Published in final edited form as:
J Community Health. 2012 February ; 37(1): 65–71. doi:10.1007/s10900-011-9417-z.

Physical Activity and Fruit and Vegetable Intake Among American Indians

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Abstract

The American Indian population has among the highest rates of obesity in the United States. Thus, it is critical to understand factors related to this epidemic (e.g., physical activity, nutrition) among this ethnic minority population. The current study examined factors related to engaging in at least

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Conflict of Interest None.

4 days of physical activity (PA) per week and factors related to consuming at least 5 fruits and vegetables (FV) per day among a sample of American Indians in the Midwest. We used multiple methods to recruit participants for this study, including recruitment at pow wows, focus groups, health fairs, new student orientation for American Indian students, and other venues. A total of 998 American Indians (76% participation rate) completed a survey assessing sociodemographics, physical activity level, fruit and vegetable intake, and perceptions regarding the recommendations for physical activity and fruit and vegetable intake. Factors associated with exercising ≥4 days in the past week (44.77% of the sample) include being younger ($P = .002$), being male ($P<.001$), having at least some college education ($P = .048$), eating ≥5 FV per day, and higher perceived number of days of PA recommended ($P<.001$). Factors associated with eating ≥5 servings of FV per day (37.01% of the sample) included exercising ≥4 days in the past week ($P<.001$) and higher perceived number of servings of FV recommended ($P<.001$). These findings highlight the importance of education in enhancing engagement in positive weight control behaviors and the importance of addressing both physical activity and nutrition among the American Indian population.

Keywords

American Indian; Nutrition; Physical activity; Weight

Introduction

Available data indicate that the prevalence of overweight and obesity in American Indian children and adults is higher than the respective US rates for all races combined [1–3], and trends over long periods of time indicate increasing rates of overweight and obesity for this community [1, 4]. Although studies have found regional [2, 5] and age-related [6, 7] variation in prevalence rates, a recent study documented the median prevalence of obesity to be 39.2 and 37.5% among American Indian men and women, respectively [8].

Known obesity-related health risks for American Indian adults include increased likelihood of type 2 diabetes, hypertension, cardiovascular disease, and problems with lipid levels [9]. Although there is little information about the economic costs of obesity that is specific to American Indians, obesity and overweight among all Americans are associated with both direct (e.g., preventive, diagnostic and treatment services) and indirect costs (e.g., value of lost wages). Most of these costs are due to type 2 diabetes, coronary heart disease, and hypertension [10]. Additionally, there are psychosocial consequences of being overweight or obese among this population. Research has documented that American Indians are concerned about their weight, are dissatisfied with being overweight, suffer from social stigmatization related to being overweight, and engage in practices to lose weight, particularly among the overweight [11–14]. Thus, addressing obesity and overweight among the American Indian population is critical to minimize the related detrimental effects.

Two lifestyle factors contributing to being overweight or obese include nutrition and physical activity. Research findings pertaining to the American Indian population indicate that adults and children understand that obesity, diabetes, heart disease, and hypertension are related to dietary behavior and physical activity [15–17]. Despite this knowledge, many factors impede the population's ability to maintain a lifestyle with the proper dietary intake or the requisite physical activity. In terms of nutrition, one study found that only 21% of American Indian adults consume the number of servings of fruits and only 34% of them consume the number of servings of vegetables recommended by the USDA [18]. Unfortunately, the high rates of poverty and unemployment limit access to healthy foods and promote utilization of commodity foods [19]. While tribal administrators of the commodity

programs have strived for improvements in the content, quality, and variety of foods offered, there is still significant room for improvement [20]. Thus, there are critical factors present within the American Indian environment that may hinder their ability to access and consume fruits and vegetables, as well as other important foods.

In terms of physical activity, the course of events in the history of the American Indian population has caused them to shift from a traditional subsistence lifestyle to a more sedentary one that involves much less physical activity [21,22]. Several studies [21, 23] have found low physical activity levels among American Indians living on reservations [6]. These studies suggest that environmental interventions are needed to increase opportunities for physical activity, to address barriers to physical activity on reservations, and to increase social support for making lifestyle changes that include the proper nutrition and physical activity [13, 15].

