

## ABSTRACT

### A COMPARISON OF WHITE AND HISPANIC BODY PERCEPTION

This study examines the differences in body mass index (BMI) and body perception between White and Hispanic female students attending California State University, Fresno. White and Hispanic/Latino cultures have differing ideals of body size. This study examines the impact diet, physical activity, and race has on BMI and body perception. This study utilizes secondary data from the 2007 National Collegiate Health Assessment, a Web-based survey administered to randomly selected CSU, Fresno students. Data regarding height, weight, diet, physical activity level, body perception and race will be used for purpose of this study. The benefits of this study are greater knowledge of differences in ethnicity with respect to BMI and body perception as well as the possibility to identify needed resources for students on the university campus. There is minimal risk associated with this study as students cannot be identified based on responses.

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A COMPARISON OF WHITE AND HISPANIC BODY  
PERCEPTION

by

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## CHAPTER 1: INTRODUCTION

The purpose of this study is to determine if there is a significant difference among ethnicity, body image, and trying to change weight. The National College Health Assessment (NCHA) is a survey that was created by the American College Health Association (ACHA) and is administered around the country. Extensive data are collected for various health risks and behaviors of college students. NCHA data can help to improve college students' health by helping to produce extensive research with respect to student perceptions and risky behaviors. This study focuses on body image, body mass index (BMI), and response to perceptions. It will focus on White and Hispanic/Latino students from California State University, Fresno. This study will help to clarify trends among college female students, with respect to their weight. Oftentimes persons' perceptions do not reflect reality. This study aims to find whether there is a significant difference between White and Hispanic/Latino reports of weight compared to respective BMI.

### Problem Statement

The topic of weight and body image is of particular interest due to the social environment surrounding California State University, Fresno. Fresno is located in California's Central Valley. The Central Valley is an area where the Hispanic population has grown and continues to grow exponentially. The Hispanic/Latino and White cultures are thrown into a melting pot in the Central Valley along with many other ethnicities. This melting pot allows values, morals, and beliefs to blend among cultures. The Hispanic/Latino culture is one which has historically embraced and regarded a full figure as the ideal. The full figure is described as having full hips and thighs. In contrast, the White culture has

fluctuated in its beliefs over the past century; the culture currently regards a slim figure as the ideal. The purpose of this paper is to identify a significant difference between ethnicity, Hispanic/Latino and White, with respect to reported weight and body image. The 2007 NCHA found that 40% of the female population at California State University, Fresno had a BMI greater than 25 (ACHA, 2007). The same survey found that a greater number, 50%, self-identified as “over weight” or “very overweight” (ACHA, 2007).

### Subproblems

Some subproblems that may arise as a result of the study are as follows: history of eating disorders, reported exercise, and reported nutrition. A history of eating disorders will be controlled for by responses to question 43 of the NCHA, which is a self-report of anorexia, bulimia, or depression. Another variable that will be controlled are responses to question 37 of the NCHA, whether respondents had “exercised to lose weight, dieted to lose weight, vomited or taken laxatives to lose weight, taken diet pills to lose weight, or done none of the above” (ACHA, 2003b, p. 6). This question will help to account for those female students with a predisposition to have body image distortion. Within this study a confounding variable will be exercise and nutrition. For example, if a student meets the recommended amount of exercise, she may self-report that she is “about the right weight,” regardless of her BMI.

### Purpose

The purpose of this descriptive study is to identify a significant difference between ethnicity and BMI among White and Hispanic/Latino students who attended CSU, Fresno in the spring of 2007. In addition to identifying differences in BMI, this study aims to identify a significant difference between the ethnicities

body perception. BMI was calculated using height, weight and age reported by respondents to the NCHA. Individual body image reports were evaluated using question 37 of the NCHA, “How would you describe your weight?” (ACHA, 2003b, p. 6). The categories of weight description are as follows: underweight, about normal weight, overweight, and extremely overweight. The results of this study will help establish health programs aimed at addressing the important issues surrounding weight and weight control. There may be unexpected consequences to a change in body perception among Hispanic/Latinos if the ideal is shifting from a fuller figure to a more trim and slim figure. Future implications may include lowered self-esteem, eating disorders, or other emotional disorders.

#### Research Question

The research question is: Are CSU, Fresno Hispanic/Latino female students more likely to underestimate body image with respect to BMI? For example, Hispanic/Latino female students are more likely to report being “about the right weight” when their BMI is greater than or equal to 25, the overweight marker.

#### Hypotheses

Due to the history of Hispanic/Latino and White cultural body ideal, there is sufficient evidence to say the Hispanic/Latino culture has a curvy and fuller figured body ideal than that of its White counterpart. With this known ideal, the expected outcome of this study is hypothesized as follows:

#### Hypothesis 1

Female Hispanic/Latino CSU, Fresno students between the ages 18-24 will be less likely to report themselves as overweight when their BMI is greater than 25 when compared to their White peers.

## Hypothesis 2

Female Hispanic/Latino students attending CSU, Fresno in 2007 will be less likely to report trying to change their weight compared to their White peers.

### Assumptions

One of the major assumptions in this study is that respondents answered correctly and honestly. There is always room for human error in self-report. Another assumption made is that the demographics of the response group will match that of the CSU, Fresno general population. This assumption may hinder the results due to the misrepresentation of CSU, Fresno student body. If a misrepresentation of CSU, Fresno students exists, it will limit the ability to generalize NCHA data to the entire Fresno State population. Along with this assumption of demographics comes the assumed rate of response in order to receive a usable sample of the population.

### Limitations

One of the main limitations of this survey is the population under study. Only students registered for classes in the spring of 2007 were included in the random selection of students who received the NCHA. If students had not yet registered for the semester, they were deemed ineligible to receive the NCHA survey. Another limitation is that only those students who chose to respond were included in the survey data and therefore in this study.

### Delimitations

The delimitations of this study are age, gender, and ethnicity. The delimitation of age, 18 to 24 years old, was selected due to the average age of Fresno State students, 22 years of age, with a standard deviation of two (Institutional Research Assessment, and Planning, 2006). For the purposes of this

study, females are of particular interest due to the historical sensitivity of weight and negative body image among the gender. Since White and Hispanic/Latino ethnicities were the largest ethnic groups in attendance of CSU, Fresno in the spring of 2007, these ethnicities were compared in this study. Delimitations of this study were identified to allow for the least number of outliers.

### Definition of Terms

For the purpose of this study, the following definitions will be used for terms significant to this study:

**Body Mass Index (BMI)** is defined as “a number calculated from a person’s weight and height. BMI provides a reliable indicator of body fatness for most people and is used to screen for weight categories that may lead to health problems” (Centers for Disease Control and Prevention [CDC], 2009). The characteristics of BMI for females age 18-24 is as follows:

Underweight- BMI is equal to or less than 18.5

Normal- BMI between 18.5 and 24.9

Overweight- BMI between 25 and 29.9

Obese- BMI is equal to or greater than 30

**Female** will be defined as individuals between the ages 18-24 who self reported “female.”

**Hispanic/Latino** is defined by the U.S. Census as follows, “Hispanics or Latinos are persons of Cuban, Mexican, Puerto Rican, South or Central-American, or other Spanish culture or origin, regardless of race” (U.S. Census Bureau, 2000).

