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Racial/Ethnic Disparities in Meeting 5-2-1-0 Recommendations among Children and Adolescents in the United States

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Abstract

Objective—To evaluate racial/ethnic disparities among children and adolescents in meeting the 4 daily 5-2-1-0 nutrition and activity targets in a nationally representative sample. The 5-2-1-0 message summarizes 4 target daily behaviors for obesity prevention: consuming ≥5 servings of fruit and vegetables, engaging in ≤2 hours of screen time, engaging in ≥1 hour of physical activity, and consuming 0 sugar-sweetened beverages daily.

Study design—The National Health and Nutrition Examination Survey (2011–2012) data were used. The study sample included Hispanic (n = 608), non-Hispanic black (n = 609), Asian (n = 253), and non-Hispanic white (n = 484) youth 6–19 years old. The 5-2-1-0 targets were assessed using 24-hour dietary recalls, the Global Physical Activity Questionnaire, and sedentary behavior items. Outcomes included meeting all targets, no targets, and individual targets. Multivariable logistic regression models accounting for the complex sampling design were used to evaluate the association of race/ethnicity with each outcome among children and adolescents separately.

Results—None of the adolescents and <1% of children met all 4 of the 5-2-1-0 targets, and 19% and 33%, of children and adolescents, respectively, met zero targets. No racial/ethnic differences in meeting zero targets were observed among children. Hispanic (aOR, 1.76 [95% CI, 1.04–2.98]), non-Hispanic black (aOR, 1.82 [95% CI, 1.04–3.17]), and Asian (aOR, 1.48 [95% CI, 1.08–2.04]) adolescents had greater odds of meeting zero targets compared with non-Hispanic whites. Racial/ethnic differences in meeting individual targets were observed among children and adolescents.

Conclusions—Despite national initiatives, youth in the US are far from meeting 5-2-1-0 targets. Racial/ethnic disparities exist, particularly among adolescents.

Obesity rates among youth have tripled in recent decades, with one-third of children and adolescents in the US being overweight or obese.[1] Youth with obesity are at greater risk of adverse health outcomes during adulthood, including obesity, chronic health conditions, shorter life expectancy, and social discrimination.[2–4] Hispanic and non-Hispanic black youth are at a greater risk of being overweight or obese than non-Hispanic white youth.[1,5] Obesity prevention through establishing healthy dietary and physical activity behaviors during childhood and adolescence is necessary to reduce future health consequences.[3,6,7] The

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federal government has promulgated national nutrition and physical activity recommendations for youth, including *Healthy People 2020*, the 2008 Physical Activity Guidelines for Americans, and the 2010 Dietary Guidelines for Americans.[8–10] These guidelines target nutrition and physical activity that have been promoted through national and local campaigns.[8–10] The Maine Youth Overweight Collaborative summarized these recommendations in a succinct message in the "Let's Go! 5-2-1-0" youth obesity prevention program.[11] The 5-2-1-0 mnemonic represents 4 targeted behaviors for obesity prevention, including ≥5 servings of fruit and vegetables, ≤2 hours of screen time, ≥1 hour of physical activity, and 0 sugar-sweetened beverages daily. This message and similar iterations have been used by obesity prevention programs across the US due to the simple and easy to remember message.[12,13]

Understanding the uptake of national nutrition and physical activity recommendations in marginalized populations is important to reduce existing disparities in obesity. Prior examination of the 1999–2002 National Health and Nutrition Examination Survey (NHANES) found that the proportion of adolescents meeting all 5-2-1-0 targets before the implementation of national recommendations was estimated to be 0.4% of adolescents.[14] However, nationally representative estimates of adherence to 5-2-1-0 guidelines among children and adolescents have not since been examined and contemporary population-based estimates of racial/ethnic disparities in meeting these guidelines is not well-established. To address these gaps, this study examined racial/ethnic disparities in meeting the 5-2-1-0 nutrition and activity targets among children and adolescents in a nationally representative sample.

