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Self-Rated Diet Health: Socioeconomic and Health Related Correlates

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SELF-RATED DIET HEALTH: SOCIOECONOMIC AND HEALTH RELATED CORRELATES

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ABSTRACT

BACKGROUND: Two-thirds of Americans are overweight or obese, increasing their risk for multiple chronic diseases. Self-rated diet health may be useful in public health efforts to prevent the negative consequences of overweight/obesity. This study aims to identify sociodemographic and health-related correlates of the NHANES self-rated diet health question.

METHODS: The 2009-2010 NHANES data for adults 20 years and older were used. Sociodemographic and health-related variables were investigated with self-rated diet health as the outcome. First, bivariate analyses determined associations of each variable with self-rated diet health. Those associated with p-values ≤.25 were included in two multiple ordinal logistic regression models.

RESULTS: Model 1 included only sociodemographic variables; all were independently and significantly associated with self-rated diet health. Health-related variables were added to Model 2; only BMI, overweight diagnosis, and self-rated general health were independently and significantly associated with self-rated diet health.

CONCLUSION: Perceived diet health is significantly associated with several sociodemographic and health-related variables. Associations with BMI and overweight diagnosis suggest potential public health applications of the self-rated diet health item, particularly in increasing at-risk individuals' risk perceptions related to diet. More research about the validity and utility of the self-rated diet health question is needed.

INTRODUCTION

Americans have gained an increase in body mass index (BMI) over the past several decades, with two-thirds of the current adult population considered to be either overweight or obese. BMI is a formula calculated using height and weight measurements to categorize individuals as underweight, normal weight, overweight, or obese. According to the National Health and Nutrition Examination Survey (NHANES), between 1960-1962 the prevalence of overweight adults in the United States (U.S.) was 31%, and the prevalence of obese adults was 13.4%. By 2009-2010, the prevalence of overweight adults had risen to 32.7% and, more dramatically, the prevalence of obese adults had risen to 36.1%.[1]

The increase in the overweight and obesity rates can be seen in all ages, race, income levels, sexes, and education levels of the population[2], but rates of overweight and obesity vary in association with these demographic factors. In 2009-2010, according to NHANES, 74% of males and 64% of females were overweight or obese. Minorities were more likely to report being overweight or obese than Non-Hispanic Whites. Approximately 78% of Non-Hispanic Blacks and 76.6% of Hispanics reported being overweight or obese, compared with 66.7% of Non-Hispanic Whites.[3] People with a bachelor's degree or higher had a lower overweight BMI than those having less than a high school education (36.1% compared to 37.3%). Also, those with a bachelor's degree had a much higher percentage of normal weight BMI than those with less than a high school (41.3% compared to 29.1%).[4] Of the approximately 36% of the population

considered obese, 41% of those individuals had incomes of 350% above the poverty level, whereas 20% of those obese adults reported incomes less than 130% of the poverty level.[5] Looking more closely at the data, women, and especially minority women, have a higher prevalence of obesity at incomes below 130% of the poverty level.[5,6] The 2009-2010 NHANES data also shows that adults 60 and older have a higher prevalence of obesity than younger adults.

Being overweight or obese is associated with a range of chronic health problems that increase the risk of morbidity and mortality, including diabetes, cardiovascular disease, and stroke.[1,8-10] Currently, there are 18.8 million people in the U.S. diagnosed with diabetes and 6.8 million with pre-diabetes, or undiagnosed diabetes, making it one of the most prevalent diseases and the 7th leading cause of death.[11,12] Being overweight and obese are established risk factors for cardiovascular disease and stroke[1,7-10,12-16], with heart disease being the leading cause of death among women, men, and most ethnicities, and stroke being the fourth leading cause.[10-12] Not only is high BMI an increased risk factor for preventable chronic disease, it is also a burden on our medical system. The U.S. spends an estimated $147 billion dollars annually on obesity and obesity related medical expenditures.[10,17] Despite all of the data confirming the rise of obesity and unhealthy weight gain in the U.S. and the negative impact on health, changing the paradigm is a challenge.