**Perception/Body Image** is an individual’s self-reported view of their body status based on the NCHA, ACHA (2003) question 38: “How would you describe your weight?” (p.6) with responses scaling 1 to 5:

1. Very underweight
2. Slightly underweight
3. About the right weight
4. Slightly overweight
5. Very overweight. (ACHA, 2003, p.6)

**White** is defined by the U.S census as “a person having origins in any of the original peoples of Europe, the Middle East, or North Africa” (U.S. Census Bureau, 2000).

#### Summary

The focus of this study is to determine the role ethnicity has on body image and trying to change weight. This chapter outlined the issue of obesity. Identifying differences in body perception among ethnicities in the college setting can help create and enhance existing programs that target college health. This study aims to identify if ethnicity is a significant factor in body image and trying to change weight. This study focuses on female respondents of the NCHA. This chapter also defined the terms to be used for the purpose of this study which include female, Hispanic/Latino, White, BMI, and body image/perception.

## CHAPTER 2: LITERATURE REVIEW

This study will determine if there is a significant difference in body image and trying to change weight between Hispanic/Latino and White female students. The issues of body image and obesity have become major health issues in the United States. The California Obesity Prevention Initiative (COPI) reported that the prevalence of overweight Californians has exploded from 38% in 1984 to 57% in 2003 (Garamendi, 2005). The Central Valley of California and urban Los Angeles have the highest rates of overweight persons in the state (Babey, Grant, & Brown, 2006). Findings from the 2006 NCHA support these findings. In 2006, 26.7% of the NCHA National Reference group had a BMI equal to or greater than 25 (the overweight marker), compared to 45.3% of CSU, Fresno respondents (ACHA, 2006). Research has shown that minority groups are disproportionately affected by obesity and overweight status. With much of the Central Valley's population, and over 60% of the CSU, Fresno population, being classified as minority, this issue becomes all the more relevant (Institutional Research, Assessment, and Planning, 2006). With many health programs focusing on the issue of weight, many groups have changed their ideal body image to fit that of the masses.

In order to gather sufficient information on the research topic, retrieval programs such as Pub Med were used. Through this computerized program research in the following journals was found: *Ethnicity and Health*, *Obesity Research*, *Social Science and Medicine*, *The Journal of Social Psychology*, and *The International Journal of Eating Disorders*. All listed journals are peer-reviewed, accounting for reliability and validity. The time frame selected for the research was 1990-2010. These years will give sufficient history and background

of the topics as well as account for new studies and ways of thinking. Although the time frame is rather large, most articles reviewed were from the early 2000s.

The target population for the purpose of this study is female Hispanic/Latino and White CSU, Fresno students between the ages of 18 and 24. The trends in obesity are on the rise. As stated by Neighbors and Sobal (2007), “prevailing sociocultural influences lead females to desire a thin body and males a muscular body” (p. 429). This study found that females expressed greater body dissatisfaction (Neighbors & Sobal, 2007). Women are disproportionately affected by body image and weight issues.

The demographics of the CSU, Fresno campus population is 59.2% female, 38% White, and 30.4% Hispanic/Latino (Institutional Research, Assessment, and Planning, 2006). When accounting for age, 69.6% of the CSU, Fresno population is 18 to 24 years old (Institutional Research, Assessment, and Planning, 2006). Due to the demographics and data available, the CSU, Fresno campus is a population that can be looked to for differences between White and Hispanic/Latino females with regard to weight and perception of weight.

Due to the increase in research on obesity there are many studies and articles available on weight, body image, and BMI. There are also many studies that account for acculturation. Although there are many articles and much research available, most tend to have studied the same topics in different settings. Few studies focus on the role of ethnicity in BMI and body image among the college population. Most research on ethnicity and obesity has been conducted with White and Black ethnic groups. This study compares White and Hispanic ethnicities body image, BMI, and trying to change weight. This study focuses on college students, a group that is not adequately represented in available research. Studies that focus on the college population are invaluable due to the exposure to new

ideas and cultures. These experiences can impact an individual's beliefs and attitudes especially in the realm of health. The topics of obesity and body image remain at the forefront for health; with rates of obesity and overweight continuing to rise and more emphasis being placed on weight in the media now is the time to act.

### Body Mass Index (BMI)

Body Mass Index is used as an indicator of a person's fatness (CDC, 2009). BMI can be calculated if height and weight are known. A study from California State University, Los Angeles found that BMI is a strong predictor of body dissatisfaction. BMI is often used as a screening tool in the health care setting. This instrument can help identify possible weight issues and possible risks of chronic disease. Although BMI is a good indicator of body fatness, it does not measure body fat directly; therefore, it should not be used as a diagnostic (CDC, 2009). In order to determine if a person's weight is a health risk, additional medical assessments are required.

### Body Image

#### Hispanic Body Image

Obesity rates in the U.S. have risen at an alarming rate. At the heart of this issue are minority women. Obesity is most common among ethnic minorities. Research conducted with minority groups has shown that minority women tend to rate themselves as more attractive than their White counterparts even though they have similar body image dissatisfaction (Cachelin, Chung, Pelayo, & Rebeck, 2002). One reason for these contradicting views may be the difference in the cultural ideal of body size. Researchers have theorized that minority groups are

more accepting of overweight figures as opposed to the White culture. Because of this, Hispanic/Latino women are more likely to rate themselves as attractive even if they perceive themselves as overweight

A study conducted in New York hypothesized that a possible reason for increased prevalence of obesity among Hispanic/Latinos and African Americans is the cultural norm for attractiveness (Allison, Fournier, Heymsfield, & Hoy, 1994). The study found that when asked to rate which female silhouette was most attractive, Hispanic/Latino and African American males requested fuller figured women more frequently than Whites and Asian Americans (Allison et al., 1994). The study also found that Hispanic men were less likely to select a slim figure as their ideal for a woman's body (Allison et al., 1994).

### White Body Image

A study focusing on White and African American females was conducted to find whether men and women of different ethnicities had varying views on ideal body size (Demarest & Allen, 2000). The study found no significant difference in perceived ideal body size. However, they found that White women had the most inaccurate perception of men's body preference, when compared to other ethnicities (Demarest & Allen, 2000). There still remains a large gap in the literature in terms of White female body image. For many studies including this one, the White group is used as a reference group for other ethnicities.

### Acculturation

Acculturation is defined by Abraído-Lanza, Armbrister, Flórez, and Aguirre (2006) as “the process by which individuals adopt the attitudes, values, customs, beliefs, and behaviors of another culture” (p. 1342). In the Central Valley there are a variety of different cultures interacting with one another on a daily

basis. This close proximity and interaction make it inevitable for cultures to adapt to one another's customs.

### Body Image and Acculturation

A San Diego State University study examined the factors of body image dissatisfaction (Ayala, Elder, Galindo, & Mickens, 2007). The study found that adolescents who were either overweight, or at risk for overweight, and who agreed with body ideals portrayed in the media were more likely to be unhappy with their body (Ayala et al., 2007). This study also found that children who had stronger affiliations with their culture were more likely to be overweight (Ayala et al., 2007). A study from the Department of Health and Human Performance at a university in Texas assessed the relationship of BMI, gender, and acculturation (Olvera, Suminski, & Power, 2005). The study utilized a pictorial instrument to assess body image (Olvera et al., 2005). It found that, when shown pictorials, overweight children were more likely to select slim figures as the ideal body (Olvera et al., 2005). The study also reported that acculturated children chose slim figures with greater frequency than less acculturated children (Olvera et al., 2005).

