Nutrition, Exercise Habits, & Perceptions of Obesity in Hispanic College Students in South Texas: A 10 year Follow-up

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Abstract

The objective of the study was to determine if Hispanic college students perceive themselves to be more overweight than other ethnicity students and if so, if this difference is caused by diet, lack of exercise or both. A 10 year comparison was completed with previous data from the same university. Participants were a convenience sample of 228 college students enrolled in classes between June 2012 and June 2013. Methodology involved comparisons of means and frequency distributions. Results: More Hispanic students self-reported being overweight, eating poorly, exercising less and participating in fewer sports than Caucasian or African American students. With diabetes, heart disease and other weight and diet related diseases at epidemic proportions, and with the number of Hispanics in the United States rising, obesity, poor eating and poor exercise habits among young Hispanics could place an additional, unnecessary strain on our health care system.

Key words: Hispanic, college student, diet, obesity, overweight, exercise

1. Introduction

Obesity is a major public health problem in the United States, reaching epidemic proportions in all age groups (Flegal,Carrol, Ogeden & Curtin, 2010; Mokdad, Bowman, Ford, Vinicor, Marks, &Koplan, 2001; Ogden, Flegal, Carroll, & Johnson, 2002; Huang, Harris, Lee, Nazir, Born & Kaur, 2010). It is now estimated that 66% -68% of adult Americans are overweight or obese with BMI (body weight index) > 25kg/m^2, 15%-17% of adolescents are obese (BMI>95th percentile) and 21% of college students are obese with 35-36% either overweight or obese (Flegal et al, 2010; Huang et al, 2010; West, 2012; Berrington de Gonzaolez, Hartge, &Cerhan, 2010; Hays & Roberts, 2008; NIH, 2013; Park, Mulye, Adams, Brindis, & Irwin, 2006; Grinnell, Breene, Melanson, Blissmer & Lofgren, 2011; LaCaille, Dauner, Krambeer, & Pedersen, 2011; Boyle &LaRose, 2008; Mokdad, Ford & Bowman, 2003, Gordon-Larsen, Adair, Nelson &Popkin, 2004). Studies also suggest that college age students participate in little physical activity and consume, in general, unhealthy diets (Huang et al, 2010; Anding, Suminski & Boss, 2001; Brevard & Ricketts, 1996).

A 2005 study reported that more than half of the college students surveyed ate high-fat, fried or fast food at least three times every week (Boyle & LaRose, 2008). The Tufts Longitudinal Health Study found that the average college freshman gained from 4.5 to 5.5 pounds in their first year of college, 66% did not eat the recommended five servings of fruits and vegetables a day, 50% did not get enough fiber, 60% ate too much saturated fat, 30% of women did not consume enough calcium and 59% agreed that their diet had gone downhill since they started college (Hellmich, 2013). A study at Oregon State University found that students were not even eating one serving of fruits and vegetables per day (Science Daily, 2013).

Data from the Youth Risk Behavior Surveillance Survey (YRBSS) show that while 55% of high school students meet the guidelines for physical activity, less that 40% of college students meet the same standard (LaCaille et al, 2011; Douglas, Collins & Warren, 1997). The World Health Organization (WHO) also reports an alarming increase in overweight children, possibly as high as 17% (West, 2012; Haberman & Luffey, 1998; Junk Food Jitters, 2002). Obesity is a major risk factor for diseases such as heart disease, diabetes, hypertension, high cholesterol, stroke, cancer and arthritis (Flegal, et al, 2010; West, 2012, Hays & Roberts, 2008; Grinnell et al, 2011; Malnick & Knobler, 2006).These diseases have increased dramatically in all Americans during the past two decades (Healthy People 2000, USDHHS, 2011) but even more so for Hispanics (Hensley, 1999; Mexican-American, 1999; Obesity, 1999).