The reasons for the weight gain phenomenon and increased obesity have been studied extensively, with substantial research documenting a wide range of personal, social and environmental contributors to being overweight and

obese.[2,6,8,10] Researchers understand that the increase in BMI is a result of sedentary lifestyle and poor diets.[2,6,8,10,18,19] However, the relationship between self-perceived diet and the multiple factors affecting it, including sociodemographic factors (e.g., sex, race, age, health insurance) and health conditions (e.g., heart disease, stroke, diabetes) is less well understood. Unlike self-rated diet health, self-rated general health has been studied and is recognized to be a strong predictor of mortality.[20-23] Self-rated general health has been determined to be a good and reliable indicator of overall health.[24-28] In fact, mortality has been found to be correlated with self-rated health more strongly than with objective health.[30] This self-perceived health quantifier has also been linked with obesity. Obese individuals rate their overall general health lower than their normal weight counterparts.[24,25]

On the other hand, research on the validity of self-rated diet health is limited. The majority of diet-related studies use self-reporting methods, including food frequency questionnaires, food diaries, and food recalls. The drawbacks of these methods include time needed to administer methods and several types of self-report bias, including social desirability and recall. A self-rating of dietary health using a simple ordinal response question could potentially be a useful measure because it would capture an individual's perception of their own diet. Most individual level theories of health behavior suggest that perception may be the main driver behind health behavior. Beliefs about perceptions, threats, and benefits, according to these theories, are key elements in the adoption of beneficial health behaviors.[29] For example, the Health Belief Model, unlike other

theories which focus on behavioral intentions through attitudes, social norms, and environmental influences, proposes that if an individual perceives a threat, he or she will be motivated to make changes to avoid the threat. The Theory of Planned Behavior and the Theory of Reasoned Action posit that before an individual can take action, they consider the perceived benefits and barriers. In order to go through with the action, the perceived benefits have to outweigh the perceived barriers.[29] As suggested by these theories, if individuals perceive their diet as appropriate and healthy, they are unlikely to perceive potential benefits to changing their dietary habits.[30,31]

Because self-rated diet health potentially plays an important role in willingness to change behavior, learning how various factors are associated with self-diet perception can aid in designing dietary interventions to improve public health.

METHOD

Dataset

The data used for this study were drawn from the 2009-2010 National Health and Nutrition Examination Survey (NHANES). To minimize the risk of sampling bias and uphold human research integrity, NHANES uses a complex, stratified, multi-stage sample of a non-institutionalized U.S. population. The demographic and non-sensitive survey data were collected in the participants' homes by trained interviewers with the use of the computer-assisted personal interview system. Mobile examination centers staffed with a variety of trained health professionals were used to collect sensitive and biological data. The

current study used the BMI measurements collected by the technologists at the examination centers rather than self-reported BMI. Portions of the demographic questionnaire and examination sections from the multi-part survey were used to operationalize the variables for this study.[32]

Data Analyses

Analysis was conducted in two steps. Pearson Chi-square tests were used to determine which independent variables were associated with self-rated diet health in bivariate analyses. As recommended by Hosmer and Lemeshow[33], a p-value of $\leq .25$ was used as the criterion for inclusion for the multivariate models. In the second step, multiple ordinal logistic regression (MOLR) was used. Two models were run with MOLR: Model 1 included the sociodemographic variables with a p-value $\leq .25$ in the bivariate tests; these included race, education, age, poverty level, and health insurance. Model 2 included the same sociodemographic variable plus the health variables of BMI, overweight diagnosis, coronary heart disease (CHD), angina, heart attack, and self-rated general health. For both models, model fit was assessed, the assumption of proportional odds was tested, and the Nagelkerke pseudo R^2 value was obtained.

NHANES collects data from participants of all ages. Due to NHANES categorical coding of age, this study only used data for participants 20 years and older. Several variables were recoded for analysis and interpretation, as described below.