### Overweight and Acculturation

A study from the Carolina Population Center reported that acculturation had a beneficial influence on the variable "overweight" in foreign-born Hispanics (Gordon-Larsen, Harris, Popkin, & Ward, 2003). The study also went on to describe the contrast in foreign- and U.S.-born Hispanic/Latino adolescents as a possible underlying cause of the increased overweight prevalence between first and subsequent generations of U.S. Hispanic/Latino populations (Gordon-Larsen et al., 2003). This study emphasizes the impact that acculturation can have on an individual and a generation.

### Body Image Discrepancy (BD) and BMI

A study conducted by Northwestern University looked at the relationship between body image discrepancy and BMI across ethnic groups (Fitzgibbon, Avellone, & Blackman, 2000). This study used a questionnaire comprised of a picture diagram. Participants were asked to rate themselves on the diagram as well as select the ideal body size. The selections were then compared to the participant's BMI in order to find any body image discrepancies (BD). In the study, Fitzgibbon et al. (2000) found that "White women experienced BD at a lower BMI than minority women" (p. 587). This BMI level was found to be 24.6, which is just below the 25 marker for "overweight" classification used on the BMI scale (Fitzgibbon et al., 2000). In contrast Hispanic/Latino women did not experience BD until they had reached a BMI classification of "overweight," 28.5 (Fitzgibbon et al., 2000). The most interesting result of this study was that Hispanic/Latino women experienced an increase in BD at smaller increases in BMI, compared to their Black and White counterparts (Fitzgibbon et al., 2000).

### Implications of Physical Activity and Diet

The level of activity and nutrition an individual reports may have an impact on how they report their current weight status. This study will look to describe variables that may influence body image and those factors that may influence what an individual does in response to their perceived weight status. Physical activity and nutrition are factors that are used to lose and maintain weight in addition to a healthy lifestyle. Physical activity and diet are both important factors and this study will attempt to define a relationship between these two factors and body image.

### Physical Activity and BMI

A study from the University of South Carolina found that students who participated in high frequency physical activity were more likely to have healthy BMIs. The study also found that students who participated in minimal physical activity had a greater likelihood of being overweight (Kasperek, Crowin, Valois, Sargent, & Morris, 2008). Another study examined behaviors during the first semester of college and used weight from the beginning and end of the semester to determine weight changes. This study found that those individuals who gained more than 5% of their body weight throughout the semester participated in less physical activity than they had previously in high school (Wengreen & Moncur, 2009). Similar findings were also reported in a study from the Virginia Polytechnic Institute and State University. The Virginia study found that weight gain in college may be linked to a decline in physical activity and dietary habits when compared to high school years (Strong, Parks, Anderson, Winett, & Davy, 2008).

### Physical Activity and Body Image

Physical activity is recognized as a predictor of good health. Individuals who are regularly active are less likely to develop chronic disease and more likely to maintain their weight. Studies have also demonstrated that physical activity may be a predictor of perceived weight. A study from the Centers for Disease Control and Prevention found that women who were regularly active had a greater likelihood of being content with their body (Kruger, Lee, Ainsworth, & Macera, 2008). This study utilized data from the National Physical Activity and Weight Loss Survey. This association between activity and body satisfaction was significant in White women, yet weaker in minority women (Kruger et al., 2008).

Studies have demonstrated a strong link between physical activity and body image. Similarly a lack of physical activity, sedentary, can also be a predictor for health and body image. A study on ethnicity and body image was able to establish sedentary behavior as a predictor of self reported weight (Yancey, Simon, Mccarthy, Lightstone, & Fielding, 2006). The study also found that average weight minority women who reported themselves as overweight were more likely to be sedentary than average weight White women (Yancey et al., 2006). The study utilized data from a telephone survey in Los Angeles County. The study also found that adults, who were sedentary, regardless of weight status, had a greater likelihood of identifying as overweight (Yancey et al., 2006).

Many studies have been able to support the claim that physical activity influences body image. Another factor that may also be linked to physical activity is body self-esteem. One study theorized that physical activity may increase body self-esteem (Russell & Cox, 2003). The study associated physical activity with increased body self-esteem due to factors associated with physical activity such as weight loss, fat loss and muscle tone (Russell & Cox, 2003). It should be noted that the study also reported that excessive exercise can have a negative impact on body image (Russell & Cox, 2003). The study summarized that as an individual's body changes their body ideal also evolves and in the long term excessive exercise can have a negative impact on body image (Russell & Cox, 2003). An individual's level of physical activity may influence their response to inquiries of their perceived weight status. In their study on weight training and body image disturbance, Depcik and Williams (2004) concluded that weight training had a positive impact on body image and could possibly be used as a treatment for body image discrepancy. A second study found that females had a greater likelihood

than males to participate in physical activity for the superficial benefits (Smith, Handley, & Eldredge, 1998).

### Diet and BMI

Diet is one of the most effective ways of losing and maintaining weight. One of the benefits of fruit and vegetable consumption is weight management. The population for this study is focused on university age females. Studies were identified in the U.S. that described college student's diet and eating behaviors. Many studies have identified fruit and vegetable consumption as an indicator for weight management or even weight loss, while decreased consumption has been inversely linked to weight and therefore BMI. A study from the University of Boston found that weight loss in the freshmen year was related to fruit and vegetable intake (Economos, Hildebrandt, & Hyatt, 2008). Another study found that freshmen weight gain was associated with decreased fruit and vegetable intake. This study was based on data collected via a Web-based survey on the University of South Carolina campus (Kasperek et al., 2008).

Studies have shown a relationship between body image discrepancy and an individual's history of eating behaviors. One such study from Akan and Grilo (1995) found "greater levels of disordered eating and dieting behaviors and attitudes and greater body dissatisfaction," (p. 186) among White students than their peer ethnic groups. Another study found that patients who suffer from anorexia or bulimia have self-reported body image discrepancy; however, there was no significant difference among the ideal body size chosen compared to individuals who were not diagnosed with an eating disorder (Benninghoven, Raykowski, Solzbacher, Kunzendorf, & Jantschek, 2007).

### Diet and Body Perception

As diet has the capacity to impact BMI, it may also be linked to body perception. A study from the Centers for Disease Control and Prevention found that individuals who were unsatisfied with their weight were more likely to diet to lose weight (Millstein et al., 2008). A second study affirmed these findings, reporting that in their sample 83% of respondents reported dieting to lose weight (Malinauskas, Raedeke, Aeby, Smith, & Dallas, 2006). Individual diet can impact one's perception of BMI in a variety of ways. A study from Eastern Michigan found that "overall body dissatisfaction across situations was related to higher BMI, greater likelihood of binge eating, and higher depression" (Saules, Aollings, Wiedemann, & Fowler, 2009, p. 909). Another example of body perception and diet is a study of adolescent girls from New Jersey, which found that perception of being overweight was associated with dieting behaviors (Strauss, 1999). These studies emphasize the impact body perception has on BMI. There is a need for additional research relating diet and body perception in more specific terms as to the foods that may influence body perception, such as fruits and vegetables.

