Published in final edited form as:

Fam Community Health. 2020 ; 43(1): 26–34. doi:10.1097/FCH.0000000000000249.

Perceived Family Social Support for Healthy Eating Is Related to Healthy Dietary Patterns for Native Americans:

A Cross-sectional Examination

Jennifer L. Lemacks, PhD, RD, Tammy Greer, PhD

School of Kinesiology and Nutrition (Dr Lemacks) and School of Psychology (Dr Greer), The University of Southern Mississippi, Hattiesburg.

Abstract

Native Americans continue to suffer health disparities ameliorated by healthy dietary patterns. The study objective was to determine moderating effects of perceived family social support on the relationship between ethnicity and diet behaviors. Dependent variables included dietary variables, and independent variable was family social support for healthy eating. Analyses included Pearson χ^2 and correlation, one-way analysis of variance, and regression tests. Higher social support was related to lower consumption of added sugars, sugar-sweetened beverages, and red/processed meats for Native Americans. More research is needed to confirm the moderating effect of family social support on dietary behaviors.

Keywords

family; Indians; North American; nutrition; social support

OBESITY AND preventable chronic disease are major public health issues and account for the greatest health care expenditures in the United States.¹ Health disparities are related to numerous factors, including income, race/ethnic background, and geographical location.² For example, Deep South states historically have the highest obesity prevalence rates in the country,^{3–5} particularly for those who identify as racial minorities⁴ and reside in rural areas.⁶ Native Americans who reside in the Deep South are seldom represented in the literature and are one group that generally suffer disproportionately from obesity and comorbid chronic diseases (such as diabetes and hypertension),^{7,8} which are conditions that respond readily to and are prevented by healthy diet and physical activity behaviors. For Native Americans residing in the Deep South, health behaviors may have unique cultural and geographic considerations compared with Native populations in other areas.

Diet and physical activity management are key health behaviors for the prevention and treatment of obesity and preventable chronic disease.⁹ With the goal of reduced risk for obesity and comorbid chronic diseases, the Dietary Guidelines for Americans¹⁰

Correspondence: Jennifer L. Lemacks, PhD, RD, School of Kinesiology and Nutrition, The University of Southern Mississippi, 118 College Dr #5142, Hattiesburg, MS 39406 (Jennifer.Lemacks@usm.edu).

The authors declare no conflict of interest.

recommended a healthy eating pattern that includes higher intakes of fruits and vegetables and lower intakes of meats, including red and processed meats, sugar-sweetened foods, foods with added sugars, and sugar-sweetened beverages. Calorically dense foods high in fat and sugar are oftentimes more readily available in Native American communities than more nutrient-dense food options.¹¹ However, there is limited information on the dietary behaviors of Native Americans residing in the Deep South.

Unhealthy dietary patterns are related to risk factors similar to obesity and preventable chronic diseases.^{6,12} For example, literature has shown that a more unhealthy diet pattern is associated with rural residence in the United States.¹³ Conversely, psychosocial variables are related to healthy dietary patterns. Social support, self-efficacy, and intention to change behavior have been identified as 3 major predictors of fruit and vegetable intake among young adults in China.¹⁴ Social support may be a moderator between self-efficacy for planning fruit and vegetable intake and the behavior itself.¹⁵ Thus, social support may be a critical factor to consider to promote self-efficacy for planning and healthy dietary patterns. Surprisingly, there is limited information on diet and physical activity behaviors or the relationship between diet and social support for healthy eating in populations of Native Americans located in the Deep South, a region infamous for obesity and preventable chronic disease disparities. Thus, the objective of this study was 2-fold: (1) to provide a preliminary examination of diet, physical activity, social support for healthy eating, medical history, and demographics between Southeastern Native Americans and whites; and (2) to determine the moderating effects of social support on the relationship between race and diet behaviors.