Primary Outcome

Self-rated Diet Health. Self-rated diet health is measured in NHANES by a single item: “In general, how healthy is {your/his/her} overall diet?” Responses comprise 5 categorical response options: Excellent, Very Good, Good, Fair, and Poor. The current study recoded self-rated diet health into three categories, determined by the distribution of frequencies, to reduce small cell sizes: Fair and Poor, Good, and Excellent and Very Good. The order of the recoded variables was reversed to make analysis interpretation easier, so that higher values indicate higher levels of diet health.

Sociodemographic Variables

Race/Ethnicity. Self-reported race/ethnicity is measured by a single item with five categorical response options on the original NHANES: Mexican American, Other Hispanic, Non-Hispanic White, Non-Hispanic Black, and Other Race-Including Multi-Racial. In the current study, race/ethnicity was recoded into three categories to address small cell sizes: Hispanics, Blacks and Others, and Non-Hispanic Whites. Whites were used as the reference group in the MOLR analysis.

Education. Self-reported education originally included five categorical response options in NHANES: Less than 9th Grade, 9-11th Grade, High School Graduate/GED or Equivalent, Some College or AA degree, College Graduate or above. It was reduced to three categories in this study: Less than High School, High School or GED, and Some College or above. The categories were reduced to address small cell sizes and Some College or above became the reference group in the MOLR analysis.

Age. Self-reported age in years is measured as a continuous variable in the original NHANES. This study recoded age into three categories: 20-39, 40-59, and 60 and above. The age groups were determined by the distribution of frequencies and the categories created to address small cell sizes. The reference group became 60 and above for the MOLR analysis.

Ratio of Family Income to Poverty. The self-reported ratio of family income to poverty is a continuous variable in the original NHANES: 0-4.99 and 5 and above. The current study recoded it to a categorical variable with two options: 200% and below poverty and 201% and above poverty. The recoding to two variables was based on the distribution of frequencies and done to address small cell sizes. The reference group used for the MOLR analysis was 200% and below poverty.

Sex. Self-reported sex remained unchanged from its original NHANES responses: male or female.

Health Insurance: Self-reported health insurance remained unchanged from its two category response options: yes or no.

Health Related Variables

Body Mass Index. Technologist-measured and calculated BMI is a continuous variable ranging from 12.58 to 84.87 in NHANES. In this study it was recoded to a categorical variable with three options: Normal, Overweight, and Obese. These categories are based on the National Institute of Health Guidelines. The Obese group was used as the reference in the MOLR analysis.

Self-rated General Health. Self-rated general health is measured by a single item with 5 categorical response options on the original NHANES: Excellent, Very Good, Good, Fair, and Poor. The current study recoded self-rated general health into three categories determined by the distribution of frequencies to reduce small cell sizes: Fair and Poor, Good, and Excellent and Very Good. The reference group in MOLR analysis was Excellent and Very Good.

Overweight Diagnosis. Self-reported diagnosis by a physician of being overweight remained unchanged from the original two category response options: yes or no. The original questions was, “Has a doctor or other health professional ever told {you/SP} that {you were/s/he/SP was} overweight?” This study used no as the reference group in the MOLR analysis.

Diabetes. Diagnosis of diabetes is a self-reported question in NHANES with three category response options: yes, no, or borderline. The original question was, “{Other than during pregnancy, {have you/has SP}/{Have you/Has SP}} ever been told by a doctor or health professional that {you have/{he/she/SP} has} diabetes or sugar diabetes?” This variable was not reduced to two categories. Because borderline was neither a yes nor no answer, if it had been recoded into either category the results would not have been as accurate. It may have changed the results of the MOLR analysis. Borderline was used as the reference group.

Coronary Heart Disease. Self-reported diagnosis of CHD by a physician remained unchanged from the original two category response options: yes or no.