### Implications of Work Hours on BMI and Body Image

For the purpose of this study, hours worked will be evaluated to determine the role it may play in BMI and perception of weight. There is a gap in the literature in the area of working hours and health in college students. Studies involving other age groups have found that increased work load has a negative impact on the ability to incorporate physical activity. A study based on U.S high school students found that working more than 10 hours a week had a negative impact on physical activity, a significant predictor in weight and body perception (Pruitt & Springer, 2010). Studies targeting adult populations point to long hours, shift work, and job strain as factors contributing to obesity (Di Milia & Mummery,

2009). A study from Central Queensland University found that long hours and shift work was a significant predictor of BMI (Di Milia & Mummary, 2009). A study by Kouvonen, Kivimaki, Cox, Cox, and Vahtera (2005) reported similar results: “scores showed that lower job control, higher job strain, and higher effort-reward imbalance were associated with a higher BMI” (p. 580). Few U.S studies have been conducted to determine the impact of work hours on BMI and body image. Further research is needed in this area with respect to the collegiate population.

#### Similar Studies

The focus of this study is to identify a significant difference between White and Hispanic/Latino female students’ body image and trying to change weight. Similar studies have been conducted across the U.S and other countries. These studies were similarly designed to determine differences among ethnic backgrounds. One study from the Centers for Disease Control and Prevention focused on non-Hispanic Black and non-Hispanic White adolescent health. This study found that non-Hispanic Blacks were less likely than non-Hispanic Whites to try to change their weight when an overweight body image was reported (Dorsey, Eberhardt, & Ogden, 2010).

Another study from New Zealand focused on differences between BMI and weight factors in adolescent girls of varying ethnicities. This study found that girls with a “normal” BMI were trying to lose weight and determined that the difference could be attributed to ethnicity (Duncan, Duncan, & Schofield, 2010). A study from Louisiana State University found that body perception of overweight is linked to numerous variables yet varied by ethnicity (Paeratakul, White, Williamson, Ryan, & Bray, 2002). A study comparing college age, Black and

White females' body dissatisfaction and ethnicity found no link between body dissatisfaction and ethnicity (Baugh, Mullis, Mullis, Hicks, & Peterson, 2010). However, the study did suggest the need for diverse programs targeting different ethnicities and body dissatisfaction (Baugh et al., 2010).

### Summary

For the purpose of this study the focus is body image, trying to change weight and ethnicity. The articles cited above are extremely beneficial. Although there is little information on the targeted population, 18 to 24 year olds, much of the information found is applicable to the ethnicities as well as gender. Based on the literature review, further research in the topic of body image is needed. With the CSU, Fresno location being in the Central Valley and dealing with the various health issues that come with this location, studies that target the college age group would be beneficial and informative. Since many studies have shown that Hispanic women and White women are affected by body image and BMI differently, it will be interesting to find if this remains constant for the CSU, Fresno population.

## CHAPTER 3: METHODOLOGY

For the purpose of this study, secondary data gathered through the NCHA was be used to determine differences between White and Hispanic/Latino students, their body image, and trying to change weight. Prior approval was received to conduct analysis of the data collected in the spring 2007 term. The data available included data gathered from CSU, Fresno students as well as some data available from the national reference group.

### National Collegiate Health Assessment

The NCHA was developed by the ACHA. The NCHA is an instrument designed to identify academic impediments, student health trends, and student perceptions. The NCHA was created in 1998 when a committee of ACHA-NCHA workers reviewed many college health assessments including, the *National College Health Risk Behavior Survey*, (NCHRBS), the National Health Objectives as outlined by *Healthy People 2010*, the *Monitoring the Future* study, and many more. The NCHA was first piloted in 1998 and a second pilot was performed in 1999. In the year 2000, 20 schools self-selected to participate in the NCHA.

### Reliability and Validity

Cronbach's alpha was used to measure the consistency of the collegiate survey. Items in the NCHA were grouped according to topic. A separate analysis was conducted for each group. In order to be considered reliable the test should fall between 0.4 and 0.9. All items in the NCHA were considered and measured to be reliable. There are four samples of the NCHA and each was tested for reliability across the samples in order for other researchers to be able to replicate the results. As defined in the *ACHA-NCHA User Manual* (ACHA, 2004),

“measurement validity is the degree of fit between an independent variable and its dependent variable” (p. 8). When one item is tested for significance with another item and the findings are statistically significant, one has achieved measurement validity if the effect size is strong.

### NCHA and Fresno State

The NCHA is a survey that assesses the current trends, perceptions, and attitudes of CSU, Fresno students. The NCHA has been implemented on the CSU, Fresno campus since 2002. During these years there have been changes in trends of CSU, Fresno students' health behaviors. In 2003 63.3% of CSU, Fresno NCHA respondents were at a “normal” BMI classification (ACHA, 2003a). In contrast, 30.5% were overweight or obese, with three classifications of obesity (ACHA, 2003a). By 2006 the data reported that 39.7 % of the female population met or exceeded the classification of “overweight” according to BMI (ACHA, 2006). In 2003, 53.8% of the surveyed female CSU, Fresno students were exercising to lose weight and 34.4% of the population surveyed was dieting to lose weight (ACHA, 2003a). In contrast, in 2006, 62.2% of female students reported exercising to lose weight and 42.6% reported dieting to lose weight (ACHA, 2006).

### Protection of Human Subjects

Since the NCHA data are secondary data, approval from the Human Subjects Committee was received prior to the commencement of the study. Questions on the NCHA were of low risk of affecting students. All information was kept confidential and surveys were anonymous. The NCHA was kept confidential and anonymous by having no trace of who answered the survey attached. When the surveys were sent electronically, the e-mail accompanying the link to the survey described the assessment as well as how the data would be used.

Once a respondent clicked on the survey link it was considered that they had given their informed consent. When a person clicked on the link they were redirected to a secure site and their e-mail address was not linked to the survey. The survey did not require respondents to provide their names or birthdates; therefore there was no way to link a person to their survey.

### Gathering Data

In order to gather data on the desired population, this study made use of the NCHA. This survey was administered by the Health Promotion and Wellness Services Department at CSU, Fresno in the spring of 2007 and was therefore considered secondary data. The survey was administered to a select number of CSU, Fresno students who were selected at random by the registrar's office. The survey was then sent electronically to selected students. Students were encouraged to return the survey by offering an incentive to return completed surveys. Confidentiality and anonymity were assured through the use of a numerical system and secured server. Once the data were received the information was used to report on the social norms of students in the 2008 school year. For the purpose of this study the target populations, White and Hispanic/Latino females between the ages 18 and 24 were separated from the general respondents. The first step in the research was to identify the students who applied to the category of either White females between ages 18 and 24 or Hispanic/Latino females between the ages 18 and 24. Once these students were identified, using the data gathered by the Health Promotion and Wellness Services Department in the spring of 2007, the NCHA questions required for this study were compared to identify differences between groups.