METHODS

Study setting and participants

Adults 18 years or older were recruited at 2 types of community (Indian Santa and a university-hosted PowWow) events in South Louisiana and Mississippi. Both of these were well attended by Southeastern Native Americans and were located at public venues in predominately white communities. When announcements were made by Native community leaders that surveys were available for any-one willing to participate, participants approached a booth to volunteer to complete the survey. After completion of the survey, participants were allowed to enter a gift card drawing. All human subjects protocols were approved by the University of Southern Mississippi institutional review board. Survey data collection occurring during the Indian Santa events received additional approval from the current chief and tribal council of the predominant tribe in the targeted communities. Consent information was presented at the beginning of the survey and was indicated by completion and submission of the survey to avoid collecting identifying information.

Measures

Data were collected and analyzed in year 2018. The survey consisted of multiple items to indicate diet, physical activity, social support and self-efficacy for diet, medical history, and standard demographic data (age, ethnicity, income, education, marital status, and health insurance coverage). To support the proposed objectives, diet, physical activity, social support for healthy eating, medical history, and demographic data are described and

reported. Data collection initially began with one instrument, with items later added to collect information on social support. The data collection instrument initially included only demographics, medical history, and diet and physical activity variables. Social support for healthy eating was added to the data collection instrument to support an identified research mission.

Dietary data were collected using the Dietary Screener Questionnaire that produces mean estimates that agree (differences <2%) with multiple 24-hour recall of diet.^{16,17} National Cancer Institute research team data processing and scoring procedures were followed to compute the following dietary factors: fruits and vegetables (cups per day), added sugar (teaspoons [tsp] per day), sugar from sweetened beverages (tsp per day), and red and processed meats (days consumed per week).¹⁶ Physical activity was collected using the Godwin Leisure-Time Exercise Questionnaire, with validity evidence that has indicated that respondents classified as active had higher oxygen uptake and lower body fat percentages than those who were classified as inactive¹⁸; responses to type of physical activity and times per week were used to calculate a numerical score and classify the score as insufficiently active (≤ 23) or active (>23). Social support for healthy eating behaviors was collected using an established tool¹⁹ and calculated as a mean of 5-anchor Likert responses (1 = never, 5 = very often) across 10 items (Cronbach α = 0.82 for the 10-item measure). A typical item included “During the past 3 months, my family (or members of my household) encouraged me not to eat ‘unhealthy foods’ (cake, salted chips) when I’m tempted to do so.” Half of the items (n = 5) indicated encouragement (Cronbach α = 0.82) and the other half of the items indicated discouragement of healthy eating (eg, family refused to eat same foods; Cronbach α = 0.90). Medical history information included yes or no questions that indicated whether self or immediate family member had been diagnosed with the following health conditions: overweight/obese, high blood pressure, diabetes/prediabetes, high cholesterol, high triglycerides, cancer, heart attack/stroke, or alcoholism/substance abuse.

Statistical analysis

Demographic characteristics such as level of education (dichotomized as high school or less, some college or more), household income (0-\$39 999, \$40 000 or above) marital status (single, married or cohabitating, divorced, or separated), health insurance coverage (yes, no), and gender were tested both as potential confounds (related to ethnic group or psychosocial variables) and covariates (related to diet, and exercise-dependent variables) prior to, and to inform, the main analyses. Chi-squares and analyses of variance (ANOVAs) were examined to test for potential confounds and covariates. A multivariate regression was followed by a series of moderated multiple regressions to test the hypotheses that (1) there would be unique main effects of social support on the physical activity and dietary consumption variables and (2) social support would moderate the relation between ethnicity and dietary consumption and physical activity. A series of moderated multiple regressions were conducted with each dependent variable regressed onto the main effects of ethnic group and social support, controlling for covariates, and the ethnic group $\times$ social support interaction. To determine whether there was sufficient power to detect main effects and interactions in a full regression model, a power analysis was conducted with G*Power 3.1. Pearson

correlation analyses were used to examine associations between dietary variables and social support for each ethnic group.