Despite the widespread obesity among American Indians, there is a paucity of data on their physical activity and dietary behaviors [24] or the factors influencing their activity levels and nutrition. Thus, the current study examined (1) levels of physical activity (PA) and fruit and vegetable (FV) intake among American Indians; and (2) factors related to engaging in at least 4 days of PA per week and to consuming at least 5 FV per day.

Methods

Study Participants

Because there is no comprehensive list of American Indian residents of Kansas or the region, we used multiple methods to recruit participants for this study. We used the following methods to recruit all participants for this study: Pow wows, focus groups, health fairs, new student orientation for American Indian students, and other various American Indian events in the region. We recruited 207 participants from pow wows in the Kansas region, 211 from focus groups, 124 from health fairs and physicals, 275 from career fairs and conferences, and the remaining 181 from various other events and referrals from other participants. We recruited a total of 998 American Indians in the region from May 2008 to December 2009. The participation rate for this study was approximately 76% across all methods of recruitment. Participants were reimbursed with a $10 gift card for their time and participation in the study. Each participant completed a self-administered survey which took approximately 20 min to complete.

Men and women who self-identified as American Indian (only or in part) and were at least 18 years of age were eligible to participate in the study. The survey included questions about general health, participant demographics, traditional tobacco use, commercial tobacco use, knowledge and attitudes related to cancer, use of the internet, source of health information and health care, other health related behaviors. This study was approved by the Human Subjects Committee of the University of Kansas Medical Center.

Measures

Sociodemographics—We assessed age, gender, education level, where they grew up (urban areas, rural areas, or reservations), marital status, whether there were children present in the home, and whether they had insurance.

Physical Activity—To assess level of physical activity (PA), participants were asked, “During the past month, did you participate in any physical activities or exercises such as running, aerobics, golf, gardening, or walking for exercise?” and “In a normal week, how many days do you do any physical activity or exercise that makes you breathe somewhat

harder than normal?" To assess perceptions of appropriate physical activity, participants were asked, "How many days a week of moderate intensity activity should a person get to stay healthy?"

Fruit and Vegetable Intake—To assess fruit and vegetable intake (FV intake), participants were asked, "How many servings of fruits do you usually eat or drink each day?" and "How many servings of vegetables do you usually eat or drink each day?" Responses to these two questions were aggregated to get an assessment of total average FV intake daily. To assess perceptions of appropriate fruit and vegetable intake, participants were asked, "How many servings of fruits and vegetables should a person eat each day for good health?"

Data Analysis

Based on the recommendations for appropriate PA [25] and FV intake [26] and the distributions of the data, we dichotomized the PA variable as <4 days of PA per week versus ≥4 days of PA per week, and we dichotomized the FV variable as <5 servings of FV per week versus ≥5 servings of FV per week.

Participant characteristics were summarized using means and standard deviations and N and percentages. We then conducted bivariate analyses examining differences between participants engaging in <4 days of PA per week versus those engaging in ≥4 days of PA per week and differences between participants consuming <5 FV daily versus those consuming ≥5 FV daily. Finally, we conducted two binary logistic regression models examining factors related to ≥4 days of PA per week and factors related to ≥5 servings of FV daily. We forced gender, age, and education level into the models and then used forwards stepwise entry for factors that were significant at $P<0.10$ in the bivariate analyses, allowing only those variables that significantly contribute to the models at $P<0.05$ to remain in the models. All analyses were conducted using SAS version 9.1.

Results

Table 1 displays the characteristics of the study sample, as well as bivariate analyses of (1) those participants exercising ≥4 days in the past week (44.77% of the sample) versus those who did not and (2) those participants eating ≥5 servings of FV per day (37.01% of the sample) versus those who did not. Factors associated with ≥4 days of PA in the past week included being younger ($P<0.001$), being male ($P<0.001$), being single ($P = 0.018$), not having children ($P = 0.002$), perceived number of days of recommended PA ($P<0.001$), and having consumed ≥5 FV per day ($P<0.001$). Factors associated with ≥5 FV consumed on average per day included exercising ≥4 days per week ($P<0.001$) and perceived number of recommended servings of FV per day ($P<0.001$).

Table 2 displays the binary logistic regression models for (1) those participants exercising ≥4 days in the past week versus those who did not and (2) those participants eating ≥5 servings of FV per day versus those who did not. Factors associated with exercising ≥4 days in the past week include being younger ($P = 0.002$), being male ($P<0.001$), having at least some college education ($P = 0.048$), eating ≥5 FV per day, and higher perceived number of days of PA recommended ($P<0.001$). Factors associated with eating ≥5 servings of FV per day included exercising ≥4 days in the past week ($P<0.001$) and higher perceived number of servings of FV recommended ($P<0.001$).