### Participant Selection

The target populations for the purpose of this study were female Hispanic and White CSU, Fresno students between the ages of 18 and 24. Since the NCHA is secondary data which were obtained through the Healthy Promotion and Wellness Services Department on the CSU, Fresno campus, this study was limited to those students who responded and completed the survey. For the purpose of implementing the NCHA, participants were randomly selected by the CSU, Fresno Registrar's office. All students enrolled in the spring 2007 semester were included in the selection. Of over 20,000 Fresno State students, 1,500 were selected to receive the NCHA. This survey was mailed electronically to students' university electronic mail accounts. The NCHA included questions on ethnicity, age, and gender. Once all female respondents had been identified, selection for ethnicity began. Hispanic/Latino and White individuals were selected for this study. Respondents were then sorted according to ages; those between ages 18 and 24 remained in the study. Once the group had been filtered, the analysis began. All filtration was done using the statistical package SPSS. This program was used for all purposes of this study.

### Sample Size

In the spring of 2007, 613 students completed the NCHA. Of the 613 students, 454 identified themselves as female, while 159 students reported as male. For the purpose of this study, the focus was White females between the ages 18 and 24 and Hispanic/Latino females between the ages of 18 and 24. In order to determine a usable sample size for the study a correlation for age and ethnicity was run with SPSS software. From this correlation the sample size was determined. The delimitation based on age and ethnicity was determined to be 232 female students reporting as either White or Hispanic/Latino between the ages

18 and 24. Based on ethnicity the total sample size per group was 137 White female students and 95 Hispanic/Latino female students.

### Exclusions

For the purpose of this study, the focus was on White and Hispanic/Latino females between the ages of 18 and 24. In order to target these specific groups, individuals who responded as identifying with ethnicities which were neither Hispanic/Latino nor White and those who did not fall into the age requirement were excluded. In order to ensure a high integrity and validity this study also excluded individuals who responded as identifying with more than one ethnicity. Individuals who responded “yes” to questions: 43b2 and 43b5, reports of diagnosis of anorexia or bulimia, were also excluded (ACHA, 2003b). As the literature states eating disorders can create a distorted body image, for this reason these individuals were excluded from the study. These boundaries were set in order to prevent any outliers which may have influenced the outcome of the analysis and study.

### Instrumentation

The NCHA is a collegiate assessment that is implemented on hundreds of college campuses across the country. The questions which were used to calculate BMI are question 45, age given a numerical value; question 46, gender (1= male; 2= female); question 47, height given a numerical value based on inches; and question 48, weight given a numerical value based on pounds (ACHA, 2003b). Question 35 of the NCHA, “how would you describe your weight?” (p. 6) was used to identify respondent’s body image (ACHA, 2003b). Responses to question 35 were categorized in an ordinal format as follows: 1, very underweight; 2, slightly underweight; 3, about the right weight; 4, slightly overweight; and 5, very

overweight (ACHA, 2003b). For the purpose of this study responses 4, slightly overweight, and 5, very overweight were used to compare to BMI. Question 36 of the NCHA was also used to find whether respondents were doing any of the following regarding their weight: 1, I'm not trying to do anything about my weight; 2, stay the same weight; 3, lose weight; or 4, gain weight (ACHA, 2003b).

### Test Utilized

For the purpose of this study, cross tabulations and regression analysis using the statistical package SPSS were used to analyze the data. This analysis was done to determine what variables had the greatest impact on BMI and Body Image. The models for the regression analysis were as follows:

Hypothesis 1 is defined as Female Hispanic/Latino CSU, Fresno students between the ages 18 and 24 will be less likely to report themselves as overweight when their BMI is greater than 25 when compared to their White peers. Where body image is influenced by the following: BMI, fruit and vegetable consumption, general health, work hours, ethnicity, and exercise in the past 7 days.

Hypothesis 2 is defined as Female Hispanic/Latino students attending CSU, Fresno in 2007 will be less likely to report trying to change their weight compared to their White peers. Where weight status is influenced by the following variables: BMI, ethnicity, fruit and vegetable, general health, body image, and exercise in the past 7 days.

### Summary

The focus of this study is determining the impact of ethnicity on body image and trying to change weight. This chapter outlined the methodology of this study. The NCHA is a valuable tool that has been utilized on the CSU, Fresno campus for over 5 years. The population of study included respondents of the

NCHA that fit the following criteria: female, Hispanic/Latino or White, between the ages of 18 and 24. The study identified qualified individuals and analyzed self-report. The analysis that was used to test the hypothesis of the study was multinomial regression. This tool helped determine statistical significance of variables in the study.

## CHAPTER 4: RESULTS

For the purpose of this study, the focus was female White and Hispanic/Latino students, their body image, and trying to change weight. This study made use of secondary data from the NCHA survey completed on the CSU, Fresno campus in the spring of 2007. This study assessed data related to weight, diet, exercise, work hours, volunteer hours, body image, and trying to change weight (Table 1). This study also reviewed the degree to which ethnicity could influence body image. Finally, this study also determined the degree to which ethnicity could impact individuals wanting to change their weight. This chapter describes the results rendered.

Table 1. Descriptive Statistics for Variables of the Study

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Your weight	229	1	5	3.48	.717
Trying to do anything about weight	225	1	4	2.59	.733
Servings of fruit & veg.	230	1	4	2.35	.629
Vigorous exercise	228	1	8	3.02	1.695
White	230	.00	1.00	.5870	.49345
Hispanic	230	.00	1.00	.4174	.49420
Weekly work hours	230	1	7	3.19	1.615
Categories of BMI	227	1	4	2.49	.795
Valid N (listwise)	220	-	-	-	-

### Ethnicity and Body Image

The first hypothesis of this study assumed that ethnicity would largely influence a female's body image. For the purpose of this study body image was

defined by question 35 of the NCHA: “How do you describe your weight?” (ACHA, 2003b, p. 6). Responses to this question were graded on an ascending scale as follows: 1. Very underweight; 2. Slightly underweight; 3. About the right weight; 4. Slightly overweight; 5. Very overweight (ACHA, 2003b). The hypothesis theorized that Hispanic/Latino females would be more likely to underestimate their weight. For example, females with an overweight or obese BMI would be less likely to report themselves as overweight. In order to derive the answer, additional data from the NCHA were selected. In order to utilize a regression analysis factors that could potentially contribute to body image were identified. Questions relating to exercise, fruit and vegetable intake, work hours, and general health status were included in the analysis.

Frequencies for body image found that 47% ( $n=108$ ) of the population in the study reported themselves as “slightly overweight” and “very overweight.” The percentage of individuals with a BMI at or above 25, the indicator of overweight, was 39% ( $n=89$ ). Preliminary cross tabulations also found that 58% ( $n=56$ ) of Hispanic females reported themselves as “slightly overweight” or “very overweight” while 50% ( $n=48$ ) were at or above a BMI of 25. This study aimed to find statistical significance in variables to help determine what factors may be causing this variation.

The analysis method used for the purpose of this study was multinomial regression. This regression allowed for multiple covariates to be analyzed at a time and gave a clear picture of statistical significance of all covariates that may have influences given variables. For the purpose of this hypothesis the variable of study was body image (NCHA question 35) while the covariates were ethnicity, fruit and vegetable intake, exercise, volunteer hours, work hours, good health, and BMI (Table 2).

