary line of the body. The pants and underclothing of the SP must be lowered slightly for the examiner to palpate directly on the hip area for the iliac crest. The examiner then stands on the SP's right side and places the measuring tape around the trunk in a horizontal plane at this level marked on the right side of the trunk. The recorder walks around the SP to make sure that the tape is parallel to the floor and that the tape is snug, but does not compress the skin. The measurement is made at minimal respiration to the nearest 0.1 cm.

Adapted from CDC. Body Measurements. November 6, 2010. URL: http://www.cdc.gov/chs/data/nhanes/nhanes3/cdrom/NCHS/MANUALS/ANTHRO.PDF

Figure 4.1 *Abdominal Waist Circumference Measuring Tape position.* Source: CDC. Available online at: http://www.cdc.gov/nchs/data/nhanes/nhanes3/cdrom/NCHS/MANUALS/ANTHRO.PDF

Individuals with a large WC are at higher risk of acquiring diabetes, hypertension, dyslipidemia, CVD, shortness of breath (Han et al., 2006, NHLBI, 2000). While measures for abdominal fat deposition include waist to hip ratio & waist circumference, for the above reasons, WC was selected as an index for fat deposition in this study.

Nutrition

Several self report methods exist to assess nutrition such as food record, which include 24-hour dietary recall, diet history questionnaire, food frequency questionnaire, calorimetery, among others. For the purposes of a dissertation, the study's principal investigator obtained information about nutrition knowledge using selected items from the dietary guidelines/ recommendations for Americans issued by the US Department of Agriculture (USDA) (2005), an Active Partnership issued by the AHA (2007) as well as How America Measures Up, a national survey issued by Discovery Health Media (1999).

Health

Information about health was operationalized by the use of items from the Medical Outcomes Study Short Form 36 (MOS SF-36) Survey, How America Measures Up, a national survey issued by Discovery Health Media (1999), and the Patient Health Questionnaire-9 (PHQ-9). While several methods exist to assess health, selected items from the MOS SF-36 and Discovery Health Media survey were combined to obtain data about general health and well-being, knowledge and beliefs. The PHQ-9 was chosen to assess mental health status exclusively about depressive symptoms.

Health is defined as the state of complete physical, mental and social well-being and is not constituted merely by the absence of disease or infirmity (World Health Organization (WHO), 1948) and is often used interchangeably with well-being

(McDowell, 2006). The construct of well-being surrounds more subjective internal states such as feelings or symptoms (Stewart & Ware, 1992). As health is comprised of physical, mental and social elements, the Short Form 36 was chosen to assess health, as it is comprehensive and included three domains of health. The Patient Health Questionnaire-9 (PHQ-9) was used to measure depression, an important aspect of mental health that may potentially influence overweight and obesity.

Short Form-36.

The Short Form-36 (SF-36) Health Survey of the Medical Outcomes Study (MOS) was designed to assess general health by assessing personal evaluations of health in general, behavioral functioning, perceived well-being, as well as social and role function asking questions about work, self-care, mobility and feeling states (Ware & Sherburne, 1992; McDowell, 2006). The SF-36 was specifically developed to ascertain numerous types and severities of health conditions for persons 18 years and older. The SF-36 was originally developed from the work of RAND's Health Insurance Experiment in the 1970s called the Medical Outcome Study (MOS) where outcome measures were used to assess the impact of psychiatric and chronic medical conditions. Subsequently, a series of short form versions were produced. The 20-item short form (SF-20) was created in 1986, but some of its limitations led to the expansion into the SF-36 (McDowell, 2006; Stewart & Ware, 1992).

The SF-36 covers eight of the most important dimensions from the original 245-item MOS questionnaire. The SF-36 uses multi-item scales to measure eight dimensions that are: physical functioning, role limitations due to physical health problems (four items), bodily pain (two items), social functioning (two items), general mental health

which encompasses psychological distress and well-being (five items), role limitations due to emotional problems (three items), vitality (energy/ fatigue) (four items), and general health perceptions (five items) (McDowell, 2006).

The SF-36 can be administered in five to ten minutes in person or through telephone interviews or it can be self-administered. The psychometric properties of the SF-36 are robust and have been tested in numerous studies. Reliability is good with test-retest reliability greater than 0.8 for three domains, with 0.6 yielding the lowest coefficient for social function, and a median internal consistency exceeding 0.80 for all eight dimensions (McDowell, 2006). Validity is also quite strong with criterion related validity of the scales when tested against ability to work, symptoms, health care use and mental health scale criteria, suggesting significant and consistent relationships. Predictive validity demonstrated that pain and health perception scales where most predictive of physician visits, mental health and role-emotional scales predicted hospital admissions, and general health perceptions, physical function scales and vitality best predicted four-year mortality (McDowell, 2006). For the above reasons, the SF-36 was selected to assess health in this study as it is a generic measure that can be applied universally and is not age, disease or treatment specific (Ware et al, 1993).

Patient Health Questionnaire.

The Patient Health Questionnaire (PHQ-9) is a 9-item, self-report screening instrument that can establish a provisional depressive disorder diagnosis as well as score depressive symptom severity (Kroenke, Spitzer & Williams, 2001). The PHQ-9 questionnaire is based on the nine criteria that the DSM-IV use to diagnose depressive disorders, and is a short form version of the full PHQ. Using the PHQ-9, major

depression is diagnosed when one of the symptoms is anhedonia or depressed mood, in conjunction with having five or more depressive symptom criteria present for more than 7 days in the past 2 weeks (Kroenke et al., 2001).

The PHQ-9 uses a 4 point response scale, assigning each item a rating from 0 to 3. The total score is calculated by summing the ratings from the nine items, with a range of scores from 0 to 27. The PHQ-9 serves as a measure of depression severity, creating the following cut points: 0-4 as no depression, 5-9 as mild depression, 10-14 as moderate depression, 15-19 as moderately severe, and 20-27 as severe depression (Kroenke et al., 2001; Patten & Schopflocher, 2009).

The psychometric properties of the PHQ-9 are robust. There is adequate evidence of good reliability for the PHQ-9 in a sample of primary care and obstetrics-gynecology subjects (Cronbach's = 0.86 in the PHQ Ob-Gyn Study and 0.89 in the PHQ Primary Care Study) (Kroenke et al., 2001). Good test-retest reliability of 0.84 is reported when the PHQ-9 was completed at the clinic or within 48 hours by phone (Kroenke, et al., 2001). The PHQ-9 is sensitive to change over time, by comparing the PHQ-9 with the Structured Clinical Interview for DSM-IV (SCID) at baseline and 12 months (SD 3 months) (Lowe, Kroenk, Herzog, & Grafe, 2004).

Individual health perception was assessed at present and one-year ago (SF-36), over the past two weeks (PHQ-9) and five years ago (Discovery Health Media survey). Three additional items were selected from the Discovery Health Media national survey to address sleep quantity, level of concern regarding seven common illnesses, and sources used to access health information. Subjects' self reported sleep, ranked concerns and subject-identified sources for health information was reported as ordinal numbers.

Social support

Social Support was obtained from the Enhancing Recovery in Coronary Heart Disease (ENRICHD) Social Support Instrument, which hereafter is referred to as ESSI. The ESSI is a 7-item self-report survey originally piloted in a population who had experienced a myocardial infarction to assess social support. ESSI was developed to catalog structural (partner), emotional (caring) and instrumental (tangible help) social support that were previously found to be individually predictive of mortality in patients with CVD (Mitchell et al., 2003). The ESSI takes an average of five minutes to complete and has a total range of scores from 8-34 (Mitchell et al., 2003), with higher scores indicating greater social support (Vaglio et al., 2004). Six of the seven items range from 1 (none of the time) to 5 (all of the time), with the seventh item (living with partner) assigned a score of 4 for "yes" and 2 for "no". The ENRICHD investigators (2001) used five ESSI items (item 1, 2, 3, 5, and 6) to determine low perceived social support, excluding the items "is there someone available to help you with daily chores" and "are you currently married or living with a partner". Based on the above items, subjects qualified for low perceived social support with a score of 2 or less on at least two items and a total score of 18 or less.

The psychometric properties of the ESSI scale are robust. The ESSI has been compared to several other reputable scales measuring social support which include the Index of Socially Supportive Behaviors (ISSB), the Perceived Social Support Scale (PSSS) and the Social Network Questionnaire (SNQ). Mitchell et al. (2003) reported adequate internal consistency for the ESSI (Cronbach's $\alpha = 0.86$) compared to the total ISSP (Cronbach's $\alpha = 0.96$), the PSSS (Cronbach's $\alpha = 0.96$) and the SNQ. Vaglio et al.

(2004) reported reliability to be good with test-retest reliability demonstrated by an intra-class correlation coefficient (ICC) of 0.94, and internal consistency of 0.88 in a population of cardiac patients undergoing percutaneous coronary intervention (PCI). Mitchell et al. (2003) reported convergent validity for the ESSI and demonstrated modest to strong correlations with the ISSP, PSSS and SNQ. Vaglio et al. (2004) reported modest correlations between the ESSI, SF-36 scales, and the Seattle Angina Questionnaire (SAQ) testing quality of Life (QOL) and angina frequency, which suggests a relationship between greater social support and better social functioning, better symptom control and general and disease-specific QOL.

While many measures exist to measure social support, the investigator chose the ESSI due to its sound measurement properties and brevity, to reduce subject burden, with consideration to the study as a whole.

Acculturation

The Short Acculturation Scale for Hispanics (SASH), hereafter referred to as the SASH, was used to obtain data about acculturation knowledge and beliefs. The SASH was designed by Marin, Sabogal, Marin, Otero-Sabogal, and Perez-Stable (1987) to assess acculturation in the Hispanic population. It consists of 12 items with a five-point Likert type scale for each item. There are three categories of questions classified as "language use" (5 items), "media" (3 items), and "ethnic social relations" (4 items). Scoring is performed by obtaining the average score on four items (item 1, 3, 4, and 5), which qualify subjects as having low or high acculturation based on an average of 2.99.

The psychometric properties of the SASH are robust. Marin and colleagues (1987) report reliability to be good with internal consistency of 0.92 (0.9 for "language

use" items, 0.86 for "media", and 0.86 for "ethnic social relations"). Validity is also quite strong with criterion related validity reported for all SASH items having statistically significant correlations with generation (0.65), length of residence (0.70), self-evaluation (076), acculturative index (0.83), and age of arrival (-0.69) (Marin et al., 1987).

While many measures exist to assess acculturation, the SASH was selected because it was developed and tested in the Hispanic (aka Latino) population. Three additional items included in this section are used and these were obtained from well-known acculturation studies (Hubert, Snider & Winkleby, 2005). These additional items assess generational status, years lived in the US and country of origin

Self Efficacy

The Physical Exercise Self Efficacy and the Nutrition Self Efficacy Scales were designed by Schwarzer and Renner in 2001 and were used to assess two types of self efficacy beliefs.

Physical Exercise Self Efficacy Scale.

The Physical Exercise Self Efficacy Scale (PESES) is measured with five items, with a response range from 1 to 4 and a total range of sum scores from 5 to 20. A principle component analysis (PCA) was performed with eigenvalues and a scree test with reported eigenvalues ranging from 0.75 to 0.85 on all items and corrected item-total correlation coefficients were of 0.64 or greater. The psychometric properties of the PESES are robust. Schwarzer and Renner (2010) report good reliability with an internal consistency of 0.88 (n=1726). Validity of the scale was assessed by comparing exercise self efficacy with intention to engage in a healthy diet, physical activity and healthy

lifestyle. Schwarzer and Renner (2010) report a statistically significant correlation between exercise self efficacy and intention to perform physical activity.

The Nutrition Self Efficacy Scale.

The Nutrition Self Efficacy Scale (NSES) is measured with five items, with a response range from 1 to 4 and a total range of summed scores from 5 to 20. The psychometric properties of the NSES are robust. Schwarzer and Renner (2010) report reliability to be good with test-retest correlation of 0.59 and internal consistency of 0.87 (n=1722). Validity of the scale was assessed by comparing nutrition self efficacy with intention to engage in a healthy diet, physical activity and healthy lifestyle. Schwarzer and Renner (2010) report all correlations as statistically significant. Although several instruments exist to assess self efficacy, these scales were selected as they measured specific self efficacy domains of physical activity and nutrition important for this study.

Fatalism

Due to the lack of instruments currently available to assess fatalism, four dichotomous "yes" "no" questions were constructed by the study's investigator with a response range from 4 to 8 using the definition produced by Florez, Aguirre, Viladrich, Cespedes, De La Cruz and Abraido-Lanza (2009) addressing physical activity, weight, nutrition and health. Table 4.8 provides the coding of independent variables (IV) and excess weight (DV). Table 4.9 provides the coding scheme for the logistic regression analysis.

Table 4.8 *Coding Method for Independent Variables Used in Logistic Regression Analysis*

Variable	Coding Method
Education Level	1= < High school 2= > High school
Marital Status	1= Partnered/married 2= Unpartnered/unmarried
Employment	1= Employed 2= Unemployed
History of Heart Problems	1= No 2= Yes
History of Diabetes	1= No 2= Yes
Weight problems	1= No 2= Yes
Religious affiliation	1= No 2= Yes
HPAQ Occupation Activity Level	1= Low activity 2= Moderate activity
HPAQ Sports Intensity	1= Moderate 2= Vigorous
Exercise Quiz Questions	0= Incorrect 1= Correct
USDA Quiz Questions	0= Incorrect 1= Correct
Fruit & Vegetable Quiz Questions	0= Incorrect 1= Correct
Whole Grain Quiz Questions	0= Incorrect 1= Correct
Meats Quiz Questions	0= Incorrect 1= Correct
Kitchen Fats Quiz Questions	0= Incorrect 1= Correct
Food Label Quiz Questions	0= Incorrect 1= Correct
Weight Loss Quiz Question	0= Incorrect 1= Correct
CHD Risk Quiz Questions	0= Incorrect 1= Correct
Health Status Perception	1= Good, very good, and excellent 2= Fair and poor
BMI Group	1= Underweight and healthy weight 2= Overweight and obese
PHQ-9	1= Minimal symptoms
Social Support	1=Low 2=High
Acculturation	1=Low 2= High
Waist circumference	1= < 31 cm 2= > 31 cm

Table 4.9 *Scoring Interpretation for Independent Variables*

Variable	Score Interpretation
Physical activity guideline questions	Higher #= more PA
Physical inactivity questions	Higher #= more physical inactivity
HPAQ	Higher #= more PA
Active Partnership Exercise Question	Higher #= more PA knowledge & behavior
Self Reported Weight Status (BMI category)	Higher #= higher BMI category
Actual/current size silhouette	Higher #= larger size (silhouette)
Ideal size silhouette	Higher #= larger size (silhouette)
Active Partnership Weight Loss questions	Higher #= more knowledge & behavior
Current health status	Higher #= worse health perception
Health status 1 & 5 yrs ago	Higher #= worse health perception
Concerns about illnesses	Higher #= les concern
PHQ9 questions	Higher #= higher level of depression severity
ESSI questions	Higher #= higher/more SS
SASH	Avg>2.99=more acculturated; <2.99= less acculturated
PESES	Higher #= higher PE self efficacy
NESES	Higher #= higher nutrition self efficacy
Fatalism questions	Higher #= more fatalistic beliefs

Cross Cultural Adaptation

When administering measurements with specific cultural considerations, it is critical to follow some basic principles in the process of cross-cultural adaptation. Therefore these guidelines were used in the translation of this study's survey into Spanish. Beaton, Bombardier, Guillemin and Ferraz (2000) have published guidelines for the process of cross-cultural adaptation of self report measures. Cross-cultural adaptation is required when a measure is to be used in an immigrant population, or to persons with a different native language, and this will necessitate translation, cultural adaptation or both. The first principle of cross-cultural adaptation is one of language translation. The second principle is one of equivalence, or the translation of one concept to have the same meaning in a different language between the original measure and target versions. The third principle is pre-testing the translated measure.