RESULTS

A total of 97 individuals completed survey items regarding diet, exercise, and disease status. Because of low responses from participants who reported as Hispanic ($n = 5$) or did not report ethnicity/race ($n = 5$), 10 participants were removed from the sample. Fifty-six Native Americans and 31 whites were retained for further analyses. Of those, a smaller group ($n = 43$) completed the second wave of surveys that included social support, resulting in 23 Native Americans and 20 whites for those analyses. Tables 1 and 2 describes demographics, medical history, and diet and physical activity behaviors of Native American and white participants.

Testing for potential confounds

Pearson χ^2 results from analyses of the associations of ethnic group with demographic variables including education ($n = 43$, χ^2_1 , $P = .99$), income ($n = 41$, χ^2_1 , $P = .31$), marital status ($n = 43$, χ^2_2 , $P = .34$), health insurance coverage ($n = 42$, χ^2_1 , $P = .56$), and gender ($n = 42$, χ^2_1 , $P = .57$) indicated no significant associations between any demographic characteristics and ethnic group. One-way ANOVA results indicated no age differences as a function of ethnic group ($F_{1,40} = 0.02$, $P = .89$). Also, there were no differences in social support as a function of ethnic group ($F_{1,41} = 0.53$, $P = .47$), education ($F_{1,41} = 0.23$, $P = .63$), income ($F_{1,39} = 0.09$, $P = .77$), marital status ($F_{2,40} = 0.36$, $P = .70$), health insurance coverage ($F_{1,40} = 0.06$, $P = .81$), or gender ($F_{1,40} = 0.11$, $P = .75$). There was no correlation between age and social support ($N = 42$, $r = 0.11$, $P = .50$).

Testing for potential covariates

ANOVA results indicated no significant effects of income or marital status on any of the dependent variables. Education was related to consumption of fruits and vegetables ($F_{1,41} = 7.78$, $P < .01$), with participants having some college education or more reporting a greater consumption of fruits and vegetables ($M = 4.54$, $SD = 0.55$) than those having a high school education or less ($M = 3.65$, $SD = 1.07$). Therefore, education was covaried in analyses involving consumption of fruits and vegetables as the dependent variable. Finally, consumption of sweetened beverages and added sugar was related to age ($r = -0.374$, $P = .02$ and $r = -0.356$, $P = .02$, respectively), with older participants reporting less sugar consumption than younger participants and thus age was covaried in analyses with those dependent variables.

Omnibus analyses

To control for type I error in running multiple analyses, a multivariate regression was conducted with a composite dependent variable regressed onto a composite independent variable (ethnic group, social support, and the ethnic group $\times$ social support interaction). Results from the multivariate regression indicated a Wilks $\lambda = 0.39$ ($F_{18,85.34} = 1.86$, $P = .03$) for the entire model. This significant multivariate test was followed with a series of

univariate regressions of each diet variable and leisure activity regressed onto the main effects of ethnic group and social support, along with any covariates, and the ethnic group $\times$ social support interaction.

Main analyses

As can be seen in Table 3, for the criterion variables of added sugar, sweetened beverages, and red and processed meats, the pattern was similar—no main effects of ethnic group or social support were present, but significant ethnic group $\times$ social support interactions were revealed, accompanied by a significant overall model. The interactions, located in Figures 1 and 2, displayed similar patterns, as well with increases in social support corresponding to decreases in consumption of added sugar, sweetened beverages, and red and processed meats for Native Americans but increases in the consumption of those foods for whites.

The pattern changed with fruits and vegetables intake and leisure activity as the criteria. As can be seen in Table 3, although the main effects and overall models were significant, only the covariate of education ($b = 0.89$, $t = 3.52$, $P < .01$) predicted fruit and vegetable intake. Participants who had some college education or more consumed more fruits and vegetables than participants with a high school degree or less. Leisure activity is not shown in Table 3, as there were no main effects and no ethnic group $\times$ social support interaction, and the overall model was not significant ($F_{3,35} = 0.47$, $P = .71$).