Table 2. Hypothesis 1: Ethnicity Will Impact Body Image (NCHA question 35)

How do you describe your weight?		Significance	95% Confidence Interval	
			Lower Bound	Upper Bound
Very	Hispanic	-	.303	.303
Underweight	Fruit & Vegetable	.999	.000	-
	Exercise	1.000	.000	-
	Volunteer hours	1.000	.000	-
	Work hours	1.000	.000	-
	Good health	.999	.000	-
	BMI	.999	.000	-
Slightly	Hispanic	.402	.026	4.325
Underweight	Fruit & Vegetable	.728	.192	10.575
	Exercise	.570	.372	1.725
	Volunteer hours	.106	.755	18.378
	Work hours	.922	.516	2.076
	Good health	.552	.102	71.706
	BMI	.000	8.297E-6	.003
About the	Hispanic	.769	.206	8.466
Right Weight	Fruit & Vegetable	.437	.087	2.873
	Exercise	.240	.802	2.416
	Volunteer hours	.160	.655	12.957
	Work hours	.202	.837	2.316
	Good health	.102	.670	85.973
	BMI	.000	8.935E-5	.012
Slightly	Hispanic	.600	.294	8.326
Overweight	Fruit & Vegetable	.356	.093	2.350
	Exercise	.476	.736	1.929
	Volunteer hours	.143	.696	12.137
	Work hours	.056	.989	2.421
	Good health	.264	.409	26.038
	BMI	.001	.002	.196

For the first hypothesis the multinomial regression provided information on the significance of selected variables to that of “body image” with the “very overweight” group as the reference. The results rendered significance for BMI;  $p$  is less than 0.001, in the “slightly underweight” category of body image. BMI was also significant;  $p$  is less than 0.001, in the “about the right weight” group. BMI was found to be significant;  $p$  is less than 0.001, in the “slightly overweight” group. Work hours were found to have a statistical significance;  $p$  is slightly more than 0.05 and less than 0.1, in predicting body image in the “slightly overweight” group. Work hours and BMI were the only factors found to be statistically significant with respect to influence on body image. Cross tabs for the statistically significant variables can be found in Tables 3 and 4.

Table 3. Body Image and BMI

BMI	Very Underweight	Slightly Underweight	About Right Weight	Slightly Overweight	Very Overweight
Underweight	1	4	5	0	0
Normal	0	8	92	27	0
Overweight	0	0	10	45	1
Obese	0	0	0	19	14

#### Ethnicity and the Trying to Change Weight

The second hypothesis of the study suggested that ethnicity would have a large impact on wanting to change weight. For the purpose of this study “want to change weight status” was defined with question 36 of the NCHA: “Are you trying to do any of the following about your weight?” (ACHA, 2003b, p. 6). Responses to this question were also graded on the following scale: 1. I am not

Table 4. Body Image and Work Hours

Work Hours	Very Underweight	Slightly Underweight	About Right Weight	Slightly Overweight	Very Overweight
0 hours	1	2	26	18	4
1-9 hours	0	2	11	10	2
10-19 hours	0	5	26	20	2
20-29 hours	0	3	26	23	5
30-39 hours	0	0	9	11	2
40 hours	0	0	7	8	0
>40 hours	0	0	3	3	0

trying to do anything about my weight; 2. stay the same; 3. lose weight; and 4. gain weight. The hypothesis theorized that Hispanic/Latino females would be less likely to report wanting to change their weight. Additional data were selected from the NCHA to prove the hypothesis.

Before testing the hypothesis, frequencies for the variable of “trying to change weight” were identified. Sixty-three percent of respondents,  $n=142$ , reported trying to “lose weight” while only 39% of the population,  $n=89$ , was at a BMI determined to be “overweight” or “obese.” Hispanic females made up 43.6% of the respondents,  $n=62$ , who were trying to “lose weight.” This finding further fueled the need to determine if ethnicity is a significant indicator of “trying to change weight.” To prove the hypothesis of ethnicity influencing changes in weight, further analysis was needed.

Multinomial regression was used to test the hypothesis. In this regression model “trying to change weight” was the factor under study and the covariates were “general health,” “body image,” “fruit and vegetable intake,” “vigorous physical activity,” “BMI,” “ethnicity,” “volunteer hours,” and “work hours”

(Table 5). It was suggested in the hypothesis that ethnicity would be the main factor that would influence trying to change weight. The findings determined that other variables had a strong statistical significance. .

Results of the regression found that “fruit and vegetable consumption” was significant in the “not trying to do anything about my weight” ( $p$  is less than 0.05) and “lose weight” ( $p$  is less than 0.05) groups. It was also determined that “body image” was significant with  $p$  being less than 0.001 in the “lose weight” group, and significant,  $p$  is less than 0.055 in the “not trying to change” group. Exercise was found to be significant in the “lose weight” group ( $p$  is less than 0.05).

Crosstabs for the significant variables can be found in Tables 6-8.

### Summary

For the purpose of this study multinomial regression was the model that best fit the data and hypothesis. Multinomial regression proved useful for hypothesis 1: ethnicity influences body image as well as hypothesis 2: ethnicity influences trying to change weight. With respect to the first hypothesis, the analysis determined that BMI was statistically significant in most categories of body image. The analyses also found a statistical significance between work hours and body image. For the second hypothesis, the outcome revealed that exercise, fruit and vegetable consumption and body image were the factors that were statistically significant in trying to change weight.

Table 5. Hypothesis 1: Ethnicity Will Influence Trying to Change Weight

Trying to Change weight		Significance	95% Confidence Interval	
			Lower	Upper
No Change	Hispanic	.269	.033	2.584
	Fruit and Vegetable	.044	.046	.961
	Exercise	.519	.595	2.796
	Volunteer hours	.771	.295	2.473
	Work hours	.703	.478	1.644
	Good health	.364	.188	94.171
	BMI	.461	.089	2.993
	Body Image	.055	.962	42.949
Stay the Same	Hispanic	.364	.047	3.067
	Fruit and Vegetable	.068	.071	1.101
	Exercise	.170	.803	3.456
	Volunteer hours	.795	.324	2.368
	Work hours	.808	.516	1.674
	Good health	.236	.297	138.312
	BMI	.355	.085	2.419
	Body Image	.088	.794	29.242
Lose Weight	Hispanic	.209	.032	2.119
	Fruit and Vegetable	.035	.057	.904
	Exercise	.035	1.058	4.595
	Volunteer hours	.946	.381	2.814
	Work hours	.496	.685	2.184
	Good health	.758	.051	8.738
	BMI	.694	.141	3.679
	Body Image	.001	4.046	164.594

Table 6. Trying to Change Weight and Body Image

Body Image	Not trying to do anything	Stay the same	Lose weight	Gain weight
Very Underweight	1	0	0	0
Slightly Underweight	3	3	2	3
About the Right Weight	13	42	47	4
Slightly Overweight	7	5	79	1
Very Overweight	1	0	14	0

Table 7. Trying to Change Weight and Fruit and Vegetable Consumption

Fruit and Vegetable Consumption	Not trying to do anything	Stay the same	Lose weight	Gain weight
Don't eat	1	0	4	0
1-2 servings	18	35	93	4
3-4 servings	6	11	38	3
5 or more servings	0	4	7	1

Table 8. Trying to Change Weight and Physical Activity

Vigorous exercise over past week	Not trying to do anything	Stay the same	Lose weight	Gain weight
0 days	12	10	32	5
1 day	1	8	23	1
2 days	7	16	22	0
3 days	3	10	37	1
4 days	1	4	8	1
5 days	0	1	11	0
6 days	1	1	6	0
7 days	0	0	1	0

## CHAPTER 5: DISCUSSION

The purpose of this study was to determine statistical significance between ethnicity and weight related factors. This study aimed to discover a link between ethnicity and body image. The Hispanic/Latino ethnicity has traditionally regarded a fuller figure as the ideal. This study aimed to prove that the Hispanic/Latino ethnicity would influence body image. The study also looked to provide a statistically significant link between ethnicity and trying to change weight. The study attempted to determine if Hispanic/Latino females would be less likely to report trying to change their weight. This chapter discusses findings and makes possible recommendations to future studies and programming.