Language translation.

Current best practices for translating surveys into Spanish have been well described (US Census Bureau, 2010; Douglas & Craig, 2007; Institute of Survey Research, 2010; Weidmer, Brown, & Garcia, 1999; Weidmer, Hurtado, Weech-Maldonado, Ngo-Metzger, & Bogen, 2006). The translation and cultural adaptation is a process that applies to the instructions for the measure as well as its individual items and response options. In addition to translation, verification of the scaling properties of a measure and normative values must be established. The process of translation requires both a forward- and back- translation. It is recommended that two separate people with different backgrounds translate a measure from its original language to the target language, with only one translator being informed about the content under examination. Bilingual translators are asked to produce two separate translations and their translations often reflect grammatical nuances indicative of the target language. A recording observer then discusses the discrepancies and synthesizes the translation with the two translators. Back translation requires a translator to take this new version, reached by consensus of two (forward) translations and translate the measure back into its original language and serves as a validity check. This translation process was performed for this study.

Equivalence.

An expert committee was created to ensure cross-cultural equivalence by reviewing all translated versions and reach a consensus on discrepancy and final product. The expert committee is comprised of an inter-disciplinary team of translators, health and language professionals as well as methodologists. This group analyzes the translated measurement for equivalence in four areas of equivalence: semantic, idiomatic,

experiential and conceptual (Beaton et al., 2000). Semantic equivalence seeks to preserve the meaning of an item. Idiomatic equivalence serves to communicate the meaning of an item for colloquialisms or idioms by finding an agreeable alternative when required. Experiential equivalence seeks to convey similar experiences from the source to the target culture. Conceptual equivalence seeks to preserve the conceptual meaning between cultures.

Evaluation.

Once agreement by the experts is reached, the new translated version of an instrument must be field tested in approximately 30 to 40 subjects in the target community. Pretesting not only requires administration of the measure but also requires that each subject is interviewed about their interpretation of each item and each response to assist in developing a utility assessment. The last step is the submission of the translated version of the measurement to the developers or developing committee for appraisal.

Cross-cultural adaptation of measurements is important for several reasons. Cross cultural adaptation is done in an effort to ensure face and content validity between the source and target versions of a measure (Beaton et al., 2000). The threat exists for sampling bias when participants are excluded simply because an instrument is not available in their native language. When a measurement is written in a non-native language, participants who don't speak or read that language are less likely to be included than others who do speak or read in that language. Cross-cultural adaptation provides not only a literal translation of content from one language into another, but preserves the meaning of each item as well.

In summary, few measures needed for this study were available in Spanish. Use of all measures necessary for this study required translation into Spanish, with exception of the PHQ-9 and SASH. The study's investigator used the recommended procedures outlined above and decided to have the interviews administered by bilingual speakers, as Latinas speak Spanish and English, Spanish only or, less commonly, English only.

Data Collection Procedures

Women who presented to their clinic appointments and expressed interest in participation were provided study information and screened for eligibility. Those who passed the initial eligibility screening were invited to participate in this study and were administered a consent. Those who agreed to participate and provided written informed consent were administered a one-time questionnaire, and had body height, weight and waist circumference measurements collected.

Following subject consent and enrollment, data collection took place during a single encounter using an interview-administered questionnaire (Appendix C). The interview occurred at the clinic in a sitting area where privacy was maintained, away from other clientele or, in an unoccupied room on site, when available. Height, weight and waist circumference measurements were obtained at the clinic. When the above was completed, the subject was given a token of appreciation for their participation in the study in the amount of $10 to offset traveling expenses to the site. On average, the administration time for the interview-administered questionnaire was 30 minutes and the anthropometric measurements took 5 minutes to collect, and the total time commitment for participation was between 35 and 40 minutes.

Risks to participants were minimized in a number of ways. Firstly, the study was carefully designed to use study procedures that were not invasive and required only minimal inconvenience to the subject. Great efforts were also taken to maintain confidentiality and privacy with the interview-administered questionnaire with administration occurring in a private area, away from other clientele. Anthropometric measurements were administered in a separate area, away from other clientele. Of great importance, English and Spanish translations of both the consent and the questionnaire were offered to accommodate each participant's language preference. Additionally, vocabulary was used for this translation that would accommodate individuals with less than an eighth grade reading level. Translation procedures were followed as previously outlined. Lastly, interview-administered questionnaires were administered by bilingual and bicultural data collectors.

Human Subjects Protection

This study was reviewed and approved by the University of California, San Francisco's Committee on Human Research (Appendix D) for both sites. The researcher was available to explain the details of the study using the approved UCSF Consent form. Participants were informed that participation was voluntary and that they could withdraw at any time. Participants were asked if they understood the study details and were encouraged to ask questions during the process of obtaining consent. All participants were provided a copy of the consent form; inviting participants to call the contact numbers should they have any questions or concerns. Additional measures that were taken to assure data protection were the following: data collected were de-identified and entered in a password protected database and maintained in a locked, secure facility.

Data Management and Analysis

Data Analysis was conducted using PASW 17.0 statistical software (formerly known as SPSS Predictive Enterprise Services™) to enter, clean, manage and analyze the data (SPSS, 2009). Chi-square statistics were used to evaluate associations between nominal or ordinal variables. Logistic regression was used to estimate the independent contribution of each of the independent variables (IVs) (KABB about PA, weight, nutrition, and health, depression, social support, self efficacy, acculturation and fatalism) and its relationship with the dependent variable (DV) (weight status). A p-value of ≤ 0.10 was used for the univariate logistic regression analysis to qualify variables to be entered into the multivariate logistic model. This result was reported as odds radio (OR) with a 95% confidence interval (95% CI) for each IV using weight status as a DV (excess weight).

The analysis for aims one, objectives one through three included the following: categorical data were reported as frequencies and percentages; continuous data were reported as measures of dispersion (range, minimum and maximum values, and standard deviation) as well as measures of central tendency (means, medians, modes, and sum). The analysis for aim two, objectives four through six entailed the following: univariate logistic regression analysis reported odds ratios (OR), and 95% confidence intervals (CIs), in addition to chi-square statistics that were used to evaluate associations between nominal or ordinal variables. A p-value of 0.10 was selected as the level of statistical significance. Analysis plan for aim three, objective seven entailed the following: a final parsimonious model using the statistically significant variables obtained from aim two was tested in a multivariate logistic regression model and ORs with 95% CIs were

reported. A p-value of 0.05 was selected as the level of statistical significance for the final model.

Figure 4.2 is presented below to illustrate the PAN Study Timeline, implementing many aspects described above.

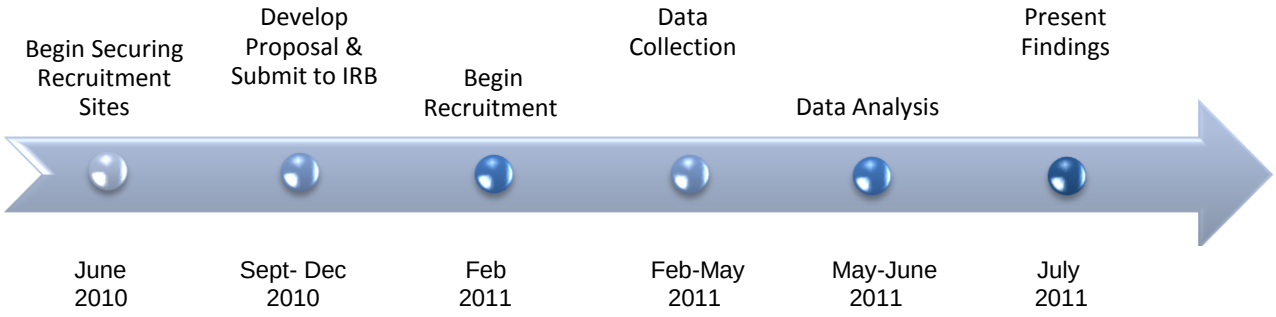

Figure 4.2 *PAN Study Timeline*

Chapter 5:

Results

Chapter five is organized by aims and objectives. First, the sample is described. Second, physical activity (PA) is described as behavior, PA knowledge, attitudes and beliefs. Third, nutrition is reported separately as nutrition behavior, nutrition knowledge and beliefs. Fourth, weight is described as self reported anthropometric findings, BMI classification, body size and weight knowledge. Fifth, the health history is reported as individual and family health history, and health perceptions and opinion poll on health concerns are described. Sixth, the psychosocial factors described include depression, social support, self efficacy, acculturation, and fatalism.

To answer objectives 1 through 3, data describe the following in Latina adults: (a) demographics, (b) knowledge, attitudes, beliefs and behaviors about PA, weight, nutrition and health and (c) psychosocial variables. This data is presented in narrative format, tables and figures. Table results are reported separately for each clinic as well as the total.

Findings for Aim 1, Objective 1

Demographic Description

A total of 132 participants were recruited; 102 from the Women, Infants and Children (WIC) clinic and 30 from the Rota Care Free Medical Clinic. One participant's data was omitted from analysis due to extensive (>80%) missing responses. Inclusion criteria stipulated that participants were self-identified Latina women, 18 to 45 years of age, low-income as defined by the USDHHS (2009), English or Spanish speaking, living or residing in Northern California, and who gave written informed consent.

Table 5.1 shows the self reported demographic information of the sample. Most of the sample were born in Mexico (41%; n=54) or Guatemala (37%; n=49). Most were

married (44%; n=58) or 31% (n=41) reported living with a partner. The remainder, 25% (n=33), were single, separated, divorced or widowed.

Most of the sample reported their education as less than high school (49.2%; n=65), while 41.7% had some high school and 9.1% had more than high school education. The median income was $12,000, ranging from $0 to $38,000. The majority, 56.1% (n=74), of the women were housewives, 42.4% (n=56) were employed full or part time and 1.5% (n=2) were unemployed. Of those who had a significant other (n=115), 75.0% (n=99) were employed. Information on significant others are not presented in the table.

The reported average household size was 4 (± 1) ranging from 0 to 8. Of these, the number of children living in the household ranged from 0 to 6, with two children being the most frequently reported number. The majority of the sample (83.3%; n=110) reported having a religious affiliation, while 16.7% (n=22) reported no religion. Of those with a religious affiliation, most reported being Catholic (48.5%; n=64), and 34.9% (n=46) reported other Christian denominations. Detailed demographic characteristics of this sample are detailed in table 5.1.

Table 5.1 *Demographic Descriptive Statistics of Young, Low-income Latina adults*

	WIC n= 102		RC n=30		Total n= 132	
	WIC n	**%**	**RC n**	**%**	**Total n**	**%**
Birthplace (n= 131)						
Guatemala	38	37.3	11	37.9	49	37.4
El Salvador	17	16.7	0	0	17	13.0
United States	1	1.0	1	3.4	2	1.5
Peru	4	3.9	1	3.4	5	3.8
Nicaragua	1	1.0	1	3.4	2	1.5
Honduras	0	0	1	3.4	1	0.8
Columbia	0	0	1	3.4	1	0.8
Education Level						
< High school	52	51.0	13	43.3	65	49.2
High school	41	40.2	14	46.7	55	41.7
>High school	9	8.8	3	10.0	12	9.1
Marital Status						
Partnered/Married	77	75.5	22	73.3	99	75.0
Unpartnered/Unmarried	25	24.5	8	26.7	33	25.0
Employment						
Full Time	17	16.7	8	26.7	25	18.9
Part Time	22	21.5	9	30.0	31	23.5
Housewife	61	59.8	13	43.3	74	56.1
Unemployed	2	2.0	0	0	2	1.5
Household Income*						
$0- $10,000	38	37.3	11	36.7	49	37.1
$10,001- $20,000	45	44.1	16	53.3	61	46.2
$20,001- $30,000	14	13.7	3	10.0	17	12.9
$30,001- $40,000	5	4.9	0	0	5	3.8
Religious Affiliation						
Yes	84	82.4	26	86.7	110	83.3
No	18	17.6	4	13.3	22	16.7
Religious Affiliation						
Catholic	50	49.0	14	46.7	64	48.5
Other Christian denomination	34	33.4	12	40	46	34.9
	WIC mean (±sd)		**RC mean (±sd)**		**Total mean (±sd)**	
Living Arrangements						
# of people living in household	4.5 (±1.2)		4.1 (±1.9)		4.4 (±1.4)	
# of children living in household	2.0 (±1.0)		1.4 (±1.4)		1.9 (±1.1)	
Total # of children living	2.1 (±1.1)		2.1 (±1.5)		2.1 (±1.1)	

* truncated due to inclusion criteria

Findings for Aim 1, Objective 2

Physical Activity

Physical activity behavior.

Table 5.2 shows physical activity (PA) knowledge, beliefs, and behavior in addition to PA preferences for this sample. In this sample, 40.9% (n=54) reported spending ≥ 30 minutes walking briskly at least 5 days each week, 23.5% (n=31) run ≥ 25 minutes at least 3 days each week and 18.2% (n=24) performed aerobic dance at least 3 days each week.