Methods

We conducted a cross-sectional analysis using the most recently available NHANES continuous cycle data (2011–2012). NHANES is a national survey that uses a complex sampling design to represent the noninstitutionalized US population.[15] Our sample included children ages 6–11 years old (n = 967) and adolescents ages 12–19 years old (n = 987) in 4 self-reported racial/ethnic groups (non-Hispanic white, non-Hispanic black, Asian, and Hispanic) who completed the household interview, mobile examination center (MEC) interview, both dietary recalls, and had complete 5-2-1-0 information (Figure 1; available at www.jpeds.com). NHANES questionnaires were administered by trained interviewers. Youth participants <16 years old had proxy respondents, typically parents/caregivers, when needed. NHANES was approved by the Institutional Review Board at the US National Center for Health Statistics with data available for public use.[15]

The behavioral targets included in the 5-2-1-0 recommendations[11] were defined as consuming ≥5 servings of fruits and vegetables per day, limiting screen time to ≤2 hours per day, engaging in physical activity for ≥1 hour per day, and consuming 0 sugar-sweetened beverages per day. Binary outcomes assessed included meeting all of the recommendations, meeting none of the recommendations (vs meeting ≥1), and meeting each individual recommendation.

The physical activity target was calculated from the physical activity questionnaire, which is based on the Global Physical Activity Questionnaire, measuring activity related to work, transportation, and recreation.[16] Questions differed for children and adolescents. The question; “During the past 7 days, on how many days was – physically active for a total of at least 60 minutes per day?” was used to assessed activity in children. Among adolescents, multiple questions about days and time per week one engaged in moderate and vigorous activity at work and for recreation were used to calculate daily minutes of physical activity.

The screen time target was calculated from 2 questions: (1) “Over the past 30 days, on average how many hours per day do you sit and watch TV or videos?” and (2) “Over the past 30 days, on average how many hours per day do you use a computer or play computer games outside of work or school?” The hours per day for each question were summed to determine daily screen time hours.

The fruit and vegetable and sugar-sweetened beverage targets were calculated from 2 days of 24-hour dietary recall surveys; the first was conducted at the MEC and the second was conducted via telephone 3–10 days after the MEC. The Food Patterns Equivalent Database and the What We Eat in America search tool were used to compute food and beverage intakes.[17] The fruit and vegetable target was calculated by taking the average total cup equivalents of consumed fruits and vegetables on both dietary recalls. The sugar-sweetened beverage target was calculated by averaging the total added sugar in grams for consumed sugar-sweetened beverages defined as beverages that additional sugar was added; this included soft drinks or soda, fruit drinks, punches, fruit aids, sports drinks, energy drinks, and sweetened milks that have added powder or syrup.[18] Beverages such as diet drinks, 100% fruit juices, and nonflavored milks were not included.[18]

Questions on race/ethnicity included: “Do you consider yourself to be Hispanic or Latino? What race or races do you consider yourself to be? Where do you/your ancestors come from?” Participant responses were coded into the following categories: Mexican American, other Hispanic, non-Hispanic white, non-Hispanic black, Asian, and other/ multiracial. These were recategorized as non-Hispanic white, Hispanic, non-Hispanic black, and Asian. Adolescents (4.87%) and children (5.87%) identifying as multiracial or other were excluded owing to small sample sizes.

Covariates included child body mass index (BMI) percentile and sociodemographic characteristics. Participant’s height in meters and weight in kilograms was assessed by trained health technicians at the MEC and used to calculate BMI and categorized as overweight/obese (BMI ≥85th percentile) or not overweight/obese (BMI <85th percentile) using the Centers for Disease Control and Prevention’s sex- and age-specific 2000 BMI growth charts for the US.[19] Sociodemographic factors included participant age (categorized into 4 groups: 6–8, 9–11, 12–15, and 16–19 years), sex, parental marital status (married/ living with partner, single, separated/divorced/widowed), household income-to-poverty ratio (<1, 1–3, >3), and parental education (<high school, high school graduate, some college, or college graduate).

Statistical Analyses

All analyses were stratified by age range (children and adolescents). Appropriate 2-year sample weights were applied in all analyses to account for the complex survey design and to yield a nationally representative sample. Frequency distributions of each variable were computed by racial/ethnic group. Because few youth met all 5-2-1-0 recommendations, bivariate and multivariable analyses were not performed for this outcome. For individual behavioral targets, bivariate differences in the proportion of each racial/ethnic group meeting each target behavior were assessed using χ^2 tests. Univariate and multivariable logistic regression models were also computed to evaluate the associations of race/ethnicity with each target behavior. Child BMI percentile and sociodemographic characteristics were considered potential confounders and adjusted for in each model. The multivariable models were adjusted for income-to-poverty ratio and not parental education owing to parental education and household income-to-poverty ratio being highly collinear.