### Ethnicity and Body Image

The purpose of the first hypothesis of this study was to determine if ethnicity was statistically significant in relation to body image. Findings from this study provided no statistical significance between ethnicity and body image. For the purpose of this study the null hypothesis was accepted and it is recognized that this study rendered no statistical significance between body image and ethnicity. The study did find statistical significance for “BMI” and “work hours” with respect to “body image”.

### BMI

The study found that “BMI” was statistically significant in the “slightly underweight” (p is less than 0.01), “about the right weight” (p is less than 0.01), and “slightly overweight” (p is less than 0.01) body image groups. These findings indicate that BMI may influence body image. BMI is a measurement that determines an individual’s body fat percentage. BMI may be an influential factor due to the close relationship to weight. This study utilized self-reported data

including, height and weight to determine BMI. The link between BMI and body image may be closely related to reported weight. Students may understand their weight status and therefore are able to identify with their body image. A study on Female weight and body dissatisfaction found that BMI is a strong predictor of body dissatisfaction (Swami & Tovée, 2006). These findings prove current with this study in that BMI is significant to body image.

Many studies have supported the claim that BMI can influence body image. One study from Denmark took the topic a step further to determine if other factors could influence body image. The study evaluated females with normal to low BMI who classify themselves as overweight. It found that body dissatisfaction may be established in childhood. While this study focused on low BMI females, the findings contradict this study in that BMI may not be a major contributing factor in some cases (Kjaerbye-Thygesen, Munk, Ottesen, & Kruger Kjaer, 2004). Factors such as childhood experiences, depression, and other mental health factors may play a larger role in body image and body dissatisfaction and deserves further study.

### Work Hours

The study found there was a statistically significant correlation between the variables “works hours” and “slightly overweight.” This finding may indicate that those individuals who work more hours may be more likely to report themselves as “slightly overweight”. These findings are similar to those reported in the literature review which highlight, long work hours and job strain as contributors to obesity, a category of BMI (Kouvonen, et al., 2005). Further study is needed on the impact of work hours and body image. Specific studies on work hours,

university load, and body image would be beneficial as the stress and work load of university life may impact body image in different ways.

### Ethnicity and Trying to Change Weight

The second hypothesis of this study attempted to find statistical significance between ethnicity and trying to change weight. Due to the history of a fuller figure in the Hispanic/Latino population, this study theorized that Hispanic/Latino surveyors would be more content at their weight and be less likely to try to change their weight. This study found no statistical significance between ethnicity and trying to change weight. For the purpose of this study the null hypothesis is accepted. The study did find statistical significance in “fruit and vegetable consumption,” “exercise,” and “body image.”

### Fruit and Vegetables

In the regression analysis “fruit and vegetable consumption” was found to be statistically significant for, the group that was “trying to stay the same” and the group that was “trying to lose weight,” when compared to the group that was “trying to gain weight.” This finding can best be summarized as follows: individuals who reported wanting to “stay the same weight” and wanting to “lose weight” were more likely to report eating fruit and vegetables than those individuals trying to “gain weight.” Increased fruit and vegetable intake in the group that was trying to “lose weight” may be due to the perception that increased fruit and vegetable consumption is linked to weight loss. Likewise, for the group that was trying to “stay at the same weight,” this may also be attributed to increasing fruit and vegetable intake for weight management. These findings are similar to the studies reviewed in the Literature Review. A study reviewed from the University of Boston reported weight loss is linked to fruit and vegetable

consumption (Economos et al., 2008). This finding is parallel to the results of this study. Yet another study proved that decreased fruit and vegetable consumption is associated with weight gain in college students (Kasperek, et al., 2008).

Studies from around the world have reported a relationship between fruit and vegetable consumption and weight management. While this link may be commonly understood it requires further study in its application to daily life. A study from the Journal of the American Medical Association utilized data from the Behavioral Risk Factor Surveillance System to evaluate individuals who were trying to change weight along with the weight loss strategies. The study found that most participants were limiting fat from diet rather than watching calories or using a combination of a reduced calorie diet and physical activity (Serdula et al., 1999). Participants in the study were more likely to limit fat versus making other changes to diet such as incorporating more fruit and vegetables (Serdula et al., 1999). This study demonstrates the need for further surveying on dietary habits beyond fruit and vegetable consumption.

### Exercise

Exercise was found to be statistically significant in the “lose weight” group when compared to the group that was trying to “gain weight”. This finding determined that individuals who are trying to “lose weight” would be more likely to report incorporating physical activity to their weekly routines when compared to individuals trying to “gain weight”. These findings are consistent with studies which have established links between physical activity and weight. Wengreen and Moncur (2009) found that a decrease in physical activity is an indicator of weight gain.

Physical activity is a factor that is utilized for optimal health, weight management, and stress reduction. In most cases physical activity and a healthy diet are recommended as a combination therapy for weight management. While this may be the recommended combination, many people choose to follow a plan that is most convenient for them. A study on adolescent girls weight loss behaviors found that, although a combination of physical activity and diet were the most reported weight loss practice, most reported not incorporating either (Duncan et al., 2010). A second study on ethnic differences in body image and weight management found that White adolescents were more likely to utilize unhealthy weight management tactics such as vomiting and diet pills (Neff, Sargent, McKeown, Jackson, & Valois, 1997). A majority of individuals focus on diet, reduced fat intake, or unhealthy methods of weight loss verses a combination of physical activity and healthy eating

### Body Image

Body image was determined to be statistically significant in the “not trying to change weight” group and the “lose weight” group, when compared to the group that was “trying to gain weight.” The study found that there was a statistical significance between a person’s body image and “trying to stay the same” and trying to “lose weight.” This finding highlights that those individuals who report themselves as “slightly overweight” and “very overweight” were more likely to report trying to “lose weight.” It would seem logical that ones body image would influence wanting to change weight. The perception of being “overweight” would most likely influence an individual to try to “lose weight.” Likewise the perception of being “underweight” would influence trying to “gain weight.”

A study from the *Journal of American College Health* conducted similar research on ideal body size, body dissatisfaction, and ethnicity. This study used body shapes to determine if there was a statistically significant difference between ethnicity and body dissatisfaction. The study found that although ethnicity did not play a role in body dissatisfaction, women who were dissatisfied with their body were more likely to chose a smaller body ideal (Baugh et al., 2010). Body dissatisfaction is something this study was unable to test due to the initial questionnaire. The significance of body image to trying to lose weight may have a stronger significance when accounting for body dissatisfaction.