Table 5.2 *Physical Activity of Young, Low-income Latina Adults*

	WIC (n=102)		RC (n=30)		Total (n=132)	
	WIC n	**%**	**RC n**	**%**	**Total n**	**%**
1. Spend ≥ 30 minutes walking briskly at least 5 days each week	42	41.2	12	40.0	54	40.9
2. Run ≥ 25 minutes at least 3 days each week	29	28.4	2	6.7	31	23.5
3. Aerobic dance ≥ 25 minutes at least 3 days each week	23	22.5	1	3.3	24	18.2
4. Of these, your preferred activity						
Walk briskly	62	60.8	22	73.3	84	63.6
Run	19	18.6	5	16.7	24	18.2
Dance	21	20.6	3	10.0	24	18.2
5. How many times each week would you like to do them?						
0-2	61	59.8	17	56.7	78	59.1
2-4	30	29.4	10	33.3	40	30.3
≥ 4	11	10.8	3	10.0	14	10.6
	WIC mean (±sd)		**RC mean (±sd)**		**Total mean(±sd)**	
Physical Activity Preference						
Times/week you would like to do the above	4.4 (±1.8)		4.8 (±2.1)		4.5 (±1.9)	
Physical Inactivity						
Hours spent each day sitting	2.5 (±1.6)		2.7 (±2.3)		2.5 (±1.8)	
# of days spent sitting	5.5 (±2.3)		5.9 (±2.3)		5.6 (±2.3)	
	WIC mean (±sd)		**RC mean (±sd)**		**Total mean(±sd)**	
HPAQ Total Score	6.7 (±1.2)		7.7 (±1.5)		7.7 (±1.3)	
HPAQ Work index	3.1(±0.5)		3.3 (±0.5)		3.1 (±0.5)	
Sport index	2.0 (±1.5)		2.1 (±1.5)		2.0 (±1.5)	
Leisure index	4.9 (±1.2)		4.5 (±1.0)		4.8 (±1.2)	

	WIC n	%	RC n	%	Total n	%
Why should you exercise?						
To feel good physically	36	35.3	8	26.7	44	33.3
Aerobic/cardio fitness	28	27.5	6	20.0	34	25.8
To control or lose weight	24	23.5	2	6.7	26	19.7
To stay healthy	47	46.1	21	70.0	68	51.1
To build strength	9	8.8	2	6.7	11	8.3
To look good	15	14.7	4	13.3	19	14.4
Why don't you exercise?						
Don't have time to	50	49.0	13	43.3	63	47.7
Not supposed to	0	0	1	3.3	1	0.8
Lazy/hate it	27	26.5	5	16.7	32	24.2
Active lifestyle	25	24.5	10	33.3	35	26.5
Feel fine without	5	4.9	2	6.7	7	5.3
Don't care	0	0	0	0	0	0
Exercise Quiz Correct Answers						
1. Regular exercise helps the heart work better	102	100	30	100	132	100
2. For exercise to be helpful, you must do it for at least 30 minutes at a time.	2	2.0	1	3.3	3	2.3
3. People with heart disease should not lift weights	27	26.4	6	20.0	33	25.0
4. Older people shouldn't exercise	85	83.3	28	93.3	113	85.6
5. Golf is not considered physical activity	81	79.4	23	76.7	104	78.8
6. I own a comfortable pair of walking shoes	95	93.1	29	96.7	124	93.9
7. I own a pair of light (1 to 5 pound) hand weights	45	44.1	10	33.3	55	41.7
8. In the past 3 days, I exercised at least two of those days for 30 minutes or longer.	64	62.7	11	36.7	75	56.8
9. In the past 3 days, I did stretching exercises at least once.	66	64.7	13	43.3	79	59.8
10. I can balance on one foot for 20 seconds.	94	92.2	25	83.3	119	90.2
	WIC mean (±sd)		**RC mean (±sd)**		**Total mean (±sd)**	
Exercise Quiz Total # Correct	6.48 (±1.4)		5.9 (±1.2)		6.3 (±1.4)	

The Baecke Habitual PA Questionnaire (HPAQ) measures three domains of PA: work index, sport index and leisure index. Each domain ranges in value from 1 to 5, with a total score, ranging between 3 and 15 points. The mean HPAQ score for this sample, as shown in table 5.4, was 7.7 (± 1.3), having a mean work index of 3.1 (± 0.5), sport index of 2.0 (± 1.5), and leisure index of 4.8 (± 1.2). The women reported a mean number of

hours spent sitting each day as 2.5 (±1.8) and the mean number of days reported sitting was 5.6 (±2.3) days each week.

PA preferences.

The majority of the sample, 63.6% (n=84), preferred walking briskly, followed by aerobic dancing (18.2%; n= 24) and running (18.2%; n= 24). When the women were asked how many times each week they wanted to be active, the majority, 59.1% (n=78) reported 0 to 2 times each week. Of the remainder, 30.3% (n=40) reported they wanted to be active 2 to 4 times and 10.6% (n=14) reported ≥ 4 times each week.

PA knowledge and beliefs.

Of the 10 questions measuring knowledge and beliefs about PA, the mean number of questions answered correctly was 6.3 (± 1.4). The majority reported that they should exercise to stay healthy (51.1%; n=68), followed by feeling good physically (33.3%; n=44), aerobic/ cardio fitness (25.8%, n=34), to control or lose weight (19.7%; n=26), to look good (14.4%, n=19) and to build strength (8.3%; n=11). The most frequent reason given for why they don't exercise was that they don't have time (47.7%; n=63), followed by the response that they have an active lifestyle (26.5%; n=35), they're lazy/hate it (24.2%, n=32), that feel fine without it (5.3; n=7) and they are not supposed to exercise (0.8%; n=1). Of note, 97.7% (n=129) were of the misconception that for exercise to be beneficial, the duration has to be at least 30 minutes at a time and 75.0% (n=99) falsely believed that people with heart disease should not lift weights.

Nutrition

Nutrition behavior.

Table 5.3 shows knowledge and behavior about nutrition for this sample. The mean

servings of vegetables that are consumed per day are 2.3 (± 1.5) servings, fruit servings are 2.2 (± 1.1), meat and bean are 2.2 (± 1.3) servings, fats are 2.2 servings and whole grain foods are 1.5 (± 1.1) servings. In this sample, the mean servings of milk consumed are 1.0 (± 0.8) cups per day, which is more commonly low-fat. In addition, the mean servings of water consumed are 5.2 (± 2.4) servings per day. The mean servings of soda consumed are 0.3 servings per day, but the majority denied drinking soda daily.

Table 5.3 *Nutrition of Young, Low-income Latina Adults*

	WIC (n=102)		RC (n=30)		Total (n=132)	
	WIC mean (±sd)		**RC mean (±sd)**		**Total mean (±sd)**	
How many servings of these foods do you eat in a typical day?						
1.Fruits (cups)	2.2 (±1.1)		2.1 (±0.9)		2.2 (±1.1)	
2.Vegetables (cups)	2.3 (±1.5)		2.2 (±1.6)		2.3 (±1.5)	
3.Meats and Beans (oz)	2.3 (±1.4)		1.8 (±1.1)		2.2 (±1.3)	
4.Fats (tsp)	2.2 (±1.7)		2.0 (±1.2)		2.2 (±1.6)	
5.Whole grain foods (oz)	1.5 (±1.1)		1.2 (±1.0)		1.5 (±1.1)	
How many servings of these foods to you drink in a typical day?						
1.Milk	1.0 (±0.8)		0.9 (±0.9)		1.0 (±0.8)	
2.What kind of milk?	Low- fat		Low- fat		Low- fat	
3.Soda per day	0.3 (±0.6)		0.2 (±0.4)		0.3 (±0.6)	
4.What kind of soda?	none		none		none	
5. Water	5.3 (±2.5)		4.8 (±1.8)		5.2 (±2.4)	
	WIC n	**%**	**RC n**	**%**	**Total n**	**%**
USDA Quiz Correct Answers						
1. # of people who, while eating, think about balancing the calories they eat and drink with the calories they're burning.	55	53.9	12	40	67	50.8
2. # of people who think that an adult can prevent gradual weight gain over time by slowly decreasing calories from foods and beverages, while increasing physical activity.	94	92.2	29	96.7	123	93.2
3. # of people who think that an overweight adult needs to consult a healthcare provider about weight-loss strategies before starting a weight-reduction program.	92	90.2	29	96.7	121	91.7

	WIC mean (±sd)		RC mean (±sd)		Total mean (±sd)	
Correct USDA Quiz Total	1.6 (±0.6)		1.4 (±0.6)		1.5 (±0.6)	
	WIC n	**%**	**RC n**	**%**	**Total n**	**%**
Fruit and Vegetable Quiz Correct Answers						
1. It's best to avoid starchy vegetables like corn.	47	46.1	15	50.0	62	47.0
2. I have at least 5 different fruits or vegetables in my house now	95	93.1	28	93.3	123	93.2
	WIC mean (±sd)		**RC mean (±sd)**		**Total mean (±sd)**	
Correct Fruit & Vegetable Quiz Total	1.4 (±0.6)		1.4 (±0.6)		1.4 (±0.6)	
	WIC n	**%**	**RC n**	**%**	**Total n**	**%**
Whole Grain Quiz Correct Answers						
1. Flour tortillas are not whole grain	60	58.8	18	60.0	78	59.1
2. Wheat bread and whole-wheat bread is the same thing.	56	54.9	19	63.3	75	56.8
3. Whole-grain foods are healthy because they contain fiber.	101	99.0	29	96.7	130	98.5
	WIC mean (±sd)		**RC mean (±sd)**		**Total mean (±sd)**	
Correct Whole Grain Quiz Total	2.1 (± 0.7)		2.2 (± 0.8)		2.1 (0.7)	
	WIC n	**%**	**RC n**	**%**	**Total n**	**%**
Meats Quiz Correct Answers						
1. Fish contain a healthy type of fat.	90	88.2	30	100	120	90.9
2. The fat in meat is also a healthy type.	72	70.6	22	73.3	94	71,2
3. Most of the fat in chicken is in the skin	91	89.2	29	96.7	120	90.9
	WIC mean (±sd)		**RC mean (±sd)**		**Total mean (±sd)**	
Correct Meats Quiz Total	2.5 (±0.6)		2.7 (±0.5)		2.5 (±0.6)	
	WIC n	**%**	**RC n**	**%**	**Total n**	**%**
Kitchen Fats Quiz Correct Answers						
1. Right now, I have olive oil or canola oil in my kitchen.	91	89.2	26	86.7	117	88.6
2. Right now, I have lard or shortening in my kitchen.	80	78.4	25	83.3	105	79.5
	WIC mean (±sd)		**RC mean (±sd)**		**Total mean (±sd)**	
Correct Kitchen Fats Quiz Total	1.7 (± 0.5)		1.7 (±0.7)		1.7 (±0.5)	
	WIC n	**%**	**RC n**	**%**	**Total n**	**%**
Food Label Quiz Correct Answers						
1. I have never read the list of ingredients on a food label.	70	68.6	21	70.0	91	69.0
2. Food labels tell you how big a serving is.	87	85.3	27	90.0	114	86.4

	WIC n	%	RC n	%	Total n	%
3. The first item in the list of ingredients is the main one.	84	82.4	26	86.7	110	83.3
4. Food labels do not tell you if the food contains fat.	73	71,6	25	83.3	98	74.2
5. The descriptions on the front of the package tell you all you need to know to make a healthy choice.	19	18.6	4	13.3	23	17.4
6. A food with 100 mg. of sodium is low in sodium.	29	28,.4	9	30.0	38	28.8
	WIC mean (±sd)		**RC mean (±sd)**		**Total mean (±sd)**	
Correct Food Label Quiz Total	3.6 (± 1.1)		3.7 (0.9)		3.6 (± 1.0)	
	WIC n	**%**	**RC n**	**%**	**Total n**	**%**
Caloric Intake Correct Answer On average, a person should consume about 3,000 calories/day	70	68.6	23	76.7	93	70.5

Nutrition knowledge and beliefs.

Of the three USDA nutrition quiz questions measuring knowledge and beliefs, the mean number of questions answered correctly was 1.5 (± 0.6) out of three. Of the two fruits and vegetables quiz questions measuring knowledge and beliefs, the mean number of questions answered correctly was 1.4 (± 0.6). Of the three whole grain quiz questions measuring knowledge and beliefs, the mean number of questions answered correctly was 2.1 (± 0.7). Of the three meat quiz questions measuring knowledge and beliefs, the mean number of questions answered correctly was 2.5 (± 0.6). Of the two kitchen fats quiz questions measuring knowledge and beliefs, the mean number of questions answered correctly was 1.7 (± 0.5). Of the six food label quiz questions measuring knowledge and beliefs, the mean number of questions answered correctly was 3.6 (± 1.0)**.** Of the 132 participants, 70.5% (n=93) answered the question about caloric daily intake correctly.

About half of the women in this sample (53.0%; n=70) falsely believed that it was best to avoid starchy vegetables like corn, and 49.2% (n=65) did not think about balancing the calories they eat and drink with the calories they are burning. Of note, only 28.8% (n=38) correctly identified that a food with 100 mg of sodium is low in sodium

and 82.6% (n= 109) reported that the descriptions on the front of the package tell you all you need to know to make a healthy food choice.

Weight

Table 5.4 shows weight and other anthropometric measurements for this sample. Included are self reported weight, waist circumference, and BMI. Furthermore, weights before and after giving birth are reported, as are results for the self reported figure rating scale, and answers to knowledge questions about weight loss and CHD. The participants were 21.7 (± 4.3) years old at the time of their first child and self reported their mean weight before the first child as 112.6 (± 37.8) pounds.

Table 5.4 *Weight & Anthropometric Measurements of Young, Low-income Latina Adults*

	WIC		RC		Total	
	WIC mean (±sd)		**RC mean (±sd)**		**Total mean (±sd)**	
Age when having their 1st child (yrs)	22.0 (±4.4)		20.4 (±3.8)		21.7 (±4.3)	
Weight before 1st child (lbs)[a]	118.2 (±29.8)		93.4 (±53.5)		112.6 (±37.8)	
Self Reported Weight (lbs)[a] (n=131)	148.1 (±25.5)		147.1 (±27.2)		147.9 (±25.8)	
Measured Weight (lbs)[a] (n=131)	151.2 (±27.9)		152.9 (±28.4)		151.6 (±27.9)	
Self Reported WC (inches)[b] (n=8)	43.7 (±12.0)		32.1 (±4.4)		39.3 (±11.1)	
Measured WC (inches)[b] (n=131)	38.8 (±4.6)		38.0 (±4.7)		38.6 (±4.6)	
Self classified BMI category	1.6 (±0.7)		1.5 (±0.8)		2.6 (±0.7)	
Calculated BMI Category	3.2 (±0.7)		3.1 (±0.7)		3.1 (±0.7)	
Self Reported BMI Category	3.1 (±0.8)		2.9 (±0.7)		3.0 (±0.8)	
Calculated BMI (kg/m^2) (n= 131)	28.9 (±5.0)		28. 6 (±5.1)		28.8 (±5.0)	
	WIC n	**%**	**RC n**	**%**	**Total n**	**%**
Self-classified BMI category						
(1) Underweight	7	6.9	4	13.3	11	8.3
(2) Normal or Healthy	33	32.4	8	26.7	41	31.1
(3) Overweight	60	58.8	17	56.7	77	58.3
(4) Obese	2	2.0	1	3.3	3	2.3
Calc BMI category (n=131)						
(1) Underweight	0	0	0	0	0	0
(2) Normal or Healthy	21	20.6	6	20.7	27	20.6
(3) Overweight	45	44.1	15	51.7	60	45.8
(4) Obese	36	35.3	8	27.6	44	33.6