Results

The analytic sample consisted of 967 children and 987 adolescents, representing 23 656 058 children and 32 223 921 adolescents. Participant characteristics are shown in Table I. Racial/ethnic differences in obesity status, income-to-poverty ratio, parental marital status, and parental education were observed among children and adolescents. Among Hispanic children, 48.5% were overweight or obese compared with 33% of non-Hispanic black children, 33% of non-Hispanic white children, and 25% of Asian children ($P = .02$). No racial/ethnic differences in the prevalence of overweight and obesity were observed among adolescents (range, 24%–39%).

Adherence to 5-2-1-0 Recommendations

Among children age 6–11 years old, 0.03% met all 4 target 5-2-1-0 behaviors, 5% met 3 targets, 29% met 2 targets, 46% met 1 target, and 19% did not meet any of the 4 targets (Figure 2). Meeting specific 5-2-1-0 targets among children varied; 3% met fruits and vegetables, 36% met screen time, 71% met physical activity, and 9% met sugar-sweetened beverage targets. Among adolescents 12–19 years old, zero met all 4 target behaviors, 3% met 3 targets, 18% met 2 targets, 46% met 1 target, and 33% did not meet any of the 4 targets. Meeting specific 5-2-1-0 targets among adolescents varied; 4% met fruits and vegetable, 25% met screen time, 45% met physical activity, and 17% met sugar-sweetened beverage targets.

Differences in the proportion of children meeting the 5-2-1-0 targets by race/ethnicity are presented in Figure 2. The physical activity target was met by most children, with 75% of non-Hispanic whites, 68% of Hispanics, 72% of non-Hispanic blacks, and 71% of Asians meeting 60 minutes per day ($P = .34$). The percentage of children meeting the screen time target had the greatest variability across race/ ethnicity (37% non-Hispanic whites, 45% Hispanics, 15% non-Hispanic blacks, 51% Asians; $P = .003$). Nineteen percent of non-Hispanic white children met none of the guidelines compared with 19% of Hispanic, 15% Asian, and 23% of non-Hispanic black children ($P = .65$).

Racial/ethnic differences in the proportion of adolescents meeting the 5-2-1-0 targets are presented in Figure 2. Across all targets, non-Hispanic white adolescents had the highest proportions of meeting specific targets compared with other racial/ethnic groups. Almost one-half of non-Hispanic white adolescents (49%) met the physical activity target, followed by 42% of non-Hispanic blacks, 39% of Asians, and 38% of Hispanics ($P = .03$). The screen time target was met by 28% of non-Hispanic white adolescents, followed by 23% of Hispanics, 23% of Asians, and 13% of non-Hispanic blacks ($P = .05$). The proportion of adolescents who met none of the targets was highest among non-Hispanic black adolescents (44%), followed by 39% of Hispanics, 35% of Asians, and 28% of non-Hispanic whites ($P = .009$).

Multivariable Logistic Regression Models of the Association of Race/Ethnicity with 5-2-1-0 Targets

Table II shows the results from the multivariable logistic regression models. Among children, there were no differences in the odds of meeting none of the 5-2-1-0 targets by race/ethnicity (using non-Hispanic whites as the reference group). With respect to meeting individual targets, few differences emerged. Non-Hispanic black children were less likely than non-Hispanic whites to meet the screen time recommendation (aOR, 0.30 [95% CI, 0.14–0.65]). Asians were more likely than non-Hispanic whites to meet the sugar-sweetened beverage target (aOR, 3.19 [95% CI, 1.11–9.15]).

Among adolescents, Hispanic (aOR, 1.76 [95% CI, 1.04–2.98]), non-Hispanic black (aOR, 1.82 [95% CI, 1.04–3.17]), and Asian (aOR, 1.48 [95% CI, 1.08–2.04]) adolescents had greater odds of not meeting any of the four 5-2-1-0 targets compared with non-Hispanic whites. With respect to meeting individual targets, Hispanic (aOR, 0.67 [95% CI, 0.43–1.02]) and Asian adolescents (aOR, 0.58 [95% CI, 0.36–0.92]) were less likely than non-Hispanic white adolescents to meet the physical activity recommendation; and non-Hispanic black adolescents were less likely to meet the screen time recommendation (aOR, 0.48 [95% CI, 0.24–0.98]). Asian adolescents were more likely than non-Hispanic white adolescents to meet the sugar-sweetened beverage recommendation (aOR, 3.31 [95% CI, 1.34–8.24]). The missing data for the variables included income-to-poverty ratio (7.40% adolescents/ 5.58% children), parental education (3.95% adolescents/ 2.79% children), and parental marital status (5.67% adolescents/0.21% children).