#### Recommendations

The college-age group is a specific and special population. This group is exposed to new ideas and beliefs on a daily basis. Information gathered from this study highlights the need to develop programs and implement policies that target weight management and perceptions on the college campus. As demonstrated in the findings, 47% of the study population met the classification of either overweight or obese. These statistics are alarming and require action.

Immediate action from the college community can help alleviate the growing problem of obesity. University campuses may want to work to implement policies that provide optimal health for students. These policies may influence nutrition and physical activity. Policies that require increased access to healthy meals and snacks may be beneficial to the college community. Polices may choose to impact the campus at large and not focus solely on university run facilities. Implementing a policy that requires vending machines to promote healthy options and to stock said items in half the slots provided would be a start in addressing nutrition on campus. Policies may also want to focus on physical activity by

ensuring a safe campus where students feel able to participate in an active lifestyle. Providing students with bike paths or well-lit, security patrolled walk ways can go a long way in cultivating an active campus. Policies that address university nutrition and physical activity can help address the issue of obesity and body image. It is the University's responsibility to ensure that they are cultivating an atmosphere of optimal intellect and health to ensure they are crafting not only intellectual individuals but persons who will lead a healthy lifestyle.

University policies can have a positive impact on students. Taking health concerns to the state and federal level could also be a priority. The study determined work hours to be statistically significant in those reporting themselves as slightly overweight when compared to those who reported themselves as very overweight. Universities and state programs may want to work to increase the availability of student subsidies. Increased work load may be a contributing factor in individuals who are slightly overweight. Creating increased funding sources for college may help alleviate the need to work additional hours while pursuing a degree. Similarly, federal and state governments may choose to create a tuition cap to prevent excessive costs associated with university tuition. These changes can help alleviate the burden that work hours have on weight management in the college population.

#### Future Research

Future research is needed in the area of college-age health and weight. As reported in the Literature Review, there is a gap in the research with respect to the college-age group. There is insufficient data on the influence work hours have on the college population. In addition little research has been done on nutrition and physical activity in the college population. The NCHA has been utilized on the

CSU, Fresno campus in accordance with the Social Norms project, which targets binge drinking and alcohol safety in university students. The NCHA gathers a plethora of information from college students related to health. Expanding the use of the NCHA can be valuable in research related to the collegiate population.

Expanding the use of the NCHA would be a start to increasing research in the college setting. Further research in the area of weight management would also be beneficial for the public to better understand transitions made in the college years. The transitions made in early college years are those made into early adulthood and therefore may have a lasting impression in the lifecycle. Gathering information and studying this population closely can help to develop future programs and understand health beliefs. Studies that gather qualitative data can help increase the understanding of college life and health. Open-ended questions and focus groups can help to establish a better understanding of health on the college campus.

New survey techniques would be helpful in gathering data on the subject of health and health beliefs. New study themes may also be introduced to create new research in areas that have been determined to be statistically significant. Studies specifically targeting work hours and weight would be especially beneficial. More students are required to work full-time jobs while simultaneously keeping a university workload. This study found work hours to be statistically significant in influencing body image. There is little research in the U.S on work and health especially in the college population. Further study is needed to better explore work hours and the impact on the student health. Studies that determine the effects of work on school and health can be very beneficial. These studies can help universities and public health departments understand how work hours and stress influence health and university studies.

New survey techniques, in addition to new or improved programs can help shape a health community. This study found a significant relationship between body image and BMI as well as significance in work hours. These findings can help shape new programs such as Social Norms that target weight perceptions and programs that encourage active lifestyles and healthy eating on the university campus. Existing weight management programs may want to work to address the issue of distorted body image. Programs that target weight loss may choose to work to reshape the perception of the cultural body ideal to reflect a realistic achievable goal.

#### Implications for Public Health

The focus of this study was to determine the impact of ethnicity on body image and trying to change weight. This study outlined areas that could have implications for public health. Obesity is an epidemic that has spread throughout the world. It is not only an issue of weight but of chronic disease. Obesity is a risk factor for many diseases such as diabetes, hypertension, and cholesterol. It is a disease that has implications that reach far beyond the need to be fit and healthy. Obesity as a contributing factor to chronic disease is also a contributing factor to rising health care expenditures. The time to address this issue is now. This study and similar studies call professionals to action in taking an active role in addressing the needs to the public. *Healthy People 2020* outline goals for optimal health in communities specifically in the area of increased quality of life and well being. The core competencies of public health also call to action the need to address health issues in a community. The increase in obesity in the college population is one that requires action and has implications for public health.

*Healthy People 2020* outline health goals that can help address health issues in our communities. Increased quality of life and well-being is one that can be directly linked to the issue of obesity, weight management, and body perception. Addressing the issue of nutrition and physical activity on the university campus, and communities beyond can help increase well-being and quality of life. Well-being is a concept that takes into account physical and emotional components. Addressing body-image is one that can also influence well-being. By creating realistic goals about weight management and healthy living an atmosphere of well-being can be established.

In addition to the goals described in *Healthy People 2020*, the competencies of health education could also be utilized to create a framework for addressing health issues on the college campus. The health education competencies that can be applied to the findings of this study are assessing the needs of the population, and advocacy. It is the responsibility of public health and health educators to assess and address the needs of their local communities. The university setting is one that allows opportunities for research. Needs assessment of the university population can help develop optimal programs that increase the well-being of the community. Similarly, advocating for health for college students could help increase awareness of health related issues in the community. Advocacy can also help prompt the incorporation of beneficial policies to address the health of the student population.

Programs can utilize the data from this study to help focus their programs on the issues of the student body. This study found variables that were statistically significant in students who were trying to lose weight or stay the same. For those individuals who were trying to lose weight or stay the same, there was a positive relationship for fruit and vegetable consumption and body image. These findings

reinforce messages from current weight management programs that emphasize the need for a healthy diet. The need to continue programs that target healthy eating are invaluable to increase health in college communities. Findings also highlighted the statistical significance of exercise in the group that was trying to lose weight when compared to the group that was trying to gain weight. Exercise however, was not found to be a significant factor for the group that was not trying to change weight. This finding reinforces those individuals who are trying to stay the same focus less on physical fitness. This may be an indication of exercise for appearance rather than physical fitness. If a person feels they have achieved their ideal body appearance they may be less likely to participate in physical activity. This finding emphasizes the need to promote physical activity as a benefit for overall health and not simply for appearance reasons.

Findings from this study can serve to help guide health promotion programs and influence how programs are structured. Programs may choose to focus on the need for healthy eating and physical activity. By focusing on these factors, programs can influence health beliefs among the college age group. These programs may want to target students from all backgrounds. This study further demonstrates the need for health professionals to assess and address health issues in their communities.

### Summary

This study was able to determine that body image and BMI are influenced by health related factors. These factors include, work hours, nutrition, and physical activity. This study provided findings and recommendations for this body image and BMI. Through the course of this study, information on the CSU, Fresno population was explored in relation to nutrition, physical activity, and work hours.

Nutrition and physical activity are factors that have been linked to weight management and weight loss. These variables have a clear historical link to weight. They are factors that contribute to a healthy and active lifestyle. Although this study was able to determine statically significant relationships, further study is needed in the area of college health and weight management. Future study can help build on findings of this study and support the development of new programs or the redirection of existing programs. Nutrition and physical activity are important contributors to health. The increased rates of obesity emphasize the need to increase healthy eating and an active lifestyle.

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