	WIC n	%	RC n	%	Total n	%
Correct BMI category based on self reported weight (n=130)						
(1) Underweight	0	0	0	0	0	0
(2) Normal or Healthy	28	27.7	8	27.6	36	27.7
(3) Overweight	40	39.6	15	51.7	55	42.3
(4) Obese	33	32.7	6	20.7	39	30.0
	WIC mean (±sd)		**RC mean (±sd)**		**Total mean (±sd)**	
Calc BMI from SR Weight (kg/m^2) (n=130)	28.0 (±5.4)		27.6 (±4.5)		27.9 (±5.2)	
Calc BMI from Measured Weight & Height (kg/m^2) (n=131)	28.9 (±5.0)		28.6 (±5.1))		28.8 (±5.0)	
Figure Rating						
Actual body size	5.2 (±1.6)		4.9 (±1.5)		5.1 (±1.5)	
Ideal body size	3.2 (±1.0)		3.2 (±0.9)		3.2 (±1.0)	
Body Dissatisfaction Score	2.0 (±1.3)		1.7 (±1.5)		1.9 (±1.3)	
	WIC n	**%**	**RC n**	**%**	**Total n**	**%**
Weight Loss Quiz Correct Answers						
1. For most foods, a reasonable portion size is ½ to 1 cup	92	90.2	29	96.7	121	91.7
2. A good portion size for cooked meat, chicken, or fish is 3 ounces, with a total of no more than 5 ounces per day.	82	80.4	25	83.3	107	81.1
3. The only way to satisfy hunger is to eat a high-fat or high-calorie food.	92	90.2	22	73.3	114	86.4
4. People who exercise regularly are less likely to gain back pounds they have lost.	71	69.6	26	86.7	97	73.5
5. People who keep track of what they eat are less likely to gain back the pounds they have lost	78	76.5	26	86.7	104	78.8
6. I have never tried to write down everything I eat in a day.	23	22.5	3	10.0	26	20.0
7. In the past week, I had at least one eating binge (eating a large amount of food in a short time).	57	55.9	11	36.7	68	51.5
8. I exercise at least 5 days a week for at least 30 minutes)	50	49.0	5	16.7	55	41.7
	WIC mean (±sd)		**RC mean (±sd)**		**Total mean (±sd)**	
Weight Loss Quiz Total # Correct	5.3 (±1.3)		4.9 (±1.1)		5.2 (±1.3)	
	WIC n	**%**	**RC n**	**%**	**Total n**	**%**
CHD Risk Answer If you are obese, are you at risk of having coronary heart disease?	89	87.3	27	90.0	116	87.9

[a] Weight was converted to US convention using pounds

[b] WC was converted to US convention using inches

Self reported anthropometric findings.

The current self reported mean weight was 148.0 (± 25.8) pounds and the actual, measured mean weight was 151.4 (± 28.0) pounds (t = -4.54, $p < 0.05$). The mean self reported weight circumference (WC) of the eight participants was 39.3 (± 11.1) inches and the measured mean WC was 38.6 (± 4.6) inches 124 "did not know". Ethnicity and sex-specific values exist for waist circumference as 31 in (80 cm) for women; Figure 5.1 illustrates the proportion of women in this study who met this criterion.

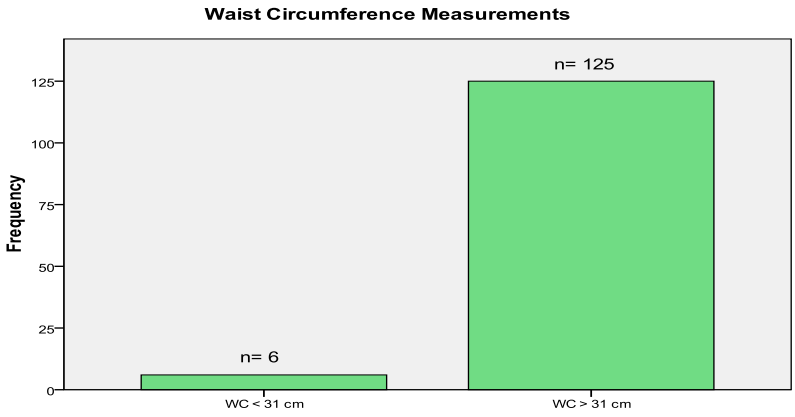

Figure 5.1 *Waist Circumference Measurements of Young, Low-income Latina Adults*

BMI classification.

Forty six percent of participants correctly classified themselves into the correct BMI category. Only 2% (n=3) overestimated their weight as overweight when they actually had a normal or healthy BMI. The majority of the women, 52% (n=68), underestimated their BMI classification by 1 or 2 BMI weight status categories, classifying themselves as healthy when they were overweight, coded as a one category difference, or classifying themselves as healthy when they were obese, coded as a two category difference (table 5.5).

While 31.1% (n= 41) classified themselves into the healthy BMI group, 20.6% (n=27) of this sample had a healthy weight. Although 58.3% (n=77) classified themselves as overweight, 45.8% (n=60) were overweight. Although 2.3% (n=3) classified themselves as obese, 33.6% (n=44) were obese, as shown in figures 5.2 and 5.3. When comparing self reported BMI categories and calculated BMI using excess weight, the participants statistically significantly underreported their excess weight (

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The mean body mass index (BMI) for this sample was 28.8 kg/m^2, which is considered overweight, having a BMI between 25.0 and 29.9 kg/m^2. Self reported height data was not collected. However, using the self reported weight and measured height, the mean self reported weight BMI category was overweight, closer to the calculated mean BMI classification.

Table 5.5. *Self Classified BMI of Young, Low-income Latina Adults*

		Calculated BMI Groups			
		Healthy	Overweight	Obese	Total
Self Classified BMI Group	Underweight	6	4	0	10
		22.2%	6.7%	.0%	7.6%
	Healthy	18	17	6	41
		66.7%	28.3%	13.6%	31.3%
	Overweight	3	39	35	77
		11.1%	65.0%	79.5%	58.8%
	Obese	0	0	3	3
		.0%	.0%	6.8%	2.3%
Total		27	60	44	131
		100.0%	100.0%	100.0%	100.0%

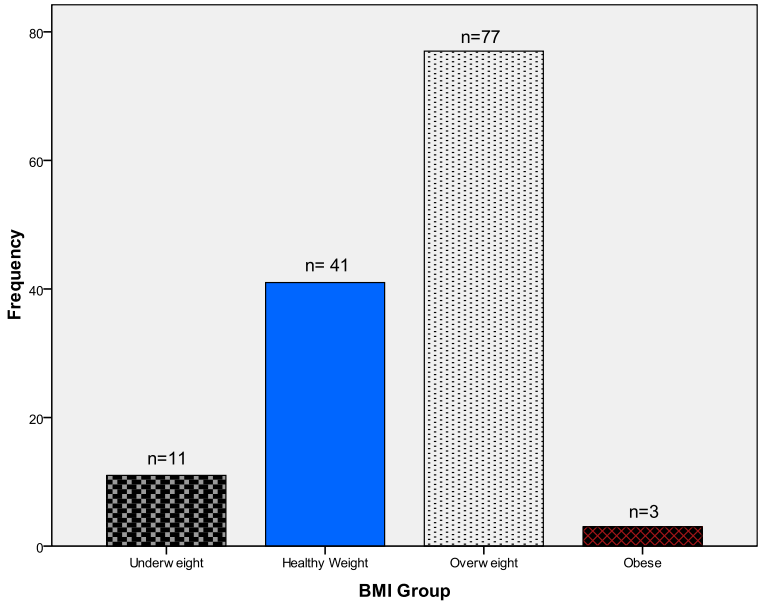

Figure 5.2 *Self Reported BMI of Young, Low-income Latina Adults*

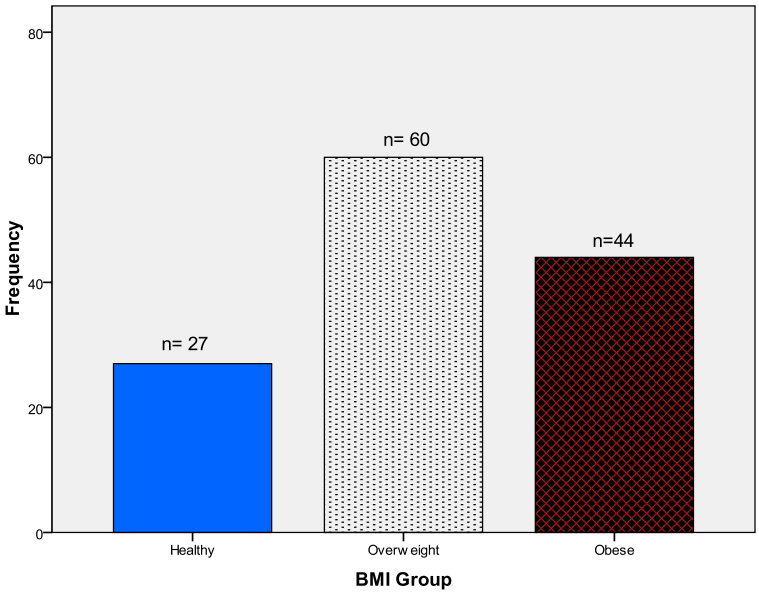

Figure 5.3 *Calculated BMI of Young, Low-income Latina Adults*

Body size.

In this sample, the average actual/current body silhouette size on the (1-9) figure rating scale (FRS) (with 1 being the thinnest figure and nine being the largest figure) was 5.1 (± 1.5 body size), while the ideal mean silhouette size was 3.2 (± 1 body size) (t= 16.48, $p<.05$). The mean body dissatisfaction score was 1.9 (± 1.3) body sizes, as shown in table 5.4. Women with excess weight had higher body dissatisfaction scores as shown in table 5.6. The majority of women (66.7%; n=88) reported that they were not at their ideal body weight. Of those who wanted to lose weight, the mean number of pounds they would have to lose to be at their ideal body weight was 15.48 (± 16.01).

Table 5.6 *Weight Perception of Young, Low-income Latina Adults*

	Excess Weight	n	Mean
Actual/ Current Size Body Silhouette	No	27	3.37 (± 1.12)
	Yes	104	5.54 (± 1.32)
Ideal Size Body Silhouette	No	27	2.63 (± 0.88)
	Yes	104	3.32 (± 0.97)
Body Dissatisfaction Score	No	27	0.74 (± 1.43)
	Yes	104	2.22 (± 1.08)

Knowledge about weight.

Of the eight weight loss questions measuring knowledge and beliefs, the mean number of questions answered correctly was 5.2 (± 1.3). Of the 132 participants, 87.9% (n=116) answered the question linking obesity with increased CHD risk correctly.

Health

Individual health history.

Table 5.7 shows the self reported rank ordered medical history for the sample. The three most commonly reported health problems were: weight problems (23.5%; n=31), mental health problems (15.9%; n= 21), and diabetes (12.9%; n=17). Only 15.9% (n=21) of the women reported having any other health problems. Of the 45.5% (n=60) reported having had surgery, 18.9% (n=25) had cesarean sections, 7.6% had tubal ligations (n= 10) and 3.8% (n=5) had gallbladder surgeries.

With regards to reproductive health, 25.0% (n=33) of the women reported having reproductive problems. In this sample, 25.0% (n=33) reported having had miscarriages, 6.1% (n=8) had stillbirths, and 11.4% (n=15) had abortions. With regards to health assessments, less than one third (n=42) of the women stated that they had an annual health check-up within the last year.

Family health history.

Table 5.7 also shows self reported, rank ordered family medical history for the sample. The four most commonly reported health problems were: diabetes (50.0%; n=66), weight problems (23.5%; n=31), heart problems (20.5%, n=27), and cancer (20.5%, n=27).

Table 5.7 *Health History of Young, Low-income Latina Adults*

	WIC n= 102		RC n= 30		Total n =132	
	WIC n	%	RC n	%	Total n	%
Individual Health History						
General health						
Weight Problems	23	2.5	8	26.7	31	23.5
Mental Health Problems	13	12.7	8	26.7	21	15.9
Diabetes	15	14.7	2	6.7	17	12.9
Respiratory Problems	9	8.8	4	13.3	13	9.8
Heart Problems	4	3.9	0	0	4	3.0
Arthritis	2	2.0	2	6.7	4	3.0
Cancer	4	3.9	0	0	4	3.0
Gallbladder Disease	6	5.9	1	3.3	7	5.3
Reproductive Health						
History of miscarriage	23	22.5	10	33.3	33	25.0
History of Abortion	10	9.8	5	16.7	15	11.4
History of Stillbirth	6	5.9	2	6.7	8	6.1
Reproductive Problems	2	2.0	2	6.7	4	3.0
Had annual PE in past 12 months	37	36.3	5	16.7	43	31.8
Family Health History						
Diabetes	49	48.0	17	56.7	66	50.0
Weight Problems	23	22.5	8	26.7	31	23.5
Heart Problems	20	19.6	7	23.3	27	20.5
Cancer	18	17.6	9	30.0	27	20.5
Arthritis	18	17.6	8	26.7	26	19.7
Respiratory Problems	14	13.7	6	20.0	20	15.2
Gallbladder Disease	12	11.8	2	6.7	14	10.6
Mental Health Problems	12	11.8	2	6.7	14	10.6
Reproductive Problems	3	2.9	3	10.0	6	4.5

Lifestyle Factors

Table 5.8 shows the self reported rank ordered lifestyle factors for the individual and family. In this sample, 7.6% (n=11) of the individuals reported having smoked more than 100 cigarettes in their lifetime, 2.3% (n=3) were current smokers and 19.7% (n=26) reported drinking alcohol. Participants reported that 27.3% (n=36) of their family smoked more than 100 cigarettes in their lifetime and 42.2% (n=56) drank alcohol.

Table 5.8 *Lifestyle Factors of Young, Low-income Latina Adults*

	WIC n= 102		RC n= 30		Total n =132	
	WIC n	**%**	**RC n**	**%**	**Total n**	**%**
Individual Health History						
Smoked > 100 cigarettes/lifetime	7	6.9	3	10.0	11	7.6
Current smokers	3	2.9	0	0	3	2.3
Drink Alcohol	19	18.6	7	23.3	26	19.7
Family Health History						
Smoked > 100 cigarettes	23	22.5	13	43.3	36	27.3
Drink Alcohol	41	40.2	15	50.0	56	42.4

Health perceptions.

Table 5.9 shows self reported health status and rank ordered health concerns for the sample. When the participants were asked, would you say your health is "excellent", "very good"," good", "fair or poor", the majority, 55.3% (n=73) reported their health to be "excellent, very good or good", while 44.7% (n=59) reported being in fair or poor health. In particular, most women with a healthy weight (40.7%) rated their health as good, while those who were overweight (40.4%) or obese (45.5%) rated their health as fair. When asked how would you rate your health now compared to one year ago, 44.7% (n=59) endorsed "much better or somewhat better" now, while 38.6% (n=51) rated their health the same and 16.7% (n=22) stated "somewhat worse". When asked how would you rate your health now compared to five years ago, 48.5% (n=64) endorsed "much better" or "somewhat better" now, while 23.5% (n=31) rated their health "the same" and 28% (n=37) rated their health "somewhat worse" or "much worse" now. The sample averaged 7.2 (± 1.2) hours of sleep per night, a mode of 8 hours (32.6%), and ranged from 4-12 hours per night.