Discussion

This study is important as it adds to the limited literature available documenting rates of and correlates of achieving the recommended level of PA and FV intake among American Indians. Unfortunately, we found that only 45% of the sample met the recommended level of physical activity in the last week and only 37% consumed the recommended level of FV per day. Previous research [27] documented that roughly 53% of American Indians were regularly active, which is slightly higher than in our sample. In this study [27], American Indians reported being regularly active more frequently than Whites (51%), Blacks (40%), and Hispanics (42%). In addition, this research found that 24% of men and 33% of women within the American Indian population consuming at least 5 FV per day [27], which is slightly lower than in our study. In part that might be due to the representation of college students in our sample, who may have had FV more readily available on their campus. Prior research suggests that, overall, American Indians are less likely to consume the requisite number of FV in comparison to Whites, Blacks, and Hispanics [27].

One particularly useful finding from the current study is that perceiving the recommended number of days of PA per week and the recommended number of servings of FV per day as being greater were related to exercising at least 4 days per week and consuming at least five FV per day. This highlights the importance of education and knowledge in engaging in positive health promoting behaviors. There has been some research [4, 28, 29] that indicate that American Indians view overweight/obesity as normal and healthy, given their history of malnourishment and lack of available foods [18]. Perhaps some of the sociodemographic correlates of engaging in physical activity (i.e., younger age, greater education) might also reflect more education regarding being knowledgeable about weight- and health-related issues. Likewise, those who exercise more also consume more fruits and vegetables. Thus, education, knowledge, and perceptions are critical factors in improving weight-related health behaviors.

Unfortunately, intervention research in the area of obesity prevention specifically targeting the American Indian population is in its infancy. One critical intervention study, the Diabetes Prevention Program (DPP), included American Indians but was not limited to them. This study found that the Lifestyle Balance intervention was significantly more effective in reducing the incidence of diabetes and resulted in greater weight loss and increase in leisure physical activity than the placebo or the drug metformin [30, 31]. Additionally, several of the school and/or community-based approaches targeting American Indians have not found significant changes in youth overweight/obesity [32–34]. However, findings from these studies did indicate changes in mediating variables involving knowledge, attitudes or behaviors such as increase in healthy food choices at school, additional classroom diabetes-prevention activities, positive changes in the school nutrition policy, addition of community walking paths, changes in high calorie beverage consumption, increased physical activity while at school, or reduced TV watching. Perhaps follow-up periods were not delayed enough to detect changes in weight that reflected these knowledge and behavioral changes.

Several emerging trends were apparent in reviewing intervention studies currently being implemented by federal agencies, although many of these projects have not yet completed a formal evaluation. First, in addition to behavioral approaches, several studies have focused on environmental interventions (i.e., walking trails, diet sodas in vending machines, etc.). Also, many current studies are multi-level and multi-component interventions that involve several levels of the social-ecological model (i.e., community, school, individual, family) as well as more than one key strategy (i.e., physical activity, nutrition education, tailored materials, etc.). Given the limited successful interventions in the area of weight management

and obesity prevention targeting American Indians, research should examine additional potential intervention targets and examine other intervention strategies.

Limitations

Some limitations to this research exist. First, our recruitment methods (from pow wows, focus groups, health fairs, student orientations for American Indian students, etc.) suggests that we our sample is not representative to American Indians in the Midwest or in the US more generally. Also, the cross-sectional nature of the study does not allow for us to ascertain causal relationships. Finally, we relied on self-reported data, which is likely to be influenced by bias or social desirability. Despite these limitations, this study including a sample size of almost 1,000 participants is important and makes a significant contribution to the field given the paucity of data available in this population.

Conclusions

This study highlights important and novel findings regarding achieving the recommended level of PA and FV intake among American Indians. Given that perceived number of days of PA per week and number of servings of FV per day recommended were related to healthier weight-related behavior, education and knowledge are critical to promote positive weight-related behaviors.

Acknowledgments

This research was funded by the National Institute on Minority Health and Health Disparities (R24MD002773; PI: Daley) and the American Lung Association (SB-40588-N; PI: Daley). Dr. Ahluwalia is supported in part by 1P60MD003422 from the National Institute on Minority Health and Health Disparities at the NIH.