Post hoc analyses—Results from the power analysis indicated that power was sufficient (0.84) to detect an $R^2 = 0.25$ (between medium and large effects) for the full model having 3 predictors, using $\alpha = .05$, and having a total $N = 43$.

Correlation analyses

Pearson correlation analyses revealed significant, moderate inverse relationships between social support and processed meat consumption, sugar-sweetened beverages, and added sugar for Native Americans (see Table 4). Significant, moderate positive relationships were identified between red meat consumption, sugar-sweetened beverages, and added sugar for whites.

DISCUSSION

This study examined diet and physical activity behaviors of Native Americans who were on average younger but otherwise similar to whites with regard to distribution of gender, education, income, marital status, health insurance status, and medical history. Older participants reported consumption of less added sugar and fewer sugar-sweetened beverages, whereas those with higher education levels reported higher fruit and vegetable intakes; this finding was consistent in regression analyses where age and education were significant predictors of the added sugar and sugar-sweetened beverages and fruit and vegetable intake, respectively. Ethnicity was found to be a moderator of the relationship between social support and added sugar, sugar-sweetened beverages, and red and processed meat consumption, where an interaction was identified between high intakes of the aforementioned dietary variables and low social support levels among Native Americans; the

opposite was found for whites. Significant correlations were also noted to indicate that greater social support levels were associated with lower intakes of red meat, processed meat, sugar-sweetened beverage, and added sugar consumption among Native Americans whereas as greater intakes of red meat, sugar-sweetened beverages, and added sugar were associated with higher social support levels among whites.

The impact of age, education, and income on dietary intake and quality is well established in the literature. From a sample of 4986 Americans, 2003–2004 National Health and Nutrition Examination Survey data indicated that adults with higher education and income levels generally had higher diet quality scores, as measured by the Health Eating Index-2005 (HEI-2005).²⁰ Those same data also indicated that both whites and American Indians/Alaskan Natives had high intakes of added sugar, which was inversely related to educational level and family income reported as the percentage of poverty level for both groups.²¹ In addition, HEI-2005 scores and added sugar intake were inversely associated with age.^{20,21} While our study did find that age was a significant covariate for added sugar and sugar-sweetened beverage intakes and education was a significant covariate for fruit and vegetable intake, income was not identified as a potential covariate. This may be due to the homogeneity of the sample, as two-thirds reported household incomes less than \$40 000 per year, and this restricted range in income is one limitation of this study.

Previous literature indicates that social support is a predictor of fruit and vegetable intake. A 2008 review of psychosocial determinants of fruit and vegetable intake found 3 strong predictors including social support for healthy diet as well as knowledge of healthy diet and self-efficacy for diet.¹⁴ Our findings indicate that social support facilitates the reduction of unhealthy foods but not the increase in healthy foods and has no impact on activity levels among the captured sample of Southeastern Native Americans. The findings were contrary between groups and require further exploration to establish the relationship differences between groups and identify cultural implications for nutrition education and behavior management among Southeastern Native Americans compared with whites. While our sample sizes are relatively small, power calculations and the consistency of results across dietary variables indicate that sample size is sufficient to detect this magnitude of effects. Although these results are not necessarily generalizable to populations of Native Americans and whites across the United States, the relationships and interactions identified through this preliminary research provide a clear need to confirm these relationships in larger populations, for different groups of Native Americans and whites, and to explore the implications for disease prevention and behavior management interventions for Native Americans. Our study fills a gap in the literature by elucidating the differences between Native Americans and whites as it pertains to the relationship between social support and dietary patterns.