Table 5.9 *Health Perceptions of Young, Low-income Latina Adults*

	WIC		RC		Total	
	WIC n	**%**	**RC n**	**%**	**Total n**	**%**
Health Status						
Excellent	6	5.9	0	0	6	4.5
Very good	18	17.6	1	3.3	19	14.4
Good	39	38.2	9	30.0	48	36.4
Fair	36	35.3	17	56.7	53	40.2
Poor	3	2.9	3	10.0	6	4.5
Compared to one year ago, how would you rate your health now?						
Much better now	19	18.6	2	6.7	21	15.9
Somewhat better now	32	31.4	6	20.0	38	28.8
About the same	35	34.3	16	53.3	51	38.6
Somewhat worse	16	15.7	6	20.0	22	16.7
Much worse now	0	0	0	0	0	0
Compared to five years ago, how would you rate your health now?						
Much better now	28	27.5	6	20.0	34	25.8
Somewhat better now	23	22.5	7	23.3	30	22.7
About the same	26	25.5	5	16.7	31	23.5
Somewhat worse	23	22.5	10	33.3	33	25.0
Much worse now	2	2.0	2	6.7	4	3.0
	WIC mean (±sd)		**RC mean (±sd)**		**Total mean (±sd)**	
Hours slept each night	7.2 (±1.2)		7.2 (±1.2)		7.2 (±1.2)	
Ranked concerns about each of the following illnesses:						
Cancer	1		1		1	
Heart disease	2		2		2	
Diabetes	3		3		3	
Chronic lung disease	4		6		4	
Kidney disease	5		4		5	
Stroke	6		5		6	
Alzheimer's disease	7		7		7	
	WIC n	**%**	**RC n**	**%**	**Total n**	**%**
Ranked order of resources where health information is received:						
Doctors	90	88.2	24	80.0	114	86.4
Television	71	69.6	20	66.7	91	68.9
Nurses	70	68.6	17	56.7	87	65.9
Internet	62	60.8	17	56.7	79	59.8
Medical books	63	61.8	15	50.0	78	59.1
Magazines	56	54.9	14	46.7	70	53.0
Pharmacist	47	46.1	12	40.0	59	44.7
Newspapers	36	35.3	13	44.8	49	37.4

Opinion poll on health concerns.

When asked to rank order their answers to the question: "How concerned are you about the following illnesses", the women ranked cancer (40.2%) first, followed by heart disease, diabetes, then chronic lung disease, kidney disease, stroke and Alzheimer's disease. When asked to rank order their health information sources, the most common source were doctors (86.4%; n=114), then television (68.9%; n=91), then nurses (65.9%; n=87), internet (59.8%; =79), medical books (59.1%; n=78), magazines (53.0%; n=70), pharmacists (44.7%; n=59) and newspapers (37.4%; n=49).

Findings for Aim 1, Objective 3

Psychosocial Factors

Depression.

To answer aim 1, objective 3, this data describe the psychosocial variables. Table 5.10a-e shows psychosocial factors for 131 participants in the sample. The first psychosocial factor measured was a depression severity level using Patient Health Questionnaire (PHQ-9). The sample mean was 5.1 (± 4.6) with possible values ranging from 0 to 27 for depressive symptoms. Results of the PHQ-9 levels of depression are available in table 5.9a. In summary, the majority of the sample had minimal symptoms (82.4%), while 17.6% had more than minor depressive symptoms.

Table 5.10a *Depression screening of Young, Low-income Latina Adults*

	WIC		RC		Total	
	WIC mean (±sd)		**RC mean (±sd)**		**Total mean (±sd)**	
PHQ-9 Mean Scores	4.6 (±4.8)		6.8 (±3.5)		5.1 (±4.6)	
	WIC n	**%**	**RC n**	**%**	**Total n**	**%**
PHQ-9 Level of Depression Severity Score						
Minimal (0-4)	65	63.7	8	26.7	73	55.3
Mild (5-9)	20	19.6	15	50.0	35	26.5
Moderate (10-14)	13	12.7	7	23.3	20	15.2
Moderately Severe (15-19)	3	2.9	0	0	3	2.3
Severe (20-27)	1	1.0	0	0	1	0.8
PHQ-9 Score						
0-9 (≤ minimal symptoms)	85	83.3	23	79.3	108	82.4
10-27 (≥ minor depressive symptoms)	17	16.7	6	20.7	23	17.6

Social support.

Social support was measured using the seven item ENRICHD Social Support Instrument (ESSI) ranging from 8 to 34 (table 5.10b). The mean score was 26.6 (± 6.0) and the mode was 30. Using five of the seven items and the cut-point score was adopted from ENRICHD (the ENRICHD investigators, 2000 & 2005), 23.5% participants had low perceived social support.

Table 5.10b *Social Support of Young, Low-income Latina Adults*

	WIC n	**%**	**RC n**	**%**	**Total n**	**%**
Low Perceived Social Support with a score of ≤2 on at least two items and a total score of ≤18	26	25.5	5	16.7	31	23.5

Self–efficacy.

Self- efficacy was measured with the Physical Exercise and Nutrition Self Efficacy instruments (table 5.10c) ranging from 5 to 20. The mean score for physical exercise self efficacy in this sample was 17.0 (± 3.1); and 17.5 (± 2.9) for nutrition self efficacy. The authors state that no cut-points are available for these scales.

Table 5.10c *Self efficacy of Young, Low-income Latina Adults*

	WIC mean (±sd)	**RC mean (±sd)**	**Total mean (±sd)**
Physical exercise self-efficacy	17.1 (±2.9)	16.3 (±3.7)	17.0 (±3.1)
Nutrition self-efficacy	17.5 (±2.8)	17.3 (±3.2)	17.5 (±2.9)

Acculturation.

Acculturation was measured using the 12 item Short Acculturation Scale for Hispanics (SASH), (table 5.10d), with each item having a range of 1=less acculturated and 5= more acculturated. The mean score was 21 and the mode was 16, with 12 to 60 being the SASH range of scores. Using 4 items and a cut-point adopted by the SASH study investigators (Marin et al., 1995), the mean was 1.8 (± 0.5) for this sample, so that 96.9% (n=127) of the participants met the criteria for having low acculturation. Also, the participants reported having lived in the United States an average of 9.7 (± 5.5) years.

Table 5.10d *Acculturation of Young, Low-income Latina Adults*

	WIC n	**%**	**RC n**	**%**	**Total n**	**%**
SASH Acculturation Groups						
Low acculturation	99	97.1	28	96.6	127	96.9
High acculturation	3	2.9	1	3.4	4	3.1
	WIC mean (±sd)		**RC mean (±sd)**		**Total mean (±sd)**	
Years living in the United States	9.7 (±5.4)		9.5 (±6.0)		9.7 (±5.5)	
# generations family has lived in US	2.3 (±0.5)		2.2 (±0.8)		2.3 (±0.6)	
SASH Score Averages	1.8 (±0.5)		1.7 (±0.5)		1.8 (±0.5)	

Fatalism.

Fatalism was measured by asking questions about fatalistic beliefs about exercise, weight, nutrition and health using a scale of 4 to 8, with lower scores indicating less fatalistic beliefs (table 5.10e). Of the 132 participants, 26% (n=34) had fatalistic beliefs about exercise, 28.2% (n=37) had fatalistic beliefs about weight, 31.3% (n=41) had fatalistic beliefs about nutrition; and 32.8% (n=43) had fatalistic beliefs about health. Although not statistically significant, those with excess weight had more fatalistic beliefs as compared to those of a healthy weight.

Table 5.10e *Fatalism of Young, Low-income Latina Adults*

	WIC n	%	RC n	%	Total n	%
Fatalistic beliefs about exercise	27	26.5	7	24.1	34	26.0
Fatalistic beliefs about weight	30	29.4	7	24.1	37	28.2
Fatalistic beliefs about nutrition	34	33.3	7	24.1	41	31.3
Fatalistic beliefs about health	35	34.3	8	27.6	43	32.8

Findings for Aim 2, Objectives 4 through 6

To answer aim 2, objectives 4 through 6, a logistic regression analysis was used to estimate the relationship in Latina adults between: (a) demographics and excess weight, (b) knowledge, attitudes, beliefs and behaviors about PA, weight, nutrition and health and excess weight and (c) psychosocial variables and excess weight. This data is presented in narrative format and as table 5.11. Odds ratios (OR) with 95% confidence intervals (CI's) and p-values are reported.

Logistic regression analysis was separately performed with each of the 11 independent variable and the dependent variable excess weight. A p-value of ≤ 0.10 for the univariate logistic regression analysis qualified for consideration of that variable to be

entered into the multivariate logistic model. The following independent variables satisfied this criterion: the Habitual Physical Activity Questionnaire (HPAQ) score (p=0.10), answering "Yes, I should exercise to control or lose weight" (p=0.04), the answer "I do not exercise because I am lazy/ hate it" (p=0.03), self classified BMI group (p=0.00), answering no to the question "are you at your ideal body weight" (p=0.00), actual/current body silhouette size (p=0.00), ideal body silhouette size (p=0.00), body image dissatisfaction score (p=0. 00), fruit and vegetable quiz question total (p=0.05), answering "Yes, I get my health information from magazines" (p=0.06), and answering "Yes, I get my health information from newspapers" (p=0.03). The variable, body image dissatisfaction score, was eliminated as a redundant variable. Table 5.11 shows that of the 11 evaluated independent variables seven were statistically significantly associated with excess weight and three were statistically significantly protective of excess weight.

Table 5.11 *Univariate Logistic Regression Analysis of Selected Independent Variables and Excess Weight as Dependent Variable*

Variable	OR	95% C.I.		p-value
		Lower	Upper	
Habitual Physical Activity Questionnaire Total	0.76	0.54	1.04	0.10
I should exercise to control or lose weight	8.28	1.06	63.74	0.04
I don't exercise because I'm lazy/ hate it	5.07	1.13	22.74	0.03
Self classified BMI group	7.62	3.36	17.27	0.00
I am at my ideal body weight	0.17	0.06	0.42	0.00
Actual/current body silhouette	3.83	2.29	6.37	0.00
Ideal body silhouette	2.31	1.36	3.92	0.00
Body image dissatisfaction score	2.97	1.84	4.81	0.00
Fruit and vegetable questions total	0.45	0.20	1.00	0.05
I get my health information from magazines	2.32	0.97	5.55	0.06
I get my health information from newspapers	3.28	1.15	9.35	0.03

* significant if p-value ≤ 0.10

Findings for Aim 3, Objective 7

To answer aim 3, objective 7, a multiple logistic regression was used to estimate the relationship between demographics, attitudes, beliefs and behaviors about PA; weight, nutrition and health; psychosocial variables and excess weight. Odds ratios with 95% CIs are reported. This data are presented in narrative format and as table 5.12 to show the results of the multiple logistic regression analysis.

In the final parsimonious model, two of 10 variables were statistically significantly associated with excess weight; these were actual/ current body silhouette size (p=0.02), and reporting getting health information from newspapers (p=0.01), as shown in table 5.12. Interpretations of the results illustrated in the tables are as follows: for every one body silhouette increase in Actual/current body silhouette size, there is 2.78 higher likelihood of having excess weight; for every one unit increase in getting health information from newspapers, there is a 7.31 greater likelihood of having excess weight, holding all of the other independent variables in the model constant.

Table 5.12 *Multiple Logistic Regression Table*

Independent Variable	OR	95% C.I.		p-value
		Lower	Upper	
Habitual PA Questionnaire Total	0.94	0.58	1.55	0.82
To control or lose weight as reason to exercise	2.12	0.18	24.39	0.55
Don't exercise because I'm lazy/hate it	1.75	0.29	10.46	0.54
Self classified BMI category	2.79	0.85	9.24	0.09
Are you at your ideal body weight	0.60	0.13	2.80	0.52
Actual/current body silhouette size	**2.78**	**1.28**	**6.04**	**0.02**
Ideal body silhouette size	1.40	0.56	3.46	0.47
Fruit & Vegetable Quiz Total	0.36	0.09	1.27	0.11
Get health information from magazines	1.78	0.46	6.95	0.41
Get health information from newspapers	**7.31**	**1.43**	**37.35**	**0.01**
Constant	.00			0.00

* significant if p-value ≤ 0.05

In summary, the multivariate LR model included 10 variables and revealed that actual/current body silhouette size [OR=2.78, 95% CI: 1.28, 6.04] and getting health information from newspapers [OR=7.31, 95% CI: 1.43, 37.35] were statistically significantly associated with excess weight. In the following chapter, chapter 6, the findings will be discussed within the context of the existing literature.

Chapter 6

Discussion

Chapter six discusses the study findings within the context of existing literature and offers implications for practice and future research. In this study, lists of factors as they may relate to the problem of excess weight have been researched: knowledge, attitudes, beliefs and behaviors about PA, weight, nutrition, health and psychosocial factors in young (18-45 year old), low-income Latina adults.

To achieve the research objectives, two clinics, the Women, Infants and Young Children (WIC) clinic and the RotaCare Free Medical Clinic in San Rafael provided the study sites from which subjects were recruited over a period of 2 months in 2011 in the San Francisco Bay area. The Women, Infants and Young Children (WIC) clinic is funded by the USDA's Food and Nutrition Service and provides services to low-income pregnant, breastfeeding and non-breastfeeding postpartum women, as well as their infants and children less than five years of age who are at nutritional risk by providing supplemental foods, health care referrals and nutrition education (WIC, 2011). The RotaCare Free Medical Clinic in San Rafael is a volunteer alliance of medical professionals, organizations and community members who provide free healthcare services to low income and uninsured families (RotaCare, 2010).

According to study criteria, the Latina adults ranged in age from 18 to 45 years, had low income; were English or Spanish speaking, resided in Northern California and received health services from one of two clinics. Most of the participants originated either from Mexico (41%) or Guatemala (37%) and all but two women were born outside the US. Most of the participants had less than high school education (49%) and their most frequently reported household income was in the range of $10,000 to $20,000. Most of the participants were married (44%) or partnered (31%) and their average household size

was 4 (±1) ranging from zero to eight with two (mode) children living in the household. The participants acknowledged having a religious affiliation, mostly Catholic (49%). In 1998, the USDA reported that 32% of all their WIC participants were Latina, over 1 million of whom accounted for 58% of the WIC participants in the Western region of the US, with Latinas having an average annualized family income of $12, 264. Although other demographic information were not detailed by ethnicity as demographics were most often reported by parity or breastfeeding status, these findings are consistent with the reported income in this study.

Discussion of Salient Features of this Study

The three most common health problems that the participants self reported were weight problems, mental health problems and diabetes. Their reproductive health histories included having had miscarriages (25%), abortions (11%) and stillbirths (6%). The participants' family history revealed that diabetes and weight problems were the most frequent concerns with heart problems and cancer being ranked equally as the third and fourth most common family health histories. Similar to national statistics, smoking was relatively uncommon. Alcohol consumption was reported by 20% of the participants, yet 42% reported family alcohol consumption, presumably due to consumption by other family members.