Discussion

Obesity prevention among youth is a national public priority.[8] Public health and educational campaigns have incorporated messages such as ‘5-2-1-0’ to provide succinct information about obesity prevention recommendations. The goal of this study was to examine racial/ethnic disparities in meeting the 5-2-1-0 target behaviors in a nationally representative sample of children and adolescents. Although racial/ethnic disparities in obesity prevention behaviors have been assessed in the literature, few have included nationally representative samples and/or assessed a comprehensive set of obesity prevention behaviors.

Overall, children and adolescents had low levels of adherence to the 4 recommended behavioral targets included in the 5-2-1-0 message, with very few (no adolescents, 0.3% of

children) meeting all 4 and 19.4% of children and 33.4% of adolescents meeting none. These findings are consistent with other studies reporting low adherence to specific behavioral targets among youth.[20–24] This study also observed important racial/ethnic disparities in these behaviors across race/ ethnicity and age groups, particularly among adolescents. These findings are consistent with previous studies that have observed disparities, particularly among non-Hispanic blacks and Hispanics compared with non-Hispanic white populations.[25–27] This study included Asian youth, an understudied racial/ethnic group in previous studies assessing dietary and physical activity behaviors, and found they were more likely to meet dietary targets than activity targets compared with non-Hispanic white youth.

Findings on the prevalence of meeting the 5-2-1-0 targets from our study using national data from 2011–2012 indicate little improvement over the past decade among adolescents when compared with a study using data from NHANES 1999–2002.[14] This study using data from before the promulgation of the 5-2-1-0 message indicated that 0.04% adolescents met all 4 targets, 9% met the fruit and vegetable target, 14% met the sugar-sweetened beverage target, 27% met he screen time target, and 32% met the physical activity target.[14] One possible explanation for the increase in the percentage of adolescents meeting the physical activity guideline could be increasing national efforts to promote physical activity among youth over the last decade, such as the Let's Move campaign.[28] However, no improvements in meeting all 4 targets were observed in our study sample, and obesity rates among children and adolescents in the US remain high.[1] Furthermore, racial/ethnic disparities across specific behavioral targets were observed.

In this study, non-Hispanic black children and adolescents were more likely to meet none of the 5-2-1-0 targets and were less likely to meet the screen time target than their non-Hispanic white peers. These findings support the importance of targeting sedentary and activity behaviors, particularly given prior research documenting disparities in sedentary and activity behaviors between non-Hispanic black and non-Hispanic white youth.[20,23,26] Recent reviews on sedentary behaviors found that watching TV for >2 hours daily was associated with poor body mass composition and unhealthy diets, and may be an independent risk factor for adverse health outcomes in adults.[29,30] Given the landscape of an increasingly technology-driven society, youth activity and sedentary behaviors are important and relevant to focus on improving, particularly among non-Hispanic black youth. Findings also indicated that Hispanic adolescents were more likely to meet none of the behavioral targets than non-Hispanic whites.

The current study also reports racial/ethnic disparities in meeting 5-2-1-0 targets among Asian youth in the US. Inclusion of Asian American youth in obesity prevention-related studies has been limited and may be owing to relatively low rates of obesity in this population subgroup as well as inadequate sample size in prior research.[1,31,32] However, identifying behavioral patterns across an ethnically diverse and representative population of youth is necessary to obtain a comprehensive assessment of racial/ethnic disparities in behavioral targets and to monitor trends over time. The current study's findings indicate that Asian adolescents had lower rates of meeting both activity targets and fruit and vegetable target compared with non-Hispanic whites, whereas Asian adolescents were more likely to

meet the zero sugar-sweetened beverage consumption target than non-Hispanic whites. These results may inform future research on the determinants of disparities in these behaviors and corresponding interventions that are culturally-tailored to address disparities observed for each behavioral target.