The original question asked in NHANES, “Has a doctor or other health professional ever told {you/SP} that {you/s/he} . . .had coronary heart disease?” The response of no was used as the reference group in the MOLR analysis.

Angina/Angina Pectoris. Self-reported diagnosis of angina/angina pectoris by a physician remained unchanged from the original two category response options: yes or no. The original question asked, “Has a doctor or other health professional ever told {you/SP} that {you/s/he} . . .had angina, also called angina pectoris?” The reference for the MOLR analysis was the no response.

Heart Attack. Self-reported diagnosis of a heart attack remained unchanged from the original two category response options: yes or no. The original question asked in NHANES, “Has a doctor or other health professional ever told {you/SP} that {you/s/he} . . .had a heart attack (also called myocardial infarction)?” The reference group for the MOLR analysis was the no response.

All statistical tests were conducted using SPSS version 21 for Apple Macintosh.

Because the data were de-identified by NHANES prior to distribution, the Institutional Review Board at the University of Kentucky determined that this analysis does not meet the Department of Health and Human Services definition of human subject research, and thus was exempt from review.

RESULTS

The descriptive statistics in Table 1 show that participants (N=6218) were fairly evenly divided among the categories of sex, age, and poverty ratio. Approximately half of participants (48.3%) were female, approximately one-third

fell into each of the three age groups, and half (49.9%) reported being at less than 200% of the poverty to income level. Race/ethnicity, education, health insurance, and the health diagnoses were less evenly distributed. Non-Hispanic Whites comprised almost half of participants (47.9%), with fewer Hispanics (28.5%) and Blacks/others (23.6%). Most disease diagnoses were endorsed by fewer than 5% of participants, with the exception of diabetes, which was reported by 11.7% of the sample. Just over one-third of participants (34%) reported having been told by a physician that they were overweight.

Table 1 also includes the bivariate analysis results determining which variables would be included in the MOLR. Race/ethnicity, education, age, poverty level, and health insurance were all associated with self-rated diet health with *p*-values ≤.25 in bivariate analyses, and these sociodemographic variables were retained for the MOLR. Among the health-related variables, BMI, overweight diagnosis, diabetes, CHD, angina, heart attack, and self-rated general health were all associated with self-rated diet health with *p*-values ≤.25, so they were retained for the MOLR as the health status variables. The bivariate associations of sex, stroke, and congestive heart failure with self-rated diet health did not meet the criteria for inclusion in the MOLR; thus, they were excluded from the multivariable analysis.

Table 2 presents the results of two multivariable models. Model 1 shows the results of the MOLR including sociodemographic variables only; Model 2 includes the same set of sociodemographic variables plus health status variables. For both models, inclusion of the predictor variables significantly

improved model fit compared to the null model with no predictors (Model 1: p=0.01; Model 2: p=0.00). Model 1 did not violate the assumption of proportional odds (p=.47); however, the test of parallel lines for Model 2 suggested that this assumption was violated (p<.001). For studies with a large number of predictors and a large sample size, the test of parallel lines is known to be overly sensitive (35); thus, results from Model 2 are presented with the caveat that the estimates likely provide a reasonable summary of the trend across the levels of self-reported diet health rather than precise estimates. The inclusion of health-related variables in Model 2 resulted in a higher Nagelkerke pseudo R^2 (23.7%) than obtained for Model 1 (10.5%).

The odds ratios (OR) obtained for the sociodemographic variables in Model 1 demonstrated that race/ethnicity, education, age, poverty level, and health insurance status were each independently and significantly associated with self-rated diet health. Regarding race/ethnicity, both Hispanics (OR=0.60, 95%CI: 0.53, 0.68) and Blacks (OR=0.76, 95%CI: 0.70, 0.86) had significantly lower odds than Whites of rating their diet health as excellent or very good versus poor, fair, or good. Similarly, participants with education levels less than a high school education (OR=0.56; 95%CI: 0.50, 0.64) or equal to high school or GED (OR=0.57, 95%CI: 0.50, 0.64) had significantly lower odds of rating their diet health as excellent or very good versus poor, fair, or good, compared to the reference group of participants with at least some college education or more. Regarding age, compared with those aged 60 years and above, both the 20-39 year olds and the 40-59 year olds had approximately half the odds of reporting