References

1. Zephier E, Himes JH, Story M. Prevalence of overweight & obesity in American Indian school children and adolescents in the Aberdeen area: A population study. International Journal of Obesity Related Metabolic Disorders. 1999; 23(suppl):S28–S30.
2. Denny C, Holtzmann D, Cobb N. Surveillance for health behaviors of American Indians and Alaska natives: Findings from the behavioral risk factor surveillance system, 1997–2000. Morbidity and Mortality Weekly Report. 2003; 52(SS-7):1–13.
3. Centers for Disease Control and Prevention. Health United States, 2005 with Chartbook on Trends in the Health of Americans. US Department of Health and Human Services, CDC, National Center for Health Statistics; Hyattsville, MD: 2005.
4. White LL, Ballew C, Gilbert TJ, Mendlein JM, Mokdad AH, Strauss KF. Weight, body image, and weight control practices of Navajo Indians: Findings from the Navajo Health and Nutrition Survey. Journal of Nutrition. 1997; 127(10 Suppl):2094S–2098S. [PubMed: 9339175]
5. Caballero B, Himes JH, Lohman T, Davis SM, Stevens J, Evans M, et al. Body composition and overweight prevalence in 1704 schoolchildren from 7 American Indian communities. American Journal of Clinical Nutrition. 2003; 78(2):308–312. [PubMed: 12885714]
6. Gray A, Smith C. Fitness, dietary intake, and body mass index in urban native American youth. Journal of the American Dietetics Association. 2003; 103(9):1187–1191.
7. Giuliano A. Prevalence of chronic disease risk and protective behaviors among American Indian women living on the hopi reservation. Annals of Epidemiology. 1998; 8(3):160–167. [PubMed: 9549001]
8. Liao Y, Tucker P, Okoro CA, Giles WH, Mokdad AH, Harris VB. REACH 2010 Surveillance for health status in minority communities: United States, 2001–2002. Morbidity & Mortality Weekly Report Surveillance Summary. 2004; 53:1–36.
9. National Research Council Committee on Diet and Health (NRCCDH). Diet and health: Implications for reducing chronic disease. National Academy Press; Washington, DC: 1989.