Less than half of the participants (41%) in this sample reported that they had spent more than 30 minutes walking briskly at least 5 days each week. In this sample, 24% of the women engaged in running 25 minutes or more at least 3 days each week and 18% performed aerobic dance at least 3 days each week. Therefore, the majority of the participants (83%) reported an acceptable level of physical activity, as recommended by

the physical activity guidelines for adults (USDHHS, 2009), so as to receive the substantial health benefits that include decreased likelihood of development from chronic diseases compared to inactive adults (USDHHS, 2009).

It is noteworthy that most of the physical activity was performed during leisure time versus at work or sports. This finding may be a reflection of the nature of many existing physical activity questionnaires that were designed for men and emphasized work and leisure time physical activity. Whereas woman, especially in this sample with most being housewives (56%), spend more time caring for children than playing structured sports or being at work. This finding supports that assessment of physical activity in women should not only measure work and sports alone, but should include some measure of leisure time physical activity, as well as work in the home.

Attitudes about physical activity revealed that the majority (59%) of the participants preferred to be active zero to two times each week. This low level of participation in physical activity is most likely an important contributor to the excess weight of this sample. Furthermore, this quantity of physical activity is clearly also insufficient for achieving weight maintenance or weight reduction. All of the participants correctly identified that "regular exercise helps the heart work better", and most knew that older people can exercise (86%); however, the majority of the participants (98%) had a knowledge deficit about the duration of exercise that yields health benefits ("for exercise to be helpful you must do it for at least 30 minutes at a time"). When asked about the preferred physical activity, the majority (64 %) of the women in this sample reported that their preferred form of exercise was walking briskly, with fewer preferring aerobic dancing (18.2%) and running (18.2%). Current PA guidelines for adults (table

1.3) outline different intensities and durations for physical activity that can yield health benefits in amounts as low as ten minutes in duration. Compiled with physical activity preferences, this information may prove helpful in the development and implementation of health programs focused toward the overweight and obese.

Although 88% correctly answered the question linking obesity with increased CHD risk, only 2% correctly classified themselves into the obese category, while 34% were actually obese. The top two highest ranked concerns were cancer (40%) and heart disease (27%), followed by diabetes, then chronic lung disease, kidney disease, stroke and Alzheimer's disease.

On average, this sample met or exceeded the recommended intake of fruits and vegetables, and consumed less than the recommended intake of meats and beans, fats and whole grain foods, in comparison to the USDA Food Guide (2006). On average, this sample consumed less than the recommended average daily intake of milk and water (IOM, 2004); they drank fewer servings of soda, than what the typical American drinks in a day (20 ounces), as reported by DeNies and Siegel, H on ABC News (2010). In summary, the samples dietary practices compared unfavorably to the 2005 Dietary Guidelines for Americans, based on the traditional food pyramid. Although fruit and vegetable consumption were reported in sufficient quantities, other aspects of this sample's diet were inadequate.

The participants knowledge and beliefs about nutrition showed that about half (51%) reported that they "think about balancing the calories they eat and drink with the calories they're burning". Furthermore, most (92%) of these young women reported that "overweight adults need to consult with a healthcare provider about weight-loss strategies

before starting a weight loss program. The participants knowledge of food labels was limited, in that only 29% knew that foods with 100 mg of sodium are considered low in sodium content; and 82.6% reported that the descriptions on the front of the package 'tell you all you need to know" to make healthy food choice, being unaware of misleading advertising. Overall, the participants' demonstrated on their knowledge quiz that they had a very high level of knowledge about weight and weight loss matters; however when asked if they had ever recorded all that they have eaten in a day only 17% had ever performed this activity. Given this information, further education about lifestyle choices and nutrition labeling may be valuable.

The average self reported weight of the participants in this sample was 148 (± 26) pounds which was statistically significantly lower than their measured mean weight of 152 (± 28) pounds. Additionally, when asked to classify themselves as one of the following (categories): "underweight" ideal weight", "overweight" or "obese", the majority (52%) underestimated their BMI categories by one or two weight status categories. Although 58% classified themselves as overweight, 46% were actually overweight. Additionally 2% classified themselves as obese, while 34% were obese according to federal guidelines for BMI. This misclassification and underreporting of their excess weight was statistically significant ($p \leq 0.05$). An alternative appraisal of the participant's weight using a figure rating scale of their body silhouette size (with 1 being the thinnest and 9 being the largest body size) demonstrated a statistically significant difference ($p < 0.05$) between the subjects actual and ideal body size. More specifically, these women had body dissatisfaction of 2 body sizes in the direction of a thinner body size. These findings imply that although most of the women underreported their weight

and misclassified themselves into lower BMI weight status categories in this study, yet their weight loss perceptions, expressed as a desired thinner body size, translate into a desire for weight loss.

Regarding health, the participants in this sample most common self reported health problems included weight, mental health problems and diabetes. The majority (55%) of the participants reported their health status as "excellent, very good, or good." Most women (41%) with a healthy weight rated their health as "good", while those who had excess weight rated their health as fair, further implying those with excess weight in this study had worse self reported health than those of a healthy weight.

There were no appreciable difference in depression, social support, nutrition or physical exercise self efficacy between those with healthy weights compared to those with excess weight. Although not statistically significant, those with excess weight had more fatalistic beliefs as compared to those who had healthy weights.

This sample rank ordered the diseases that most concerned them with cancer first, followed by heart disease, diabetes, chronic lower respiratory/lung disease, kidney disease, stroke and lastly, Alzheimer's disease. The leading causes of death for Latinos in 2007 were heart disease, followed by cancer, stroke, chronic lower respiratory/lung disease, Alzheimer's disease, diabetes and kidney disease (Xu, Kochanek, Murphy & Tejada-Vera, 2010). This finding is not uncommon since a national Newsweek poll conducted by Discovery Health Media also identified that "cancer" was the disease that the public was most concerned about (1999). Considering that the majority (88%) correctly identified that obesity is linked with increased CHD risk, under appreciating their present risk given their excess weight. These data point to the need for greater

awareness about heart disease risk factors and the possibility to employ risk reduction strategies to reduce death from preventable diseases.

The women in this sample ranked their sources of health information as primarily from doctors (86%), followed by television (69%), nurses (66%), internet (60%), medical books (59%), magazines (53%), pharmacists (45%) and newspapers (37%). This would imply that healthcare professionals in medicine and nursing, who ranked 1st and 3rd as resources for health information, should be involved in the implementation of healthcare programs focused on overweight and obesity in the Latina population in Northern California, combined with continued health programs featured on television.

The majority (97%) of this sample had low acculturation. Additionally, given that most of the sample had received relatively low levels of formal education in their countries of origin, their knowledge of physical activity, nutrition (such as knowing that whole bread and whole-wheat bread aren't the same thing and that food labels tell you how big a serving is) was considerable. Likely explanations might be that they obtained such knowledge from their health care encounters (WIC) and health care providers (doctors and nurses) in the clinics that they have frequented and also from the many available cable television channels that feature health information in California.

In this study, psychosocial factors such as depression, social support, self-efficacy (for physical activity and nutrition), acculturation and fatalism were obtained to evaluate their potential effects on excess weight. The depression screening tool identified 18 % of the sample with scores suggestive of depression and in need of further follow-up evaluation to ascertain whether these women meet the DSM-IV criteria for a diagnosis of depression. Nearly one quarter of the sample (24%) qualified as having low perceived

social support. The participants in this study reported high self efficacy scores for both PA self-efficacy (17%) and nutrition SE (18%) out of a possible range of scores from 5 to 20. Self efficacy and social support are considered important aspects of behavioral self management, for this reason both PA and nutritional self efficacy were assessed (Duncan & McAuley, 1993). Women in this study lived in the United States an average of 10 (±5.5) years and almost all participants (97%) had low acculturation. Nearly one-third of the participants in this study had fatalistic beliefs about PA, nutrition, health and weight, with more fatalistic beliefs among those who had excess weight, although not significant.

Finally, a logistic multivariate regression analysis (Table 5.11) with 10 independent variables in the model found two variables that were statistically significantly associated with excess weight. These were, actual current body silhouette size [OR=2.78, 95% CI: 1.28, 6.04 (p=.02)]; and the subject reporting that their source of health information was gained from newspapers [OR=7.31, 95% CI: 1.43, 37.35; (p=.01)]

Table 5.11 *Multiple Logistic Regression Table*

Independent Variable	OR	95% C.I.		p-value
		Lower	Upper	
Habitual PA Questionnaire Total	0.94	0.58	1.55	0.82
To control or lose weight as reason to exercise	2.12	0.18	24.39	0.55
Don't exercise because I'm lazy/hate it	1.75	0.29	10.46	0.54
Self classified BMI category	2.79	0.85	9.24	0.09
Are you at your ideal body weight	0.60	0.13	2.80	0.52
Actual/current body silhouette size	**2.78**	**1.28**	**6.04**	**0.02**
Ideal body silhouette size	1.40	0.56	3.46	0.47
Fruit & Vegetable Quiz Total	0.36	0.09	1.27	0.11
Get health information from magazines	1.78	0.46	6.95	0.41
Get health information from newspapers	**7.31**	**1.43**	**37.35**	**0.01**
Constant	.00			0.00

* significant if p-value ≤ 0.05

Limitations and Strengths of this Study

Like most studies, the present study has a number of limitations that need to be considered when interpreting the findings of this study: 1) A cross-sectional study design was used to answer the research objectives which precludes definitive conclusions about causal relationships; 2) the restrictions of the sample to low income women, ages 18 to 45 further restrict the generalizability to all Latina adults; 3) the HPAQ instrument used to obtain PA information may not adequately capture household or childcare physical activity ; 4) a substantial portion of the data was obtained via self report and may be subject to bias; such criticism is germane to much of the behavioral literature and needs to be taken into consideration when evaluating the data.

Nevertheless, the present study has several strengths that have yielded numerous salient findings that build on the sparse body of knowledge about young, low income Latina Adults. 1) The investigator was a bilingual, bicultural Latina and had thus gained the cooperation of the participants contributing to the completeness of the extensive data collection necessary for this study. 2) Almost all participants were born outside the Unites States and had a low level of acculturation. 3) This study identified that a considerable discrepancy existed between the women's perceived weight over actual measure weight, a finding that could potentially contribute to the rise in the obesity epidemic in this group. 4) Although a sufficient amount of physical activity was reported, an inadequate nutritional intake was reported which may serve as a partial explanation for the excess weight observed in this sample. Awareness of the excess weight was partially evident from self rated weight category and their self rated health; in that women with excess weight tended to rate themselves as less healthy than women with healthy weight.

5) Despite the low level of formal education, the participants in this sample had relatively good knowledge about nutrition and some knowledge about exercise. The extent to which their low level of education, low level of acculturation, income limits and attribution of their fatalistic beliefs account for the excess weight remains a topic for deeper exploration in future research studies.

Research about knowledge, attitudes, beliefs and behaviors concerning excess weight is limited. Although many resources detail the problems of obesity and their contributing factors, such as nutrition and physical activity practices, these have not been well documented in young, low-income Latina adults and seldom collected by a researcher who is both bicultural and bilingual. This proved to be an asset for this research endeavor, providing an in-depth understanding that may have been missing from previous population studies.

Although overweight and obesity prevalence has been widely documented as a national priority in health disparity research, a greater understanding of the scope and breadth of this problem is required. This study explored many facets that influence excess weight in Latina adults. This study about knowledge, attitudes and beliefs lends to a more comprehensive description of this problem influenced by lifestyle choices. As the leading minority group in California, more obesity research is required in the Latina population to better direct Latina prevention, health promotion and treatment programs.

Recommendations for Future Studies

It is recommended that future studies obtain larger sample sizes to yield more precise estimates. Studies with larger sample sizes will have an opportunity to also

evaluate the interaction and moderating effects of physical activity, nutrition and psychosocial factors on excess weight. Prospective longitudinal studies will be needed to be informative about the development of excess weight and its causal factors, including more precise ascertainment of the generational factors contributing to excess weight. Prospective and comprehensive physical activity and nutritional assessments are likely to be valuable improvements in the field of obesity research. Ultimately, culturally appropriate intervention studies using randomized clinical trial methodology will need to be conducted for purposes of health promotion and risk reduction. This work illustrates the need for further research, not only on obesity, but on excess weight. Additionally, more research is needed in populations that have high obesity rates, especially within immigrant populations that may experience unique challenges. Further research is needed in immigrant Latina adults in the US as well as in their native countries in order to explicate the effects of immigration on obesity. Lastly, careful attention to the translation of questionnaires into the participants' native language as well as using bicultural/bilingual interviewers are essential to future research of excess weight in immigrant populations.

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Appendix

Appendix A:
PAN Study Brochure and Flyer Advertisement

Latina Health Study

The University of California is conducting a study to learn more about Latina health, physical activity, weight and nutrition.

Talk to your healthcare provider to see if you can be enrolled in this study.

You will receive a token of our appreciation in the amount of $10 dollars if you are eligible and enroll in the study.

If you want to learn more about this Latina health study, ask your healthcare provider for more information.

You may also contact

Jeneva Gularte @ [redacted]

Are you a Latina over 18 years of age & interested in being involved in a Research study?

SUBJECTS NEEDED FOR RESEARCH STUDY

University of California, San Francisco

We want to obtain participants to study Latina health, physical activity, weight and nutrition.

Subject Inclusion Criteria:

- Women age 18 years or older
- Latina or Hispanic
-Speaks Spanish or English
-Living or residing in Northern California

What will participants have to do?

- Study Procedures:
  - Answer questions about their health, physical activity, weight and nutrition once.
  - Have their height, weight and waist circumference measured once.
  - Subjects will receive a token of our appreciation for participation in this study.

Principle Investigator: Dr. Erika Froelicher, RN, PhD, FAAN, UCSF

IF INTERESTED, PLEASE CONTACT: Jeneva Gularte @
(cell phone # listed on original flyer)

Jeneva Gularte (#listed) (v.m. after-hours)	Jeneva Gularte (#listed) (v.m. after-hours)	Jeneva Gularte (#listed) (v.m. after-hours)	Jeneva Gularte (#listed) (v.m. after-hours)	Jeneva Gularte (#listed) (v.m. after-hours)	Jeneva Gularte (#listed) (v.m. after-hours)	Jeneva Gularte (#listed) (v.m. after-hours)	Jeneva Gularte (#listed) (v.m. after-hours)	Jeneva Gularte (#listed) (v.m. after-hours)	Jeneva Gularte (#listed) (v.m. after-hours)	Jeneva Gularte (#listed) (v.m. after-hours)

Appendix B: UCSF's Consent to participate in the PAN research study

IRB NUMBER: 10-03157
IRB APPROVAL DATE: 01/12/2011
IRB EXPIRATION DATE: 01/11/2012

UNIVERSITY OF CALIFORNIA, SAN FRANCISCO
CONSENT TO PARTICIPATE IN A RESEARCH STUDY

Investigator's Name: Erika Froelicher, RN, PhD & Catherine Waters, RN, PhD

Department: Physiological Nursing

STUDY TITLE: Knowledge, Attitudes, Beliefs and Behaviors about Physical Activity, Weight, Nutrition and Health in Young Latina Adults.