Previous studies have explored possible mechanisms underlying racial/ethnic disparities in obesity and obesity prevention behaviors, primarily among non-Hispanic black and Hispanic populations. Prior studies, including the current study, have found that racial/ethnic disparities persist after adjusting for socioeconomic status indicators.[33] Studies have shown that neighborhoods with a higher proportion of racial/ethnic minority residents have a higher density of fast food outlets and a lower density of supermarkets and are more likely to have built environments that are not conducive to physical activity than neighborhoods with lower proportions of minority residents[34,35]; these disparities in built food and physical activity environment characteristics may contribute to poorer adherence to dietary and physical activity recommendations among racial/ethnic minority populations.[34,35] Other potential mechanisms driving racial/ethnic disparities in obesity and obesity prevention behaviors may include sociocultural issues, such as acculturation. In large-scale studies of immigrant adults living in the US, acculturation and duration of residence have been shown to be related to increased risk for obesity and chronic disease,[36,37] as well as decreased physical activity.[38] Studies among Hispanic and Asian youth similarly indicate that acculturation is a risk factor for obesity-related behaviors, such as decreased physical activity and higher frequency of fast food consumption, among early adolescents in immigrant families.[39] Finally, childhood adverse events (eg, abuse, maltreatment) are disproportionately higher among black and Hispanic children in the US[40] and have been shown to be associated with increased risk of overweight and obesity and disordered eating behaviors later on in life.[41,42] Despite widespread recognition of the need to address racial/ethnic disparities in childhood obesity and related behaviors, comprehensive multilevel approaches that successfully target the underlying causes contributing to obesity are lacking.

This study found that the proportion of youth meeting the activity and screen time targets decreased by nearly one-half when comparing children with adolescents. The decrease in physical activity from childhood to adolescence is supported by prior research,[43] indicating that preadolescence and adolescence are important stages for implementing interventions that promote physical activity and reduce sedentary behaviors. This decrease suggests that the years leading up to adolescence may be a critical period for establishing healthy physical activity habits for all youth and for addressing racial/ethnic disparities in physical activity that currently persist. Study results confirm that efforts should be focused on preventing the decline in obesity prevention behaviors in the transition to adolescence.

Study strengths include the analysis of a large, nationally representative sample of US children and adolescents and the use of validated measures of the outcomes of interest. Results from the present study must be viewed in light of the following limitations. The NHANES data are based on self-report and subject to reporting errors of dietary and physical activity recall from day-to-day variation in these behaviors. Self-report data are also subject to social desirability bias. NHANES response rates for 12–19-year-olds was 73%–82%; lower response rates can result in nonresponse bias, although weighted analysis was

used to minimize this bias. Lack of an adequate sample size limited the inclusion and analysis of other racial/ethnic groups, such as Native American/American Indian and multiracial youth. Last, racial/ethnic groups are heterogeneous in this study with broad categories that may include subgroups.

Our study indicates low rates of children and adolescents meeting recommended dietary and physical activity guidelines and substantial racial/ethnic disparities in meeting these guidelines, particularly among adolescents. Results highlight the need for recruiting study samples that are representative of the racial/ethnic diversity of the US, particularly in intervention studies to determine strategies worth pursuing and addressing the decline in these behaviors in adolescence. Renewed and expanded efforts on policies that target obesity, including regulations and taxes on sugar-sweetened beverages, may be needed to change social norms and the obesogenic environment on a wide scale level. Programs that support youth in meeting dietary and physical activity guidelines, particularly those that focus limiting sugar-sweetened beverage intake and increasing fruit and vegetable consumption (behavioral targets with the lowest levels of adherence in this study), continue to be needed to address disparities in obesity and related behaviors and prevent obesity at the population level.

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Glossary

BMI	Body mass index
MEC	Mobile examination center
NHANES	National Health and Nutrition Examination Survey