There are several limitations and strengths of this research to be noted and/or discussed. As previously alluded to, sample size and generalizability are limitations of this research. These findings should be confirmed in larger samples to establish the moderating effect of social support on diet in Southeastern Native Americans and whites and how those relationships differ between the 2 groups. Our results were not expected to be generalizable to populations outside the Deep South but are worth exploration in those populations to determine

similarities and differences across the United States. In addition, we cannot distinguish whether white participants were related to Native American participants, as well as where each participant resided (whether on or off a reservation or residents of the immediate area or not) and tribal membership. We recognize there may be differences within Deep South communities and not accounting for residence, tribal membership, and familial associations may have introduced bias to the study findings. Because of such stark model differences between Native Americans and whites, it is doubtful that a large number of white participants were immediate relations to Native American participants. In addition, it is noteworthy that because Deep South tribal communities are smaller than other tribes in the United States, confidentiality and privacy were maintained and protected by not collecting tribal affiliation and residence information. Other limitations include those typical of the use of self-report instruments and survey data collection methods.

One strength is that this article represented a Southeastern group that is culturally and geographically different from other groups and underrepresented in the literature. In addition, both groups were comparable with each other based on several descriptive indicators (see Table 1). A final, major strength and unique contribution of this research is that it supports social support as a critical determinant of dietary behaviors for Native Americans and establishes that the psychosocial determinant operates differently for whites. Native American individuals are inseparable from their families, which are deeply embedded in their communities.²² Native Americans may be more successful at adopting and adhering to diet and physical activity recommendations with the understanding, help, and support of their families and communities. Family support of dietary behaviors has been shown to improve diabetes control among Navajo members,²³ and family support has been related to readiness to make behavior change at baseline among African Americans²⁴ and the adoption of behavioral strategies among Latinas.²⁵ On the contrary, lack of family support has been linked to greater weight at baseline and less weight lost over the course of the Special Diabetes Program for Indians Diabetes Prevention,²⁶ where members have reported social interaction and learning how to gain family support as benefits to diabetes education interventions.²⁷ There is a dearth of literature on the subject and clearly more work is needed to elucidate the moderating effect of social support and other constructs on dietary behaviors and resulting health outcomes among Native Americans.

As the model is established, research will benefit from examining the effectiveness and sustainability of intervention strategies to bolster social support and improve dietary patterns among Native Americans. In light of these results, we are currently conducting focus groups to determine Southeastern Native American values related to weight, diet, and physical activity, as well as facilitators and barriers to diet and physical activity behaviors. Our results lend considerable practice as well as research implications for disease prevention and behavior management approaches and pose more questions that need to be addressed in future qualitative and quantitative research.

Acknowledgments

The authors thank all staff, students, and community members who were an integral part of this research and made the work possible.

The authors were supported by the Mississippi INBRE, funded by an Institutional Development Award (IDeA) from the National Institute of General Medical Sciences of the National Institutes of Health under grant number P20GM103476.