INTRODUCTION
This is a research study. Research studies only include subjects who choose to participate. As a research participant, you have the right to know about the procedures that will be used in this research study so that you can make the decision whether or not to participate. The information presented here is to make you better informed so that you may give or not give your consent to participate in this research study. Please take your time to make your decision.
The researcher, Jeneva Gularte, RN, MS will explain this study to you. If you have any questions, you may ask the researcher.

WHY IS THIS STUDY BEING DONE?
You are being asked to take part in this study because you are a patient in a clinic where we are conducting this study. In this study, the researchers are doing a survey to learn more about physical activity, weight, nutrition and health in young Latina adults,

HOW MANY PEOPLE WILL TAKE PART IN THE STUDY?
About 130 people will participate in this study.

WHAT WILL HAPPEN IF I TAKE PART IN THIS STUDY?
If you decide to participate in this study, you will need to give your written consent after the researcher explains to you all the details of the study. You will be asked to complete a survey administered by the researcher in a one-time interview at the clinic. The survey asks about physical activity, weight, nutrition and health and takes about 30 minutes to complete. You will be asked to have your height, weight and waist circumference measured once, taking 5 minutes to complete.

ARE THERE ANY RISKS TO ME OR MY PRIVACY?
Some of the survey questions may make you feel uncomfortable or raise unpleasant memories. You are free to skip any question.
We will do our best to protect the information we collect from you. Information which identifies you will be kept secure. The survey itself will not include details which directly identify you, such as your name or address. Please do not put this information on your survey. The completed surveys will be kept safe and separate from information that identifies you. Only a few researchers will have direct access to completed surveys. If this study is published or presented at scientific meetings, names and other information that might identify you will not be used.

One question asks if you have thoughts of hurting yourself in some way. If you answer "nearly every day", then we will need to share this information with your clinic or primary healthcare giver.

ARE THERE BENEFITS TO TAKING PART IN THE STUDY?
You may not get any personal benefit from taking part in research. However, the information we get from this study may help us to better understand Latina physical activity, nutrition, weight and health.

CAN I STOP BEING IN THE STUDY?
Yes. You can decide to stop at any time. Tell the investigator if you are thinking about stopping or decide to stop If you choose not to be in this study, you will not lose any of your regular benefits and you can still receive medical care from the clinic.

WHAT ARE THE COSTS OF TAKING PART IN THIS STUDY?
There is no charge for you to participate in this study. Neither you nor your insurance carrier will be charged for your taking part in the research. Jeneva Gularte, a doctoral student, is paying for this research.

WILL I RECEIVE PAYMENT FOR BEING IN THIS STUDY?
You will receive $10.00 cash immediately after completing the study, to offset travel costs, time or inconvenience.

WHO CAN ANSWER MY QUESTIONS ABOUT THE STUDY?
If you have questions, please ask us. You can talk with the investigator about any questions, concerns, or complaints you have about this study at:

Erika Froelicher, RN, PhD at phone number (415) 476-4833
Jeneva Gularte at phone number (# listed on original consent form) (Voice mail after hours)

If you wish to ask questions about the study or your rights as a research participant to someone other than the researchers or if you wish to voice any problems or concerns you may have about the study, please call the Office of the Committee on Human Research at 415-476-1814.

CONSENT
Participation in Research Is Voluntary.

You have been given copies of this consent form to keep.

If you wish to be in this study, please sign below.

Date	Participant's Signature for Consent
Date	Person Obtaining Consent

Appendix C: PAN Study Questionnaire

Latina Health, Physical Activity, Weight and Nutrition Survey

Study ID #: _____
Clinic ID: _____
Date: _____

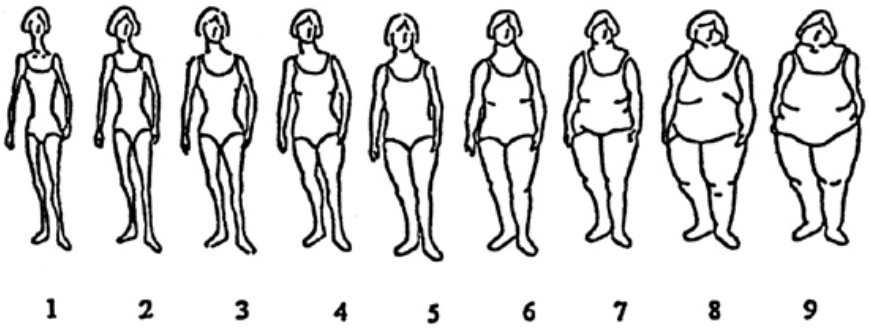
	SOCIODEMOGRAPHICS	**Please circle or write in your answer**:	**Source Information**
	How many years of education have **you** completed?	_____ years	
	What is **your** employment status?	(1) Full time (2)Part-time (3)Self-employed (4) Housewife (5)Unemployed (6) Retired	
	What is **your** annual income?	(1) $_____annually	
	What is **you**r marital status?	(1) Single (2) Married (3) Separated (4) Divorced (5)Widowed (6) Living with a partner	
	*(If you have a significant other) are they?	(1) Employed (2)Unemployed (3) Retired (4) Student (5) Disabled	
	How many **people** are living in your home?	_____ people	
	How many **children** are living in your home?	_____ children	
	How many children do **you** have?	_____ children	
	How old were you when you had your first child?	_____ years	
	How much did you weigh before having children?	_____ pounds	
	How much weight did you gain with each child?	Child #1: _____ pounds Child #2: _____ pounds Child #3: _____ pounds Child #4: _____ pounds	
	Have you ever had: A miscarriage? Stillbirth? Abortion?	 No (1) or Yes (2) _____ If yes, how many _____ No (1) or Yes (2) _____ If yes, how many _____ No (1) or Yes (2) _____ If yes, how many _____	
	Do you have a religious affiliation? If so, what is your religious affiliation	No (1) or Yes (2) _____	

	INDIVIDUAL HEALTH HISTORY		
	Have **you** ever been told by a doctor that you have any of the following? If so, please check the box or say yes:		
	1. [ ] Heart problems		
	2. [ ] Diabetes		
	3. [ ] Cancer		
	4. [ ] Breathing problems		
	5. [ ] Arthritis		
	6. [ ] Fertility problems		
	7. [ ] Gallbladder disease		
	8. [ ] Mental health problems (including anxiety or depression)		
	9. [ ] Weight problems		
	10. [ ] If any other problems, please list	_____	
	11. Have you smoked 100 cigarettes in your life?	No (1) or Yes (2)	
	*12. If you answered yes, do you currently smoke?	No (1) or Yes (2)	
	13. Do you drink alcoholic beverages?	No (1) or Yes (2)	
	14. Have you ever had any surgeries?	No (1) or Yes (2)	
	*15. If yes, please list	_____	
	16. Do you see a healthcare profession for any other health problems?	No (1) or Yes (2)	
	*17. If yes, please list	_____	
		_____	
	18. Have you seen a healthcare provider for a checkup within the last year?	No (1) or Yes (2)	
	FAMILY HEALTH HISTORY		
	Has anyone in your family ever had any of the following conditions? If so, please check the box or say yes:		
	1. [ ] Heart problems		
	2. [ ] Diabetes		
	3. [ ] Cancer		
	4. [ ] Breathing problems		
	5. [ ] Arthritis		
	6. [ ] Reproductive problems		
	7. [ ] Gallbladder disease		
	8. [ ] Mental health problems (including anxiety or depression)		
	9. [ ] Weight problems		
	10. [ ] If any other problems, please list	_____	

	11. Does anyone in your family smoke? 12. Does anyone in your family drink alcoholic beverages? 13. Are there other health problems in your family? 14. If yes, please list	No (1) or Yes (2) No (1) or Yes (2) No (1) or Yes (2) _____ _____	
	PHYSICAL ACTIVITY		
	➢ **PAG**		
	1. Do you spend 30 minutes or more walking briskly each day at least 5 days a week?	No (1) or Yes (2)	
	2. Do you run 25 minutes or more at least 3 days a week?	Yes (2) or No (1)	
	3. Do you spend 25 minutes or more doing aerobic dance at least 3 days a week?	No (1) or Yes (2)	
	4. Of these 3 activities, which would you prefer to do? 5. How many times a week would you like to do them?	(1) Walk (2) Run (3) Aerobic Dance _____ times/week	
	➢ **PIA**		
	1.How many hours each day do you spend sitting (including computer time & TV watching)?	____ hours	
	2. How many days a week do you do the above?	____ days each week	
	➢ **HPAQ**		
	1. What is your main occupation?	_____	
	2. At work I sit: 3. At work I stand 4. At work I walk 5. At work I lift heavy loads 6. After working I am tired 7. At work I sweat	1= Never 2= Seldom 3= Sometimes 4= Often 5= Always 1 or 2 or 3 or 4 or 5 1 or 2 or 3 or 4 or 5 1 or 2 or 3 or 4 or 5 1 or 2 or 3 or 4 or 5 1 or 2 or 3 or 4 or 5 1 or 2 or 3 or 4 or 5	
	8. In comparison with others of my own age I think my work is physically much heavier	(5) Much heavier (4) Heavier (3) As heavy (2) Lighter (1) Much lighter	

	9. Do you play sport? If yes: - Which sport do you play most frequently? - How many hours a week? - How many months a year? If you play a second sport: - Which sport is it? - How many hours a week? - How many months a year?	Yes (2) or No (1) _____ _____ _____ _____ _____ _____	
	10. In comparison with others of my own age I think my physical activity during leisure time is:	(5) Much more (4) More (3) The same (2) Less (1) Much less	
	11. During leisure time I sweat	(5) Very often (4) Often (3) Sometimes (2) Seldom (1) Never	
	12. During leisure time I play sport	(1) Never (2) Seldom (3) Sometimes (4) Often (5) Very often	
	13. During leisure time I watch television 14. During leisure time I walk 15. During leisure time I cycle	1= Never 2= Seldom 3= Sometimes 4= Often 5= Very often 1 or 2 or 3 or 4 or 5 1 or 2 or 3 or 4 or 5 1 or 2 or 3 or 4 or 5	
	16. How many minutes do you walk and/or cycle per day to and from work, school and shopping?	(1) <5 minutes (2) 5-15 minutes (3) 15-30 minutes (4) 30-45 minutes (5) >45 minutes	
	➢ **NP/DHC**		
	1. Why should you exercise	___ (1) To feel good physically ___ (2) Aerobic/cardio fitness ___(3) To control or lose weight ___ (4) To stay healthy ___ (5) To build strength ___ (6) To look good	

	2. Why don't you exercise?	___ (1) Don't have time to ___ (2) Not supposed to ___ (3) Lazy/hate it ___ (4) Active lifestyle ___ (5) Feel fine without ___ (6) Don't care	
	➢ **APEQ**		
	1. Regular exercise helps the heart work better	No (1) or Yes (2)	
	2. For exercise to be helpful, you must do it for at least 30 minutes at a time.	No (1) or Yes (2)	
	3. People with heart disease should not lift weights	No (1) or Yes (2)	
	4. Older people shouldn't exercise	No (1) or Yes (2)	
	5. Golf is not considered physical activity	No (1) or Yes (2)	
	6. I own a comfortable pair of walking shoes	No (1) or Yes (2)	
	7. I own a pair of light (1 to 5 pound) hand weights	No (1) or Yes (2)	
	8. In the past 3 days, I exercised at least two of those days for 30 minutes or longer.	No (1) or Yes (2)	
	9. In the past 3 days, I did stretching exercises at least once.	No (1) or Yes (2)	
	10. I can balance on one foot for 20 seconds.	No (1) or Yes (2)	
	WEIGHT		
	➢ **SRWQ**		
	1. What is your current weight?	____ pounds	
	2. What is your waist circumference?	____ inches	
	➢ **NP/DHC**	Question 1	
	1. How would you classify yourself?	Please circle ONLY one: (0) Underweight (1) Ideal (2) Overweight (3) Obese	
	Ideal body weight: 2. Are you at your ideal body weight? 3. If **no**, do you desire to be thinner? 4. If so, how many pounds would you have to lose to be at your ideal body weight?	 No (1) or Yes (2) No (1) or Yes (2) _____ pounds	
	➢ **FRS**		

	1. Choose the silhouette that you think represents your actual/ current size and circle it.		
	 		
	2. Choose the silhouette of the size that you would ideally like to be		
	➢ **APWLQ**		
	1. For most foods, a reasonable portion size is ½ to 1 cup	No (1) or Yes (2)	
	2. A good portion size for cooked meat, chicken, or fish is 3 ounces, with a total of no more than 5 ounces per day.	No (1) or Yes (2)	
	3. The only way to satisfy hunger is to eat a high-fat or high-calorie food.	No (1) or Yes (2)	
	4. People who exercise regularly are less likely to gain back pounds they have lost.	No (1) or Yes (2)	
	5. People who keep track of what they eat are less likely to gain back the pounds they have lost	No (1) or Yes (2)	
	6. I have never tried to write down everything I eat in a day.	No (1) or Yes (2)	
	7. In the past week, I had at least one eating binge (eating a large amount of food in a short time).	No (1) or Yes (2)	
	8. I exercise at least 5 days a week for at least 30 minutes)	No (1) or Yes (2)	
	➢ **AHACHDR**		
	1. If you are obese, are you at risk of having coronary heart disease?	No (1) or Yes (2)	
	NUTRITION		
	➢ **NP/DHC**		
	How many servings of these foods do you eat in a typical day? 1. Fruits	_____ cups/ day	
	2. Vegetables	_____ cups/day	
	3. Meats and Beans	_____ ounces/day	
	4. Fats	_____ teaspoons/day	
	5. Whole grain foods	_____ ounces/day	

	How many servings of these foods to you drink in a typical day? 1. Milk 2. What kind of milk do you drink? 3. Soda 4. What kind of soda? 5. Water	_____ cups/day Whole fat OR low-fat OR non-fat _____ cans/day regular soda OR diet soda _____ cups/day	
	➢ **USDANG**		
	1. When you eat food, do you think about balancing the calories you eat and drink from food and beverages with the calories you're burning?	No (1) or Yes (2)	
	2. Can an adult prevent gradual weight gain over time by slowly decreasing calories from foods and beverages, while increasing physical activity	No (1) or Yes (2)	
	3. Does an overweight adult need to consult with a healthcare provider about weight-loss strategies before starting a weight-reduction program?	No (1) or Yes (2)	
	○ **APFVQ**		
	1. It's best to avoid starchy vegetables like corn. 2. Right now, I have at least 5 different fruits or vegetables in my house	No (1) or Yes (2) No (1) or Yes (2)	
	○ **APWGQ**		
	1. Flour tortillas are not whole grain 2. Wheat bread and whole-wheat bread are the same thing. 3. Whole-grain foods are healthy because they contain fiber.	No (1) or Yes (2) No (1) or Yes (2) No (1) or Yes (2)	
	○ **APMAMQ**		
	1. Fish contain a healthy type of fat. 2. The fat in meat is also a healthy type. 3. Most of the fat in chicken is in the skin	No (1) or Yes (2) No (1) or Yes (2) No (1) or Yes (2)	
	○ **APKFQ**		
	1. Right now, I have olive oil or canola oil in my kitchen. 2. Right now, I have lard or shortening in my kitchen.	No (1) or Yes (2) No (1) or Yes (2)	
	○ **APFLQ**		