Between 1980 and 1990 diabetes increased 20 to 30% for this population, and obesity increased by 23%. Hispanics have a two to three fold risk of developing Type II diabetes when compared to Caucasians (Haffner, D'Agostino, Saad, Rewers, Mykkanene & Selby, 1996). Hispanic Americans are expected to increase to 24% of the United States' population by 2050. They will then be the largest ethnic minority group in the United States. According to the National Center for Health Statistics both Hispanic Americans and African Americans have twice the rates of obesity as Caucasian Americans (Office of Disease Prevention, 2011).

Between 1980-1990, the number of overweight children was 38.4% for African Americans, 37.9% for Hispanics and 25.8% for Caucasians. Over this same time period, the percentage of those who are overweight increased by 120% in African Americans and Hispanics and by 50% among Caucasians (Strauss & Pollack, 2001). Ethnic minorities are also disproportionally affected by diabetes, untreated hypertension, coronary heart disease and some cancers for which obesity is a risk factor (Quinn & McNabb, 1999; Despues & Friedman, 2007; National Center for Chronic Disease Prevention, 2002).

Nutrition, weight status and physical activity objectives for Health People 2020 show a strong commitment by the United States Department of Health and Human Services (USDHHS), the Centers for Disease Control and Prevention (CDC), the National Institutes of Health (NIH), and the United States Department of Agriculture (USDA) to improving health status by improving nutrition in all age groups, maintaining a healthy body weight and reducing the percentage of individuals who participate in no leisure-time physical activity (West, 2012; USDHHS, 2008; CDC, 2005; USDA, 2011). In spite of this commitment by multiple government entities and despite large monetary expenditures, studies have found a decrease in physical activity in college students beginning with the start of their freshman year, high junk food consumption, late evening snaking, high BMI with continuing weight gain, and high levels of stress (West, 2012; Vella-Zarb & Elgar, 2009; Gow, Trace &Mazzeo, 2010). College students do not follow the Dietary Guidelines for Americans (DGA).

Their diets exceed the recommendations for total and saturated fats and fail to meet the guidelines for consumption of fruits and vegetables (Grinnell, et al, 2011; Irazusta, Hoyos, Irazusta, Ruiz Biaz& Gil, 2007). They also lead in sedentary lifestyles (Anding et al, 2001; Brevard & Ricketts, 1996; Hernon, Skinner, Andrews & Penfield, 1986; Ullrich, Yeater & Hopewell, 1990; Lawrence &Schank, 1993). One study found that 66% of students were sedentary with 41% failing to meet American College of Sports Medicine (ACSM) recommendations for physical activity (Grinnell, et al, 2011; Haskell, Lee & Pate, 2007) and that 25% were overweight (Anding, et al, 2001).

Purpose of Study

A study conducted in 2003 (Yarbrough & Sherman, 2004) demonstrated that Hispanic college students at a Hispanic serving institution ate poorly, exercised less than their peers of other ethnicities and more frequently placed themselves in the overweight category. A follow-up study, conducted 10 years later at the same University, examined whether or not that scenario has changed. Do more Hispanic college students still consider themselves to be overweight when compared to their Caucasian counterparts? Have their eating habits improved? Are they exercising more or participating in more physical activities? This study attempts to answer these questions.

As in the 2003 study, questions were asked about perceived weight status, nutrition and participation in physical activities. In the area of nutrition, students were asked about eating breakfast, eating fruits and vegetables, eating sweets, and about taking vitamins, mineral and herbal supplements. In addition, this study looked at total caffeine consumption and the form that consumption takes. In the area of physical activity, students were asked about participation in sports as well as frequency of both aerobic and resistance exercise. Differences were assessed by ethnicity, gender, college classification and income.

Methods

A convenience sample of 228 college students at a Hispanic serving University in South Texas completed a survey about their perception of being overweight and their eating and exercise habits. This was a follow-up study to one completed in 2003 at the same University. The 2003 study examined 122 college students, 88 Hispanic and 34 Caucasian. In the 2003 study, the number of African American students was so low that those surveys were not used. Of the 228 participants in the 2013 study, 178 were Hispanic, 32 were Caucasian and 19 were African American. One hundred and seven were male, and 121 were female. Forty-five students were Freshmen, 30 were Sophomores, 66 were Juniors and 85 were Seniors.