REFERENCES

1. Bauer UE, Briss PA, Goodman RA, Bowman BA. Prevention of chronic disease in the 21st century: elimination of the leading preventable causes of premature death and disability in the USA. *Lancet*. 2014;384(9937):45–52. doi:10.1016/S0140-6736(14)60648-6. [PubMed: 24996589]
2. Frieden T CDC health disparities and inequalities report. *MMWR Morb Mortal Wkly Rep Suppl* Past Vol. 2013; 62(S3):1–187.
3. Writing Group Members, , Mozaffarian D, Benjamin EJ, Go AS, et al. Executive summary: heart disease and stroke statistics-2016 update: a report from the American Heart Association. *Circulation*. 2016;133(4):447–454. doi:10.1161/CIR.0000000000000366. [PubMed: 26811276]
4. Centers for Disease Control and Prevention. Overweight and obesity. <https://www.cdc.gov/obesity/>. Published 2017 Accessed June 26, 2017.
5. Trivedi T, Liu J, Probst JC, Martin AB. The metabolic syndrome: are rural residents at increased risk? *J Rural Health*. 2013;29(2):188–197. doi:10.1111/j.1748-0361.2012.00422.x. [PubMed: 23551649]
6. Trivedi T, Liu J, Probst J, Merchant A, Jhones S, Martin AB. Obesity and obesity-related behaviors among rural and urban adults in the USA. *Rural Remote Health*. 2015;15(4):3267. [PubMed: 26458564]
7. Hutchinson RN, Shin S. Systematic review of health disparities for cardiovascular diseases and associated factors among American Indian and Alaska Native populations. *PLoS One*. 2014;9(1):e80973. doi:10.1371/journal.pone.0080973. [PubMed: 24454685]
8. CDC/National Center for Health Statistics. National Health Interview Survey. Tables of summary health statistics. <https://www.cdc.gov/nchs/nhis/shs/tables.htm>. Accessed December 18, 2018.
9. Allison RL. Back to basics: the effect of healthy diet and exercise on chronic disease management. *S D Med*. 2017;Spec No.:10–18. <http://www.ncbi.nlm.nih.gov/pubmed/28817856>. Accessed February 6, 2019. [PubMed: 28817856]
10. US Department of Health and Human Services, US Department of Agriculture. 2015–2020 dietary guidelines for Americans. <https://health.gov/dietaryguidelines/2015>. Published 2015 Accessed February 6, 2019.
11. Chodur GM, Shen Y, Kodish S, et al. Food environments around American Indian Reservations: a mixed methods study. *PLoS One*. 2016;11(8):e0161132. doi:10.1371/journal.pone.0161132. [PubMed: 27560132]
12. LaVeist T, Pollack K, Thorpe R, Fesahazion R, Gaskin D. Place, not race: disparities dissipate in southwest Baltimore when blacks and whites live under similar conditions. *Health Aff (Millwood)*. 2011;30(10):1880–1887. doi:10.1377/hlthaff.2011.0640. [PubMed: 21976330]
13. Tseng M, DeVillis R. Correlates of the “Western” and “prudent” diet patterns in the US. *Ann Epidemiol*. 2000; 10(7):481–482.
14. Shaikh AR, Yaroch AL, Nebeling L, Yeh M-C, Resnicow K. Psychosocial predictors of fruit and vegetable consumption in adults a review of the literature. *Am J Prev Med*. 2008;34(6):535–543. doi:10.1016/j.amepre.2007.12.028. [PubMed: 18471592]
15. Zhou G, Gan Y, Hamilton K, Schwarzer R. The role of social support and self-efficacy for planning fruit and vegetable intake. *J Nutr Educ Behav*. 2017;49(2):100–106.e1. doi:10.1016/j.jneb.2016.09.005. [PubMed: 27780668]
16. National Cancer Institute, Division of Cancer Control and Population Sciences. Dietary Screener Questionnaires (DSQ) in the NHANES 2009–10: DSQ. <https://epi.grants.cancer.gov/nhanes/dietscreen/questionnaires.html>. Accessed December 18, 2018.
17. Thompson FE, Midthune D, Kahle L, Dodd KW. Development and evaluation of the National Cancer Institute’s Dietary Screener Questionnaire scoring algorithms. *J Nutr*. 2017;147(6):1226–1233. doi:10.3945/jn.116.246058. [PubMed: 28490673]