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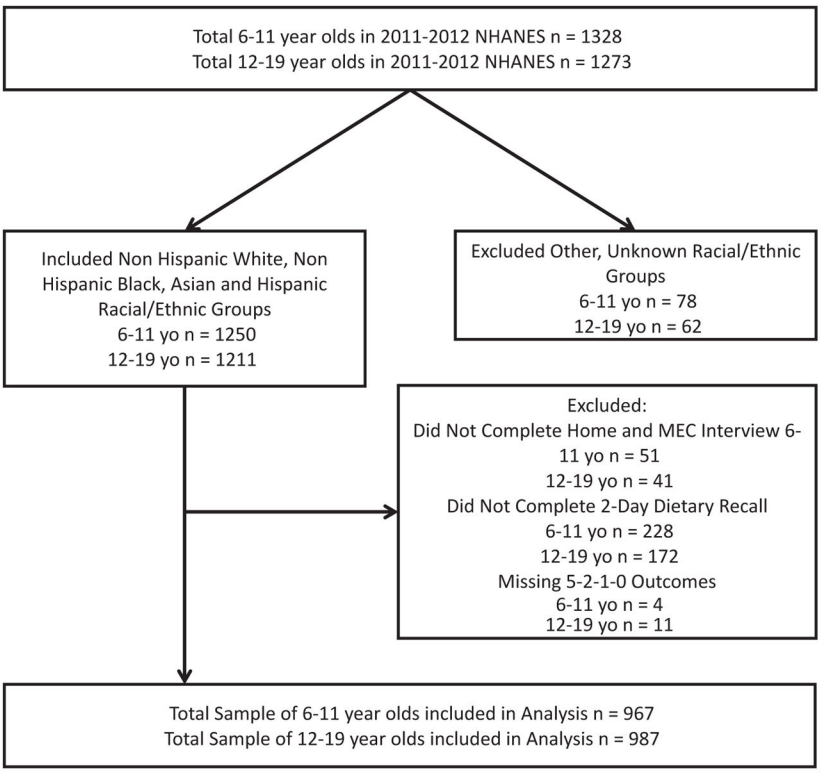

Figure 1.
Study sample from NHANES 2011–2012.

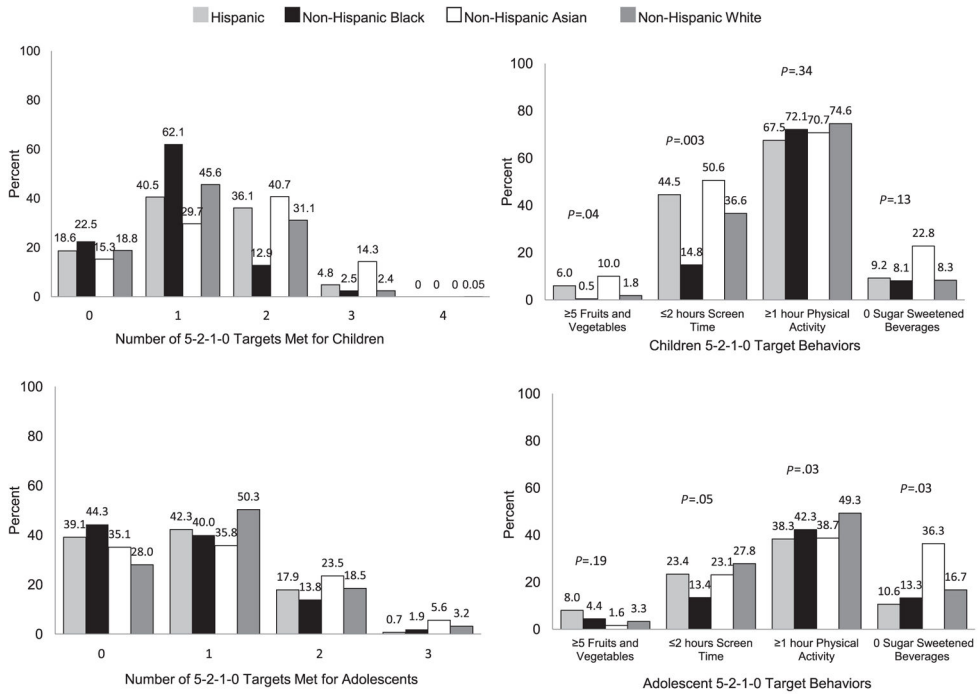

Figure 2.

Percent of US children ages 6–11 years old and adolescents ages 12–19 years old in NHANES 2011–2012 meeting 5-2-1-0 recommended nutrition and physical activity target behaviors among different racial/ethnic groups.