One hundred and fifty six had a GPA≥2.5 while 41 had a GPA <2.5. Seventy seven had an income <$30,000, 25 had an income between 30 and $50,000, 54 had an income between 50 and $75,000, 26 had an income between 75 and $100,000 and 17 had an income greater than $100,000 per year. All study participants in both studies consented to participate in the study and the Institutional Review Board at the university granted approval for the studies. All information was self-report data.

Results

Frequencies and means were calculated by ethnicity, by gender, by college standing, and by income. Additionally, frequencies were compared for weight and dietary habits from 2003-2013 by ethnicity. Perceptions of being overweight and diet and supplement usage by ethnicity are reported in Table 1. Perceptions of being overweight and diet and supplement usage by gender are reported in Table 2. Perceptions of overweight and diet and supplement usage by classification are reported in Table 3. Means by income are presented in Table 4, and a 10 year comparison by ethnicity is presented in Table 5.

Table 1: Frequencies and Means by Ethnic Group

	Hispanic	Caucasian	African American
Overweight	51.4%	25%	0%
Breakfast	62.6%	75%	89.5%
Supplements	34.6%	53.2%	42.1%
Herbs	7.8%	15.6%	5.3%
Protein	22.9%	34.4%	36.8%
Vitamins	31%	38.2%	34.3%
Energy supplements	17.9%	25%	31.6%
Cups of Coffee Daily	.32	.56	.05
Cups of Tea Daily	.62	.46	.68
Soft Drinks Daily	.75	.84	.52
Other Caffeinated Drinks Daily	.03	.00	.21
Eat Fast Food	92.2%	84.4%	100%
Fast Food meals weekly	3.08	2.4	2.89
Eat sweets	77.1%	68.8%	89.5%
Servings of sweets daily	1.50	1.18	2.42
Eat Vegetables	87.2%	90.6%	89.5%
Servings of vegetable daily	1.75	1.68	2.0
Eat Fruit	94.4%	95.5%	100%
Servings of fruit daily	1.87	1.875	2.47
Exercise	77.1%	96.9%	100%
Aerobic hours/week	2.73	4.34	3.94
Weights/week	2.18	3.81	4.16
Sports	37.4%	50%	78.9%
Hours/week	2.75	6.69	8.39

Hispanic students were more than twice as likely as Caucasian students to self-identify as overweight. When compared to African American students, this number doubled again. In most of the areas of nutrition considered to be "good nutrition practices," Hispanic students regularly demonstrated poorer habits than their Caucasian counterparts and in many cases also worse than their African American peers. Hispanic students consumed less fruit, fewer vegetables and more fast food than either of the other groups. Only in the area of sweets consumption does this trend vary with African American students consuming the most. Even though 100% of the African American students claimed to eat fast food, they ate fewer fast food meals per week than the Hispanic students. Another break in this pattern is in the consumption of coffee and soft drinks where Caucasian students consumed the most.

Table 2: Frequencies by Gender

	Male	Female
Overweight	24.5%	60.3%
Eat Breakfast	74.5%	60.3%
Use Supplements	51.8%	26.2%
Use Herbs	10%	7.1%
Use Protein Supplements	44.5%	9.5%
Take Vitamin Supplements	38.2%	31%
Use Energy Supplements	28.2%	12.7%
Eat Fast Food	90%	92.1%
Eat Sweets	69.1%	84.1%
Eat Vegetables	84.5%	91.3%
Eat Fruit	95.5%	94.4%
Exercise	97.3%	69%
Sports	64.5%	23%

Differences by gender showed that male students, in general, tended to have better eating habits than their female counterparts and possibly as a result, fewer viewed themselves as overweight.