10. Wolf AM, Colditz GA. Current estimates of the economic cost of obesity in the United States. Obesity Research. 1998; 6(2):97–106. [PubMed: 9545015]
11. Strauss RS, Pollack HA. Social marginalization of overweight children. Archives of Pediatrics and Adolescent Medicine. 2003; 157:746–752. [PubMed: 12912779]
12. US Department of Health and Human Services (USDHHS). The surgeon general's call to action to prevent and decrease overweight and obesity. USDHHS, Public Health Service, Office of the Surgeon General; Rockville, MD: 2001.
13. Harnack L, Sherwood N, Story M. Diet and physical activity patterns of urban American Indian women. American Journal of Health Promotion. 1999; 13(4):233–236. [PubMed: 10351854]
14. Story M, Stevens J, Evans M, Cornell CE, Juhaeri, Gittelsohn J, et al. Weight loss attempts and attitudes toward body size, eating, and physical activity in American Indian children: Relationship to weight status and gender. Obesity Research. 2001; 9(6):356–363. [PubMed: 11399782]
15. Harnack L, Story M, Rock BH. Diet and physical activity patterns of Lakota Indian adults. Journal of the American Dietetics Association. 1999; 99(7):829–835.
16. Rinderknecht K, Smith C. Body-image perceptions among urban native American youth. Obesity Research. 2002; 10(5):315–327. [PubMed: 12006630]
17. Sherwood NE, Harnack L, Story M. Weight-loss practices, nutrition beliefs, and weight-loss program preferences of urban American Indian women. Journal of the American Dietetics Association. 2000; 100(4):442–446.
18. Basiotis, P.; Lino, M.; Anand, R. The diet quality of American Indians: Evidence from the continuing survey of food intakes by individuals. US Department of Health and Human Services; Washington, DC: 1999.
19. Population Resource Center (PRC). Factsheet: American Indian and Alaska native heritage month. Population Resource Center; Washington, DC: 2006.
20. Finegold, K.; Pindus, NM.; Wherry, L.; Nelson, S.; Triplett, T.; Capps, R. Background report on the use and impact of food assistance programs on Indian reservations. United States Department of Agriculture; Washington, DC: 2005. Available at http://www.ers.usda.gov/Publications/CCR4/
21. Mendlein JM, Freedman DS, Peter DG, Allen B, Percy CA, Ballew C, et al. Risk factors for coronary heart disease among Navajo Indians: Findings from the Navajo Health and Nutrition Survey. Journal of Nutrition. 1997; 127(10 Suppl):2099S–2105S. [PubMed: 9339176]
22. Sugarman JR, Gilbert TJ, Percy CA, Peter DG. Serum cholesterol concentrations among Navajo Indians. Public Health Reports. 1992; 107(1):92–99. [PubMed: 1738814]
23. Yurgalevitch SM, Kriska AM, Welty TK, Go O, Robbins DC, Howard BV. Physical activity and lipids and lipoproteins in American Indians ages 45–74. Medicine and Science in Sports and Exercise. 1998; 30(4):543–549. [PubMed: 9565936]
24. Broussard BA, Sugarman JR, Bachman-Carter K, Booth K, Stephenson L, Strauss K, et al. Toward comprehensive obesity prevention programs in Native American communities. Obesity Research. 1995; 3(Suppl 2):289s–297s. [PubMed: 8581789]
25. US Department of Health and Human Services. 2008 physical activity guidelines for Americans. US Department of Health and Human Services; Washington, DC: 2008.
26. FAO/WHO. Fruit and vegetables for health: Report of a joint FAO/WHO workshop; 1–3 September 2004; Kobe, Japan. Geneva, Switzerland: World Health Organization and Food and Agriculture Organization of the United Nations; 2005.
27. Centers for Disease Control and Prevention. Prevalence of fruit and vegetable consumption and physical activity by race/ethnicity—United States, 2005. Morbidity and Mortality Weekly Report. 2007; 56(13):301–304. [PubMed: 17410082]
28. Teufel NI, Dufour DL. Patterns of food use and nutrient intake of obese and non-obese Hualapai Indian women of Arizona. Journal of the American Dietetics Association. 1990; 90(9):1229–1235.
29. Kumanyika S. Nutrition & health campaign for all women. Journal of the American Dietetics Association. 1995; 95(3):299–300.
30. The Diabetes Prevention Program Research Group. The Diabetes Prevention Program: Baseline characteristics of the randomized cohort. Diabetes Care. 2000; 23(11):1619–1629. [PubMed: 11092283]

31. Patout CA Jr. Birke JA, Horswell R, Williams D, Cerise FP. Effectiveness of a comprehensive diabetes lower-extremity amputation prevention program in a predominantly low-income African-American population. Diabetes Care. 2000; 23(9):1339–1342. [PubMed: 10977029]

32. Hood VL, Kelly B, Martinez C, Shuman S, Secker-Walker R. A native American community initiative to prevent diabetes. Ethnicity & Health. 1997; 2(4):277–285. [PubMed: 9526690]

33. Paradis G, Levesque L, Macaulay AC, Cargo M, McComber A, Kirby R, et al. Impact of a diabetes prevention program on body size, physical activity, and diet among Kanien'keha:ka (Mohawk) children 6–11 years old: 8-year results from the Kahnawake Schools Diabetes Prevention Project. Pediatrics. 2005; 115(2):333–339. [PubMed: 15687441]

34. Davis SM, Clay T, Smyth M, Gittelsohn J, Arviso V, Flint-Wagner H, et al. Pathways curriculum and family interventions to promote healthful eating and physical activity in American Indian schoolchildren. Preventive Medicine. 2003; 37(6 Pt 2):S24–S34. [PubMed: 14636806]

Table 1

Participant characteristics and bivariate analysis of any physical activity (PA) fruit and vegetable intake (FV) in past month