excellent or very good versus poor, fair, or good diet health. Respondents without health insurance (OR=0.83, 95%CI: 0.73, 0.95) had lower odds of reporting excellent or very good versus poor, fair, or good diet health than those with health insurance. Finally, participants with incomes greater than 200% of the poverty level had 1.32 times the odds (95%CI: 1.18, 1.47) of reporting excellent or very good versus poor, fair, or good diet health, compared to those who were at or below 200% of the poverty level.

Model 2 retained the sociodemographic variables from Model 1 and also included seven health status variables: BMI, overweight diagnosis, diabetes, CHD, angina, heart attack, and self-rated general health. Inclusion of the health-related variables resulted in changed odds ratios for several sociodemographic variables in the model. For example, in Model 2, Black respondents no longer differed significantly from White respondents in self-rated diet health (OR=0.88, 95%CI: 0.77, 1.00). Similarly, the independent effect of poverty on self-rated diet health also diminished in the presence of health-related variables, with no significant difference observed between respondents above and below 200% of the poverty level. In contrast, the independent effects of age groups maintained significance, and in the presence of health-related variables, the 20-39 year old age group had even lower odds (OR=0.36 in Model 2 versus 0.50 in Model 1) of reporting excellent or very good diet health compared to those ages 60 and up.

Three of the health-related variables included in Model 2 had significant independent associations with self-rated diet health: BMI, overweight diagnosis, and self-rated general health. Compared to the obese group, those with normal

(OR= 1.42, 95% CI: 1.20, 1.70) and overweight (OR = 1.33, 95% CI: 1.15, 1.50) BMIs had significantly higher odds of reporting excellent or very good diet health versus poor, fair, or good. Respondents who had been diagnosed by a physician as overweight had significantly lower odds of reporting excellent or very good diet health (OR=0.70, 95% CI: 0.65, 0.90) compared to those not diagnosed as overweight by a physician. Regarding self-reported health status, respondents reporting poor or fair health (OR=0.20, 95%CI: 0.13, 0.19) and those reporting good health (OR= 0.40, 95%CI: 0.38, 0.50) had significantly lower odds of reporting excellent or very good diet health compared to those reporting excellent or very good health status. The remaining health variables (i.e., diabetes, CHD, angina, and heart attack) were not significantly independently associated with self-rated diet health.

DISCUSSION

This study explored associations between self-rated diet health and sociodemographic factors (i.e., age, race, sex, education, and health insurance) and health diagnosis (i.e., overweight, cardiovascular, and diabetes). Diet is one of the two main causes of overweight and obesity[8-10]; with two-thirds of adults in the U.S. overweight and obese[1], it is important to understand what might influence their perceptions about diet health.

In investigating potential associations between self-rated diet health and multiple sociodemographic and health-related predictors, this study found self-rated diet health to be primarily associated with race/ethnicity, education, age, health insurance, BMI, diagnosis of overweight, and self-reported general health

status. Independent associations with poverty level and specific health conditions (i.e., diabetes, CHD, angina, heart attack) were not observed in the multivariable model including sociodemographic and health-related variables. Sex, stroke, and congestive heart failure demonstrated negligible potential associations with self-rated diet health in bivariate analyses and were excluded from the multivariable models.