Table 3: Frequencies and Means by Classification

	Freshman	Sophomore	Junior	Senior
Overweight	20%	38.5%	39.4%	62.4%
Breakfast	71.1%	61.5%	68.2%	65.9%
Supplements	42.2%	38.5%	30.3%	41.2%
Herbs	8.9%	5.1%	3%	14.1%
Protein	33.3%	25.6%	22.7%	23.5%
Vitamins	37.8%	28.2%	25.8%	41.2%
Energy	28.9%	17.9%	18.2%	17.6%
Cups Coffee	.177	.38	.36	.357
Cups Tea	.60	.74	.50	.642
Soft Drinks	.578	1.0	.64	.845
Other caffeine	.022	.07	.01	.083
Fast Food	88.9%	92.3%	93.9%	89.4%
FF meals/week	3.067	3.2	2.03	2.82
Sweets	73.3%	71.8%	77.3%	81.2%
Sweets/day	1.867	1.4	1.3	1.54
Vegetables	77.8%	94.9%	84.8%	92.9%
Vegetable/day	1.58	2.28	1.65	1.75
Fruits	93.3%	97.4%	93.9%	95.2%
Fruits/day	2.20	2.05	1.85	1.77
Exercise	100%	97.4%	77.3%	69.4%
Aerobic hours/wk	3.11	4.15	3.15	2.39
Weights hours/wk	3.71	3.69	2.25	1.65
Sports	57.8%	61.5%	36.4%	29.4%
Hours/week	4.40	6.45	2.88	2.74

Unfortunately, eating habits did not improve consistently with age and education. Weight increased while breakfast consumption decreased. On the positive side, college seniors did eat more fruits and vegetables and fewer fast food meals and sweets than did the freshmen.

Table 4: Means by Income

Income	<30,000	$30-50,000	$50-75,000	$75-100,000	>100,000
Fruit/day	1.89	1.5	2.15	2.11	2.23
Vegetables/day	1.65	1.5	1.92	1.85	2.18
Sweets/day	1.89	1.6	1.44	1.04	1.00
Fast Food/week	3.19	3.5	2.81	2.27	2.59
Coffee/day	.41	.25	.34	.35	.29
Tea/day	.71	.50	.69	.46	.35
Soft Drinks/day	.83	.98	.55	.61	.41
Other caffeine	.08	.01	.06	.04	.00
Sports hours/week	3.46	2.23	2.90	5.96	7.88
Aerobic hours/week	3.02	2.61	2.98	3.61	4.23
Weight hours/week	2.67	1.90	2.40	2.77	4.47

Level of income did seem to correlate with more healthy eating behaviors. Those with higher incomes ate more fruits and vegetables and fewer fast food meals and sweets that those with lower incomes. Additionally, higher income students consumed less caffeine of all types. This is especially important with sugary soft drinks since those are particularly detrimental to health and lead to high rates of obesity and diabetes.

Table 5: Frequencies and Means: Comparison by ethnicity/ 2003-2013

	2003		2013	
	Hispanic	Caucasian	Hispanic	Caucasian
Overweight	44.4%	34.45%	51.4%	25.0%
Eat Breakfast	41.3%	63.25%	62.6%	75.0%
Herbs	9.45%	20.85%	7.8%	15.6%
Vitamins	40.03%	48.9%	31%	38.2%
Fast Food/week	3.30	2.40	3.08	2.40
Sweets/day	1.60	1.30	1.50	1.18
Vegetable/day	1.80	2.50	1.75	1.68
Fruits/day	1.70	1.80	1.87	1.88
Caffeinated Drinks/day	2.00	2.50	1.72	1.86
Exercise hours/week	3.1	3.2	4.91	8.15
Sports	25.5%	52.5%	37.4%	50.0%

Perhaps of most interest is the 10 year comparison in eating habits and perceptions of overweight between 2003-2013. In spite of the enormous push our government has placed on improving these numbers, especially in minority populations, only some areas show improvement. More Hispanic students perceive themselves to be overweight. While more students are eating breakfast, fewer are using herbal and vitamin supplements, and vegetable consumption has dropped. On the positive side, fewer sweets are being consumed, fewer caffeinated beverages are being consumed and fruit consumption has increased in both populations.