	1. I have never read the list of ingredients on a food label. **2.** Food labels tell you how big a serving is. **3.** The first item in the list of ingredients is the main one. **4.** Food labels do not tell you if the food contains fat. **5.** The descriptions on the front of the package tell you all you need to know to make a healthy choice. **6.** A food with 100 mg. of sodium is low in sodium.	No (1) or Yes (2) No (1) or Yes (2) No (1) or Yes (2) No (1) or Yes (2) No (1) or Yes (2) No (1) or Yes (2)	
	➢ NP/DHC		
	1. On average, a person should consume about 3,000 calories a day	True or False	
	HEALTH		
	➢ MOS36		
	1. In general, would you say your health is:	1= Excellent 2= Very Good 3= Good 4= Fair 5= Poor	
	2. Compared to **one** year ago, how would you rate your health in general **now**?	1= Much better now than one year ago 2= Somewhat better now than one year ago 3= About the same 4= Somewhat worse now than one year ago 5= Much worse now than one year ago	
	➢ NP/DHC	*(4 items)*	
	3. Compared to **five** years ago, how would you rate your health in general **now**?	1= Much better now than five years ago 2= Somewhat better now than five years ago 3= About the same 4= Somewhat worse now than five years ago 5= Much worse now than five years ago	
	1. How many hours of sleep do you usually get each night?	_____ hours/night	
	2. How concerned are you about each of the following illnesses? *Rank 1 though 7 by worry level:*	____ Kidney disease ____ Diabetes ____ Cancer ____ Heart disease ____ Alzheimer's disease	

		____ Stroke ____ Chronic lower respiratory / lung disease	
	3. Where do you usually get your health information?	Please answer No (1) or Yes (2) ____ Doctors ____ Magazines ____ Pharmacists ____ Nurses ____ Television ____ Medical books ____ Newspapers ____ Internet	
	PHQ-9		
	Over the last 2 weeks, how often have you been bothered by any of the following problems?	0= Not At All 1= Several Days 2= More Than Half the Days 3= Nearly Every Day	
	1. Little interest or pleasure in doing things	0 or 1 or 2 or 3	
	2. Feeling down, depressed or hopeless	0 or 1 or 2 or 3	
	3. Trouble falling or staying asleep, or sleeping too much	0 or 1 or 2 or 3	
	4. Feeling tired or having little energy	0 or 1 or 2 or 3	
	5. Poor appetite or overeating	0 or 1 or 2 or 3	
	6. Feeling bad about yourself- or that you are a failure or have let yourself or your family down	0 or 1 or 2 or 3	
	7. Trouble concentrating on things, such as reading the newspaper or watching television	0 or 1 or 2 or 3	
	8. Moving or speaking so slowly that other people could have noticed or the opposite- being so fidgety or restless that you have been moving around a lot more than usual	0 or 1 or 2 or 3	
	9. Thoughts that you would be better off dead or of hurting yourself in some way	0 or 1 or 2 or 3	
	SOCIAL SUPPORT		
	➢ ESSI		
	1. Is there someone available to you whom you can count on to listen to you when you need to talk?	1= None of the time 2= A little of the time 3= Some of the time 4= Most of the time 5= All of the time 1 or 2 or 3 or 4 or 5 1 or 2 or 3 or 4 or 5	

	2. Is there someone available to give you good advice about a problem? 3. Is there someone available to you who shows you love and affection? 4. Is there someone available to help you with daily chores? 5. Can you count on anyone to provide you with emotional support (talking over problems or helping you make a difficult decision)? 6. Do you have as much contact as you would like with someone you feel close to, someone in whom you can trust and confide?	1 or 2 or 3 or 4 or 5 1 or 2 or 3 or 4 or 5 1 or 2 or 3 or 4 or 5 1 or 2 or 3 or 4 or 5	
	Are you currently married or living with a partner?	Yes (2) or No (1)	
	ACCULTURATION		
	➢ SASH		
	1. In general, what language(s) do you read and speak?	1= Only Spanish 2= Spanish better than English 3= Both equally 4= English better than Spanish 5= Only English	
	2. What was the language(s) you used as a child? 3. What language(s) do you usually speak at home? 4. In which language(s) do you usually think? 5. What language(s) do you usually speak with your friends? 6. In what language(s) are the T.V. programs you usually watch? 7. In what language(s) are the radio programs you usually listen to? 8. In general, in what language(s) are the movies, T.V. and radio programs you *prefer* to watch and listen to?	1= Only Spanish 2= More Spanish than English 3= Both equally 4= More English than Spanish 5= Only English 1 or 2 or 3 or 4 or 5 1 or 2 or 3 or 4 or 5 1 or 2 or 3 or 4 or 5 1 or 2 or 3 or 4 or 5 1 or 2 or 3 or 4 or 5 1 or 2 or 3 or 4 or 5 1 or 2 or 3 or 4 or 5	
	9. Your close friends are: **10.** You prefer going to social gatherings/parties at which	1= All Latinos/Hispanics 2= More Latinos than Americans 3= About Half & Half 4= More Americans than Latinos 5= All Americans 1 or 2 or 3 or 4 or 5 1 or 2 or 3 or 4 or 5	

	the people are: 11. The persons you visit or who visit you are: **12.** If you could choose your children's friends, you would want them to be:	 1 or 2 or 3 or 4 or 5 1 or 2 or 3 or 4 or 5	
	How many **generations** has your family lived in the US?	_____ generations	
	How long have **you** lived in the US	_____ years	
	What country were **you** born in?	_____	
	SELF EFFICACY		
	➢ PESES		
	How certain are you that you could overcome the following barriers? I can manage to carry out my exercise intentions… 1 ...even if I need a long time to develop the necessary routines. 2 ...even if I have to try several times until it works. 3 ...even if I have to rethink my entire way of nutrition. 4 ...even if I do not receive a great deal of support from others when making my first attempts. 5 ...even if I have to make a detailed plan.	(1) very **un**certain (2) rather **un**certain (3) rather certain (4) very certain _____ _____ _____ _____ _____	
	➢ NSES		
	How certain are you that you could overcome the following barriers?" I can manage to stick to healthy foods... 1 ...even if I need a long time to develop the necessary routines. 2 ...even if I have to try several times until it works. 3 ...even if I have to rethink my entire way of nutrition. 4 ...even if I do not receive a great deal of support from others when making my first attempts. 5 ...even if I have to make a detailed plan.	(1) very **un**certain (2) rather **un**certain (3) rather certain (4) very certain _____ _____ _____ _____ _____	
	FATALISM		
	Do you believe that events are predetermined or caused by external forces and that little, or nothing, can be done to: 1. Change your exercise? 2. Change your weight? 3. Change your nutrition? 4. Change your health?	 No (1) or Yes (2) No (1) or Yes (2) No (1) or Yes (2) No (1) or Yes (2)	

Following questionnaire administration, the following measurements are to be taken:

Measurement	Result
Height	____ feet_____ inches OR _____ meters (m)
Weight	____ pounds OR _____ kilograms (kg)
Waist Circumference	____ inches
Calculated BMI	____ kg/m^2

Appendix D: UCSF's Committee on Human Research Approval Letter

UCSF
University of California
San Francisco

Human Research Protection Program
Committee on Human Research

Notification of Expedited Review Approval

Principal Investigator	*Co-Principal Investigator*
Erika S Froelicher	Catherine M Waters

Type of Submission: Submission Correction for Modification Form
Study Title: The relationship between knowledge, attitudes, beliefs and behaviors about physical activity (PA), weight, nutrition and health on obesity in young, low-income Latina adults.

IRB #: 10-03157
Reference #: 017153

Committee of Record: Laurel Heights Panel

Study Risk Assignment: Minimal

Approval Date: 1/31/2011 **Expiration Date:** 01/11/2012

The iMedRIS system will generate an email notification eight weeks prior to the expiration of this project's approval. However, it is your responsibility to ensure that an application for continuing review approval has been submitted by the required time. In addition, you are required to submit a study closeout report at the completion of the project.

Approved Documents: To obtain a list of documents that were approved with this submission, follow these steps: Go to My Studies and open the study – Click on Submissions History – Go to Completed Submissions – Locate this submission and click on the Details button to view a list of submitted documents and their outcomes.

For a list of all currently approved documents, follow these steps: Go to My Studies and open the study – Click on Informed Consent to obtain a list of approved consent documents and Other Study Documents for a list of other approved documents.

San Francisco Veterans Affairs Medical Center (SFVAMC): If the SFVAMC is engaged in this research, you must secure approval of the VA Research & Development Committee in addition to CHR approval. The CHR website has more information.

Appendix E: Permissions

June 30, 2011

Dr. Ralf Schwarzer
Gesundheitspsychologie
Freie Universität Berlin
Habelschwerdter Allee 45
14195 Berlin, Germany
Fax: +49 (30) 838-55634
E-Mail: health@zedat.fu-berlin.de
http://www.RalfSchwarzer.de/

Dear Dr. Schwarzer:

As part of my doctoral dissertation at the UCSF School of Nursing (with Dr. Erika S. Froelicher as my dissertation chair) I kindly request permission to use the Nutrition Self Efficacy and Physical Exercise Self Efficacy scales for the purposes of a doctoral dissertation entitled "Knowledge, Attitudes, Beliefs and Behaviors About Physical Activity, Weight, Nutrition, and Health In Young Latina Adults" and any resulting publications. I will use these scales to measure self efficacy and translate it into Spanish. Please indicate your agreement by signing and dating this letter in the space provided below and kindly return it to me via e-mail.

Schwarzer, R. (2001). Autoefficacia e comportamenti salutogenici [translation: Health-specific self-efficacy scales]. In: G. V. Caprara (Ed.), La valutazione dell'autoefficacia (pp. 173-184). Gardolo di Trento, Italy: Erickson and **Schwarzer, R., & Renner, B. (2010). Health-specific self-efficacy scales. Retrieved October 09, 2010 from http://userpage.fu-berlin.de/~health/healself.pdf.**

_____
Dr. Ralf Schwarzer

Thanking you in advance.

Kind Regards,

Jeneva Gularte, RN, MS, CNS, PhDc
Doctoral Nursing Student
University of California, San Francisco
School of Nursing

June 30, 2011

Albert J. Stunkard, MD
Department of Psychiatry
3535 Market Street, Room 3025
Philadelphia, PA 19104
T: 215-898-7314
stunkard@mail.med.upenn.edu

Dear Dr. Stunkard:
As part of my doctoral dissertation at the UCSF School of Nursing (with Dr. Erika S. Froelicher as my dissertation chair) I kindly request permission to use the Figure Rating Scale (Stunkard, Sorensen, & Schulsinger, 1983) for the purposes of a doctoral dissertation entitled "Knowledge, Attitudes, Beliefs and Behaviors About Physical Activity, Weight, Nutrition, and Health In Young Latina Adults" and any resulting publications. I will use this scale to measure weight perception and translate it into Spanish. Please indicate your agreement by signing and dating this letter in the space provided below and kindly return it to me via e-mail.

Stunkard, A.J., Sorensen, T., and Schulsinger, F. (1983). Use of the Danish Adoption Register for the study of obesity and thinness. Raven Press: New York.

Albert J Stunkard
Dr. Albert Stunkard

Thanking you in advance.

Kind Regards,

Jeneva Gularte, RN, MS, CNS, PhDc

University of California, San Francisco
School of Nursing
Jeneva.Gularte@ucsf.edu

June 30, 2011

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Title:	Development of a Short Acculturation Scale for Hispanics
Author:	Gerardo Marin, Fabio Sabogal, Barbara Vanoss Marin, Regina Otero-Sabogal, Eliseo J. Perez-Stable
Publication:	Hispanic Journal of Behavioral Sciences
Publisher:	Sage Publications
Date:	06/01/1987

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MARIN HEALTH & HUMAN SERVICES
Health, Well-being & Safety

Larry Meredith, Ph.D., Director

DIVISION OF PUBLIC HEALTH • HHS HEALTH CLINICS
Craig Lindquist, M.D., Ph.D., Medical Director

Letter of Support

December 1, 2010

Jeneva Gularte
Department of Physiological Nursing
UCSF School of Nursing
2 Koret Way, N631
San Francisco, CA 94143-0610

Dear Mrs. Gularte,

It is my pleasure to write this letter of support for your study entitled "Knowledge, Attitudes and Beliefs about physical activity, weight, nutrition and health in Latina adults." As the WIC program director of the Marin WIC program, I am well aware of the health concern that you are exploring in this study and the potential impact the results may have on improving the health of the women and children in this population. I know that your time spent working as a cardiovascular nurse in both the intensive care and medical-surgical areas in addition to your service in the Latina community have prepared you well to interact meaningfully with this population.

I hope that through our collaboration, health education in the area of maternal health will be improved throughout our facilities. Once you have obtained CHR (Committee on Human Research) approval at your school, I will make your study information sheets available. I hope that your study will provide new information that can facilitate the work we do with the clients in the Women, Infants and Children (WIC) Program in the Marin Health and Wellness Center. Understanding knowledge, attitudes and beliefs associated with nutrition, weight, physical activity and health in this population is an important step in improving their overall quality of healthcare.

If you need additional acknowledgement of my support for your study, please do not hesitate to contact me.

Sincerely,

Craig Lindquist, M.D., Ph.D.
Medical Director

Department of Health and Human Services
COUNTY OF MARIN

3260 Kerner Boulevard • San Rafael, CA 94901 • Tel: 415.473.4400 • Fax: 415.473.6855

RotaCare Free Clinic of San Rafael
1033 Third Street
San Rafael, California 94901

December 17, 2010

Jeneva Gularte
Department of Physiological Nursing
UCSF School of Nursing
2 Koret Way, N631
San Francisco, CA 94143-0610

Dear Mrs. Gularte,

I have reviewed the protocol for your study entitled "Knowledge, Attitudes and Beliefs about physical activity, weight, nutrition and health in Latina adults". I have also discussed your proposal with other members of the Board of the RotaCare Free Clinic of San Rafael. We all concur that RotaCare would be a good source of patients for your worthwhile study and we would be pleased if you want to proceed as outlined in your protocol. I understand that you are applying for IRB/CHR (Committee on Human Research) approval at your school. Please feel free to contact me or Blanche if you have any other questions, and let us know when you are ready to proceed.

Sincerely,
Steven Berkov
Steven Berkov MD, PhD
Medical Director
RotaCare Free Medical Clinic of San Rafael

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J. Gularte
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