Variable	Total N (%) or mean (SD)	<4 days PA weekly N (%) or mean (SD)	≥ 4 days PA weekly N (%) or mean (SD)	*P*	<5 FV daily N (%) or mean (SD)	≥5 FV daily N (%) or mean (SD)	*P*
Sociodemographics							
Age (SD)	35.50 (15.51)	35.71 (16.26)	30.38 (13.56)	<.001	34.06 (15.48)	33.36 (15.69)	.541
Gender (%)				<.001			.463
Male	419 (42.20)	172 (34.5)	208 (51.2)		238 (42.6)	131 (40.1)	
Female	574 (57.80)	327 (65.5)	198 (48.8)		321 (57.4)	196 (59.9)	
Education level (%)				.324			.217
≤High school	326 (32.96)	157 (31.5)	127 (31.4)		184 (33)	103 (31.6)	
Some college	518 (52.38)	257 (51.5)	223 (55.1)		299 (53.6)	165 (50.6)	
College graduate	145 (14.66)	85 (17.0)	55 (13.6)		75 (13.4)	58 (17.8)	
Where did you grow up (%)				.722			.916
Urban/suburban area	310 (33.16)	163 (34.7)	123 (32.3)		181 (34.4)	101 (33)	
Rural area	191 (20.43)	98 (20.9)	79 (20.7)		107 (20.3)	63 (20.6)	
Reservation	434 (46.42)	209 (44.5)	179 (47.0)		238 (45.2)	142 (46.4)	
Marital status (%)				.018			.609
Married/living with partner	322 (32.62)	181 (36.4)	117 (29.0)		189 (34)	105 (32.3)	
Other	665 (67.38)	316 (63.6)	287 (71.0)		367 (66)	220 (67.7)	
Have children (%)				.002			.419
No	470 (48.35)	219 (44.3)	217 (54.8)		249 (45.8)	157 (48.6)	
Yes	502 (51.65)	275 (55.7)	179 (45.2)		295 (54.2)	166 (51.4)	
Insurance (%)				.079			.5120
None	16 (1.6)	4 (0.8)	9 (2.2)		10 (1.8)	3 (0.9)	
HIS	295 (29.56)	160 (31.9)	111 (27.3)		159 (28.4)	99 (30.1)	
Other	687 (68.84)	338 (67.3)	287 (70.5)		391 (69.8)	227 (69)	
Health characteristics							
Past week, PA (%)			–	–			<.001
<4 days	502 (55.23)				327 (62.0)	138 (45.1)	
≥4 days	407 (44.77)				200 (38.0)	168 (54.9)	

Variable	Total N (%) or mean (SD)	<4 days PA weekly N (%) or mean (SD)	≥ 4 days PA weekly N (%) or mean (SD)	*P*	<5 FV daily N (%) or mean (SD)	≥5 FV daily N (%) or mean (SD)	*P*
Perception of no. of days of PA recommended weekly (SD)	4.27 (1.70)	3.80 (1.65)	4.83 (1.54)	<.001	–	–	–
FV consumption/day (%)				<.001	–	–	–
<5 servings	560 (62.99)	200 (54.3)	327 (70.3)				
≥5 servings	329 (37.01)	168 (45.7)	138 (29.7)				
Servings of fruits/day (SD)	2.09 (1.85)	–	–	–	–	–	–
Servings of vegetables/day (SD)	2.25 (2.03)	–	–	–	–	–	–
Composite servings FV/day (SD)	4.24 (3.49)	–	–	–	–	–	–
Perception of no. of FV recommended daily (SD)	4.64 (3.56)	–	–	–	3.81 (2.31)	6.11 (4.71)	<.001

Table 2

Logistic regression predicting ≥4 days of physical activity weekly and ≥5 FV servings daily

Variable	OR	95% CI	*P*
Correlates of ≥4 days of physical activity weekly			
Age	0.98	0.97, 0.99	.002
Gender			
Female	Ref	–	–
Male	2.03	1.45, 2.83	<.001
Education level			
≤High school	Ref	–	–
Some college	1.46	1.01, 2.11	.048
College graduate	1.13	0.66, 1.91	.663
FV consumption per day			
<5 servings	Ref	–	–
≥5 servings	2.05	1.45, 2.91	<.001
Perception of no. of days of PA recommended weekly	1.33	1.24, 1.42	<.001
Correlates of ≥5 servings of FV daily			
Age	1.00	0.99, 1.01	.990
Gender			
Female	Ref	–	–
Male	1.19	0.84, 1.70	.333
Education level			
≤High school	Ref	–	–
Some college	0.95	0.65, 1.39	.800
College graduate	1.22	0.72, 2.05	.459
Past week, participate in PA (%)			
<4 days	Ref	–	–
≥4 days	2.05	1.45, 2.91	<.001
Perception of no. of FV recommended daily (SD)	1.33	1.24, 1.42	<.001