Comment

A large proportion of Hispanic college students tend to be overweight. Is this a function of diet, exercise habits, or a combination of these factors? Are Hispanic students more overweight than their peers from other ethnic groups? Are there differences in eating and exercise habits between the ethnic groups? Do gender, class standing, and income make a difference in how many students are overweight, in what they eat and in how much they exercise? According to these data, even after 10 years of increasing emphasis on weight control and additional programming and funding provided by the government, Hispanic college students continue to be overweight more so than other college students. On the positive side, Hispanic college students are exercising more and spending more of their leisure time engaged in sports activities than they did in 2003. It is of interest that regardless of ethnicity, all healthy behaviors improved based on income with the worst behaviors found in the lowest income group and the best in the highest.

Years in college did not appear to favorably alter health behaviors. Many students demonstrated healthier behaviors in their freshman year than in their senior year. It would appear that our education efforts in the areas of diet and exercise have had mixed success not only with the Hispanic college population, but with college students in general. A better understanding of the causes of weight gain, poor diet and lack of physical activity in college students could lead to effective preventative programs for these students.

Limitations

This study used a convenience sample largely confined to the Department of Education at a moderately sized, regional University in rural South Texas. Results might not be the same in an urban area, further north, or at a larger University. The survey used was the same survey used at the same institution 10 years ago. The instrument demonstrated reliability and face validity, but was not pilot tested prior to its first administration. Level of income could have been interpreted by participants as family income, but since a large proportion of students at this university are non-traditional students, that is not necessarily the case. This study was not conducted to demonstrate national trends, but is instead a snapshot of what has happened over the last 10 years among students at one regional university.

Conclusions

Alarming numbers of Hispanic college students are overweight (Office of Disease Prevention, 2011; Quinn & McNabb, 1999; USDHHS, 2008). They eat poorly and do not spend enough time engaged in physical activity or participating in sports activities (Yarbrough & Sherman, 2004). These students are more overweight and exercise less than their colleagues who are from other ethnic groups. Even when students start out well their freshman year, over time they tend to gain weight, make poorer nutrition choices, and spend less and less of their leisure time being physically active. Since Hispanics are at greater risk for developing heart disease and diabetes through a combination of genetics, diet and obesity, these poor behaviors beginning at such early ages are particularly problematic (Quinn & McNabb, 1999; Despues& Friedman, 2007; National Center for Chronic Disease Prevention, 2002). Diet and exercise programs designed to prevent obesity and diabetes need to be targeted directly toward this population in order to decrease the risk of these diseases. College students seem to be aware that they are overweight. They also appear to be aware that a good diet and adequate exercise are necessary for good health. In spite of this, as college progresses, these important issues are pushed aside, possibly because they have not become lifestyle habits and diet and exercise become less of a priority.

Suggestions for treating obesity, diabetes and coronary artery disease (CAD) include modifying the diet and beginning a regular exercise program to help improve and maintain weight loss. Efforts need to be aimed at preventing obesity at earlier ages by developing weight-loss and exercise programs for college students. Failure to change health behaviors in college students will contribute to the increasing numbers of people in America who are overusing our already strained health care system as they battle the diseases caused by being overweight, poor nutrition, and lack of exercise. With these diseases already at epidemic proportions in the Hispanic population, and with the percentage of the population that is Hispanic expected to rise to 24% of the population of the United States by 2050(Yarbrough & Sherman, 2004), not making changes in health behaviors in Hispanic college students could at the very least be costly both in health care dollars and in individual distress, but could, conceivably, speed the collapse of the already overburdened health care system.

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