18. Amireault S, Godin G. The Godin-Shephard Leisure-Time Physical Activity Questionnaire: validity evidence supporting its use for classifying healthy adults into active and insufficiently active categories. *Percept Mot Skills*. 2015;120(2):604–622. doi:10.2466/03.27.PMS.120v19x7. [PubMed: 25799030]
19. Sallis JF, Grossman RM, Pinski RB, Patterson TL, Nader PR. The development of scales to measure social support for diet and exercise behaviors. *Prev Med (Baltim)*. 1987;16(6):825–836.
20. Hiza HAB, Casavale KO, Guenther PM, Davis CA. Diet quality of Americans differs by age, sex, race/ethnicity, income, and education level. *J Acad Nutr Diet*. 2013;113(2): 297–306. doi:10.1016/J.JAND.2012.08.011. [PubMed: 23168270]
21. Thompson FE, McNeel TS, Dowling EC, Midthune D, Morrisette M, Zeruto CA. Interrelationships of added sugars intake, socioeconomic status, and race/ethnicity in adults in the United States: National Health Interview Survey, 2005. *J Am Diet Assoc*. 2009;109(8):1376–1383. doi:10.1016/j.jada.2009.05.002. [PubMed: 19631043]
22. Martin D, Yurkovich E. “Close-knit” defines a healthy Native American Indian family. *J Fam Nurs*. 2014;20(1):51–72. doi:10.1177/1074840713508604. [PubMed: 24122578]
23. Epple C, Wright AL, Joish VN, Bauer M. The role of active family nutritional support in Navajos’ type 2 diabetes metabolic control. *Diabetes Care*. 2003;26(10):2829–2834. doi:10.2337/DIACARE.26.10.2829. [PubMed: 14514587]
24. Bui T, Van Hersh A, Lemacks J, Choi H. Examining the stage of behavioral change for weight loss and related factors in African American young adults in South Mississippi. Paper presented at: Mississippi INBRE Conference; 7 27, 2017; Jackson, MS.
25. Schmied EA, Parada H, Horton LA, Madanat H, Ayala GX. Family support is associated with behavioral strategies for healthy eating among Latinas. *Health Educ Behav*. 2014;41(1):34–41. doi:10.1177/1090198113485754. [PubMed: 23711676]
26. Dill EJ, Manson SM, Jiang L, et al. Psychosocial predictors of weight loss among American Indian and Alaska Native participants in a diabetes prevention translational project. *J Diabetes Res*. 2016;2016:1–10. doi:10.1155/2016/1546939.
27. Griffin J, Gilliland S, Perez G, Heliter D, Cater J. Participant satisfaction with a culturally appropriate diabetes education program: the Native American diabetes project. *Diabetes Educ*. 1999;25(3):351–363. [PubMed: 10531855]

Figure 1.
Regression lines and interaction of social support and added sugar and sugar-sweetened beverages for white and Native Americans.

Figure 2. Regression lines and interaction of social support and red and processed meat consumption for white and Native Americans.

TABLE 1.

Demographics and Medical History Comparisons

	Native American (n = 56)	White (n = 31)
	Mean (SD)	
Age ^a y	39.1 (15.4)	44.4(15.4)
Other demographics	% (n)	
Gender		
Female	66.1 (37)	58.1 (18)
Education		
Some college or more	53.6 (30)	51.6 (16)
Income		
<\$40000	60.7 (34)	58.1 (18)
Marital status		
Married or cohabitating	53.6 (30)	48.4(15)
Health coverage/insurance		
Yes	83.9 (47)	80.6 (25)
Medical history (n = 87)	% (n)	
Overweight/obesity	50.0 (28)	48.4(15)
Prediabetes/diabetes	14.3 (8)	22.6 (7)
Hypertension	30.4 (17)	36.7 (11)
Hypercholesteremia	23.2 (13)	23.3 (7)
Alcoholism/substance abuse	10.7 (6)	9.7 (3)

^aSignificant group difference at $P < .05$.

TABLE 2.

Diet and Physical Activity Data Comparisons Between Native and White Americans (N = 65)^a

	Native American (n = 44), % (n)	White (n = 21), % (n)
Godin Leisure Activity		
Active Classification	41.1 (23)	35.5 (11)
Fruit and vegetables, mean (SD), cups/d	4.25 (.76)	4.23 (.89)
Added sugars, mean (SD), tsp/d	3.72 (.61)	3.55 (.74)
Sugar from sweetened beverages, mean (SD), tsp/d	5.63 (2.62)	5.09 (2.63)
Red meat, mean (SD), d/wk	3.75 (1.88)	3.23 (1.96)
Processed meat, mean (SD), d/wk	2.91 (1.77)	2.97 (1.98)

Abbreviation: tsp, teaspoon.