Results demonstrate a robust and statistically significant association between self-rated diet health and weight. Controlling for sociodemographic characteristics, respondents who had been diagnosed overweight by a physician had significantly lower odds of rating their diet health as excellent or very good (versus poor, fair, or good) compared with respondents with no such diagnosis. Unlike diabetes, CHD, angina, or heart attack, being diagnosed as overweight has a very tangible result. After being diagnosed overweight it is possible that patients perceive a problem with their diet health leading to them being overweight, resulting in lower self-rated diet health. This can be useful in public health; the physician creates a perceived threat or barrier to good diet health by diagnosing the patient as overweight and drawing specific attention to diet behaviors and the physical results of a poor diet. These can lead the individual into recognizing the need for a behavior change, eating better. This finding was also repeated when comparing respondents with normal or overweight BMI to those who were obese. The physical manifestation of being obese contributes to a significant outcome of lower perceived diet health. Related literature on the subject of self-rated general health reveals that individuals who are overweight

and obese are less likely to rate their general health as “excellent,” suggesting that they are aware that BMI plays a role in their overall general health.[24,25,36] Individuals with above normal BMI have lower self-rated health[24,25]; it stands to reason they would be less likely to report excellent self-rated diet health.

While poverty level was significantly associated with self-rated diet health in Model 1, its effect became non-significant in Model 2. One explanation for this might be consideration of the other independent variables; adding them into the multivariable analysis may have reduced the significance and the power to detect an effect of income on perceived diet health. Another explanation is that this study is looking at perceived diet health, not actual diet health. Lower income populations have been shown to have poorer diet quality.[36,37] Their diet quality has been attributed to higher calorie and lower cost foods; access and accessibility to fruits, vegetables, and lean proteins; and the time involved with shopping and cooking meals (versus going through a drive through).[2,36-38] This study divided income into two groups, rather than into more groups based on the federal poverty guidelines. That division may have caused the change in significance once all of the independent variables were run in the multivariable analysis.

Interestingly, the literature describes self-rated general health as a good predictor of morbidity and mortality, specifically when chronic diseases have been diagnosed.[20-28] In this analysis, a diagnosis of a cardiovascular disease or diabetes was not significantly associated with self-rated diet health. None of the investigated health conditions (apart from overweight/obesity) were significantly

associated with self-rated diet health in either the bivariate or multivariable analyses. The lack of association could be a result of not enough information about diet being exchanged between physician and patient at the time of diagnosis. The physician could be a specialist and felt like it should be the role of the patient's general practitioner to follow up with diet. Individuals may not associate their diet health with being diagnosed with a disease such as heart disease or diabetes; therefore, they do not perceive their diet health to be unhealthy.

The difference between perceived health status and perceived diet health appears to rely on the physical manifestation and the perceived risk and barriers. It is easier to understand and accept the seriousness of a situation when there are clearly defined markers. In today's society the differences in social class, income, education, and race are fairly easy to recognize. An individual can look in the mirror, step on a scale, and know how their clothes fit to understand they are overweight. When the diagnosis from a medical professional is added it enhances the personal risk. With chronic conditions, like cardiovascular disease or diabetes the physical manifestations may not be a daily diet reminder, but the cues may lead to a more complete understanding of their general health. The self-perceived general health question relies on people to draw their answers from how they are physically and emotionally feeling. It can be affected by their physical health, recent or current sickness, or perceptions of fitness level. In contrast, self-rated diet health asks people to consider how healthy their diets are, not how they feel because of their diets. Self-rated diet health seems to be

based less on physical and emotional responses, and based more on the knowledge that individuals have about what constitutes a healthy diet.

Nutrition knowledge may be an important factor that impacts how people perceive their diet health. Individuals who have inadequate education and knowledge about proper diet health may not understand their diet is not healthy and still rate it as good, very good, or excellent. On the other hand, people who do have nutrition knowledge and recognize their overall diets are unhealthy would rate their diets as poor or fair. The individuals who not only have the nutrition knowledge, but put it into practice, would rate their diet health as very good or excellent. Also, the individuals who lack nutritional knowledge but think their diets are healthy may be less likely to perceive the need for change. The people with the knowledge, but the poor diet ratings might be more open and willing to make the necessary changes to their nutrition intake. Understanding what people perceive as risk is a key concept in several of the individual level theories. From that perceived risk, public health researchers and practitioners can determine the benefits from a change in behavior and address the barriers along the way to sustain the healthy change.

This analysis was not without its limitations. The cross-sectional design of the survey does not allow a longitudinal examination of how people rate their diet health, limiting observations to one point in time. Also due to the cross-sectional design, this analysis does not show a causal relationship between self-rated diet health and the health status or sociodemographic variables used. The numbers of variables used in this analysis compared with the number of variables

available from the NHANES survey were few; results could have varied if different variables had been used in the MOLR. The categorizations necessary to run the MOLR analyses may have obfuscated some potential associations; for example, due to group sizes in NHANES, Black respondents were combined with other non-White, non-Hispanic respondents, which limited the ability to detect effects of more specific racial groupings. Finally, relatively small numbers of respondents reported certain health conditions, yielding small cell sizes and possible limited power to detect some associations.

Despite these limitations, this study is important to public health for several reasons. The single 5-point self-rated diet health question is not a widely researched item; as this study has shown, it is associated with self-perceived diet health and weight status, but not with expected health conditions. Research investigating the relationship between the self-rated diet health question and actual diet, using validated food frequency questionnaires and food recall diaries, would help determine the strength between perceptions and reality related to diet health. Including assessment of nutritional knowledge would further elucidate the utility and potential applications of this question. Other informative future directions include investigating sociodemographic variables' (e.g., age, health insurance type, income) associations with self-rated diet health in finer detail. .

Although much more in-depth research is needed, self-rated diet health could help public health practitioners determine a population's understanding of their diet and focus on what people determine as important to their diet health. A heart attack diagnosis may not be enough to cause a behavioral shift in diet, but

informing patients that their BMI is in the overweight or obese category may be a strategic tool for health care providers seeking to motivate change in their patients' dietary behaviors.

Table 1. Sample characteristics and Pearson Chi-square results, by population subgroups of U.S. adults aged 20 years and older, NHANES, 2009-2010 (n=6,218). Dx = Diagnosis.

				Diet Health			Pearson Chi-Squared
	Category	Frequency	Percent	Fair/Poor # (%)	Good # (%)	Very Good/ Excellent # (%)	Sig.
Gender	Male	3006	48.3	870(48.3)	1264(48.0)	871(48.9)	0.859
	Female	3212	51.7	930(51.7)	1369(52.0)	912(51.1)	
Ethnicity/Race	Hispanic	1772	28.5	684(38.0)	760(28.9)	327(18.3)	0.000
	Black & Other	1470	23.6	436(24.2)	637(24.2)	397(22.3)	
	White-Non Hispanic	2976	47.9	680(37.8)	1236(46.9)	1059(59.4)	
Education	Less than HS	1776	28.6	666(37.1)	734(27.9)	375(21.1)	0.000
	HS or GED	1426	23.0	483(26.9)	612(23.3)	330(18.6)	
	More than HS	3001	48.4	648(36.1)	1281(48.8)	1072(60.3)	
Age	20-39	2083	33.5	728(40.4)	886(33.6)	468(26.2)	0.000
	40-59	2062	33.2	650(36.1)	902(34.3)	509(28.5)	
	60 +	2073	33.3	422(23.4)	845(32.1)	806(45.2)	
Poverty Ratio	Above 201%	2801	50.1	643(39.9)	1175(49.4)	983(61.4)	0.000
	Below 200%	2793	44.9	970(60.1)	1204(50.6)	617(38.6)	
Health Insurance	No	1563	25.1	607(33.7)	677(25.7)	278(15.6)	0.000
	Yes	4652	74.9	1193(66.3)	1954(74.3)	1504(84.4)	
Diet Health	Fair & Poor	1800	29				
	Good	2633	42.4				
	Excellent & Very Good	1783	28.7				
Body Mass Index	Normal	1588	26.9	370(21.6)	649(25.7)	569(34.2)	0.000
	Overweight	2027	34.4	509(29.8)	880(34.9)	638(38.3)	
	Obese	2285	38.7	831(48.6)	995(39.4)	457(27.5)	
Dx Overweight	Yes	2112	34	772(42.9)	864(32.8)	474(26.6)	0.000
	No	4102	66	1027(57.1)	1767(67.2)	1308(73.4)	
Dx Diabetes	Yes	725	11.7	230(12.8)	302(11.5)	192(10.8)	0.106
	No	5367	86.4	1525(84.8)	2288(86.9)	1554(87.3)	
	Borderline	122	2	44(2.4)	43(1.6)	34(1.9)	
Dx Stroke	Yes	227	3.7	70(3.9)	89(3.4)	68(3.8)	0.616
	No	5983	96.3	1727(96.1)	2540(96.6)	1714(96.2)	
Dx Congestive Heart Failure	Yes	174	2.8	52(2.9)	71(2.7)	51(2.9)	0.907
	No	6025	97.2	1740(97.1)	2558(97.3)	1725(97.1)	
DX Coronary Heart Disease	Yes	254	4.1	62(3.5)	104(4.0)	88(5.0)	0.075
	No	5936	95.9	1723(96.5)	2522(96.0)	1689(95.0)	
Dx Angina/Angina Pectoris	Yes	155	2.5	56(3.1)	61(2.3)	38(2.1)	0.128
		6045	97.5	1739(96.9)	2566(97.7)	1738(97.9)	
Dx Heart Attack	Yes	261	4.2	76(4.2)	97(3.7)	88(4.9)	0.128
	No	5940	95.8	1717(95.8)	2529(96.3)	1692(95.1)	
General Health	Fair & Poor	1349	25.2	730(46.9)	435(19.2)	182(12.0)	0.000
	Good	2119	39.6	559(35.9)	1107(48.8)	453(29.7)	
	Excellent & Very Good	1882	35.2	267(17.2)	727(32.0)	888(58.3)	