^aData were missing for 12 Native Americans and 10 White, resulting in n = 44 and 21, respectively.

TABLE 3.
Main Regression Analyses With Race, Social Support, and Covariates as Predictors of Dietary Consumption Variables

Independent Variables	Dependent Variables														
	Added Sugar ^a			Sugar-Sweetened Beverages ^a			Red Meat ^b			Processed Meat ^b			Fruits and Vegetables ^c		
	<i>b</i>	<i>t</i>	<i>P</i>	<i>b</i>	<i>t</i>	<i>P</i>	<i>b</i>	<i>t</i>	<i>P</i>	<i>b</i>	<i>t</i>	<i>P</i>	<i>b</i>	<i>t</i>	<i>P</i>
Step 1	$R^2 = 0.16, F_{3,38} = 2.39, P = .08$			$R^2 = 0.15, F_{3,38} = 2.23, P = .10$			$R^2 = 0.02, F_{2,40} = 0.32, P = .73$			$R^2 = 0.03, F_{2,40} = 0.71, P = .50$			$R^2 = 0.24, F_{3,39} = 4.18, P = .01$		
Race	-.013	-.072	.47	-.053	-.062	.54	-.046	-.078	.44	-.045	-.085	.40	0.018	0.08	.94
Social support	-.014	-1.05	.30	-.022	-0.35	.73	0.03	0.08	.94	-0.35	-0.93	.36	0.014	0.08	.94
Covariate	-.001	-2.28	.03	-0.07	-2.46	.02	...	...	...	...	...	...	0.89	3.52	.001
Step 2	$R^2 = 0.28, F_{4,37} = 18.08, P < .01$			$R^2 = 0.19, F_{4,37} = 10.77, P < .01$			$R^2 = 0.26, F_{4,39} = 13.85, P < .01$			$R^2 = 0.16, F_{4,39} = 7.47, P < .01$			$R^2 = 0.04, F_{1,38} = 2.33, P = .14$		
Race	-3.64	-4.34	<.001	-14.06	-3.35	.002	-10.72	-3.82	<.001	-7.72	-2.85	.007	-1.95	-1.49	.14
Social support	-.047	-3.48	.001	-1.49	-2.22	.03	-.090	-2.03	.05	-1.01	-2.37	.02	-0.165	-0.80	.43
Covariate	-.001	-2.44	.02	-0.06	-2.52	.02	...	...	...	...	...	...	0.91	3.65	.001
Race × Social support	0.99	4.25	<.001	13.60	3.28	.002	2.91	3.72	.001	2.06	2.73	.009	0.56	1.53	.14
Overall model	$R^2 = 0.44, F_{4,37} = 7.11, P < .01$			$R^2 = 0.34, F_{4,37} = 4.80, P < .01$			$R^2 = 0.27, F_{3,39} = 4.90, P < .01$			$R^2 = 0.44, F_{3,39} = 3.04, P = .04$			$R^2 = 0.29, F_{4,38} = 3.82, P = .01$		

^a Age included as a covariate based on results from the “Testing for Potential Covariates” section.

^b No covariates analyzed on the basis of results from the “Testing for Potential Covariates” section.

^c Education included as a covariate based on results from the “Testing for Potential Covariates” section.

TABLE 4.
Pearson Correlation Analyses Between Social Support and Dietary Consumption Variables for White and Native Americans

	Red Meat Consumption, d/wk	Processed Meat Consumption, d/wk	Sugar-Sweetened Beverages, tsp/d	Added Sugar, tsp/d
<i>Native American</i>				
Social support				
<i>r</i>	−0.37	−0.48	−0.43	−0.63
<i>P</i>	0.083	0.022	0.054	0.002
<i>n</i>	23	23	19	19
<i>White</i>				
Social support				
<i>r</i>	0.66	0.31	0.55	0.52
<i>P</i>	0.001	0.168	0.012	0.019
<i>n</i>	21	21	18	18

Abbreviation: tsp, teaspoon.