Table 2. Multiple ordinal logistic regression analysis on self-rated diet health.

		Model 1	Model 2
		Sociodemographic	Sociodemographic and health
	Category	OR (95%CI)	OR (95% CI)
Ethnicity/Race	Hispanic	.60 (.53, .68)**	.73 (.63, .84)**
	Black & Other	.76 (.70, .86)**	.88 (.77, 1.0)
	White-Non Hispanic (Ref)	1	1
Education	Less than HS	.56 (.50, .64)**	.72 (.62, .84)**
	HS or GED	.57 (.50, .65)**	.65 (.56, .75)**
	More than HS (Ref)	1	1
Age	20-39	.50 (.42, .50)**	.36 (.31, .42)**
	40-59	.55 (.49, .63)**	.54 (.50, .62)**
	60 + (Ref)	1	1
Poverty Ratio	Above 201%	1.32 (1.18, 1.47)**	1.1 (.95, 1.2)
	Below 200% (Ref)	1	1
Health Insurance	No	.83 (.73, .95)*	.82 (.71, .95)**
	Yes (Ref)	1	1
Body Mass Index	Normal		1.42 (1.20, 1.70)**
	Overweight		1.33 (1.15, 1.5)**
	Obese (Ref)		1
Dx Overweight	Yes		.70 (.65, .90)**
	No (Ref)		1
Dx Diabetes	Yes		1.20 (.80, 1.90)
	No		1.08 (.73, 1.59)
	Borderline (Ref)		1
Dx Coronary Heart Disease	Yes		1.30 (.91, 1.70)
	No		1
Dx Angina/Angina Pectoris	Yes		.90 (.60, 1.30)
	No		1
Dx Heart Attack	Yes		1.20 (.90, 1.60)
	No		1
General Health	Fair & Poor		.20 (.13, .19)**
	Good		.40 (.38, .50)**
	Excellent & Very Good		1
	Pseudo R2 - Nagelkerke	0.105	0.237

OR, odds ratio; CI, confidence interval; Dx, diagnosis. Odds ratios are significant at: *p<.05; **p<.01

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BIOGRAPHY

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