Table I

Weighted characteristics of US children and adolescents ages 6–19 years old by race/ethnicity in NHANES 2011–2012 continuous cycle

	Hispanic	Non-Hispanic black	Asian	Non-Hispanic white	*P* value
Children 6–11 years old					
Unweighted n	321	288	108	250	
Weighted n	5 766 897	3 630 986	1 137 527	13 120 646	
Age (y)					.76
6–8	54.1	54.8	55.9	51.2	
9–11	45.9	45.2	44.1	48.8	
Sex, female	45.0	47.2	48.5	49.2	.83
Parental marital status					<.001
Married/partnered	78.3	43.3	87.1	83.5	
Never married/single	9.2	34.5	2.5	2.0	
Divorced/separated/widowed	12.5	22.2	10.4	14.5	
Parental education level					<.001
<High school	44.1	22.2	8.7	15.4	
High school graduate	20.7	40.1	6.1	18.6	
Some college	21.0	29.7	18.8	28.9	
College graduate	14.2	8.0	66.4	37.1	
Income poverty ratio					<.001
<1.0	43.2	48.2	10.8	15.4	
1.0–3.0	42.0	41.3	34.3	48.1	
>3.0	14.8	10.5	54.9	36.5	
Overweight/obese (BMI% ≥85)	48.6	32.9	25.1	33.2	.02
Adolescents 12–19 years old					
Unweighted n	287	321	145	234	
Weighted n	7 239 949	5 074 189	1 563 516	18 346 265	
Age (y)					.32
12–15	51.5	41.4	58.1	48.2	
16–19	48.5	58.6	41.9	51.8	
Gender, female	48.6	54.1	53.9	49.5	.75

	Hispanic	Non-Hispanic black	Asian	Non-Hispanic white	*P* value
Parental marital status					<.001
Married/partnered	79.4	47.4	89.4	76.3	
Never married/single	6.3	30.3	1.4	7.0	
Divorced/separated/widowed	14.3	22.3	9.2	16.7	
Parental education level					.001
<High school	48.8	19.1	17.1	18.8	
High school graduate	21.7	28.5	17.3	13.5	
Some college	20.7	38.5	22.6	39.0	
College graduate	8.8	13.9	43.0	28.7	
Income poverty ratio					<.001
<1.0	41.1	41.6	14.7	16.0	
1.0–3.0	39.5	35.9	48.0	38.5	
>3.0	19.4	22.5	37.3	45.5	
Overweight/obese (BMI% ≥85)	35.2	39.2	23.6	31.9	.35

Table II

Unadjusted and adjusted logistic regression models of the association of race/ethnicity with 5-2-1-0 outcomes among 6–11-year-old children and 12–19-year-old adolescents in NHANES 2011–2012

	Hispanic		Non-Hispanic black		Non-Hispanic Asian		
	Unadjusted OR [95% CI]	aOR* [95% CI]	Unadjusted OR [95% CI]	aOR* [95% CI]	Unadjusted OR [95% CI]	aOR* [95% CI]	Non-Hispanic white
Children 6–11 years old							
≥5 fruits and vegetables	3.52 [0.63–19.76]	4.18 [0.92–19.13]	0.25 [0.04–1.75]	0.43 [0.09–2.12]	6.10 [0.83–45.08]	5.85 [0.70–48.89]	Ref.
≤2 hours screen time	1.39 [0.91–2.13]	1.45 [0.95–2.21]	0.30 [0.12–0.77]	0.30 [0.14–0.65]†	1.77 [0.98–3.22]	1.56 [0.73–3.33]	Ref.
≥1 hour physical activity	0.71 [0.38–1.31]	0.65 [0.32–1.32]	0.88 [0.61–1.26]	0.72 [0.42–1.22]	0.82 [0.46–1.46]	0.68 [0.33–1.39]	Ref.
0 sugar beverages	1.11 [0.45–2.74]	1.18 [0.45–3.08]	0.97 [0.33–2.85]	1.29 [0.41–4.08]	3.24 [1.25–8.41]	3.19 [1.11–9.15]†	Ref.
Met zero 5-2-1-0 goals	0.98 [0.46–2.10]	1.07 [0.49–2.31]	1.25 [0.67–2.32]	1.74 [0.83–3.62]	0.78 [0.33–1.84]	0.90 [0.33–2.46]	Ref.
Adolescents 12–19 years old							
≥5 fruits and vegetables	2.53 [0.75–8.57]	2.41 [0.64–9.02]	1.36 [0.32–5.80]	1.53 [0.38–6.19]	0.48 [0.06–3.94]	0.59 [0.06–5.54]	Ref.
≤2 hours screen time	0.79 [0.48–1.32]	0.65 [0.34–1.25]	0.40 [0.17–0.93]	0.48 [0.24–0.98]†	0.78 [0.44–1.39]	0.80 [0.45–1.40]	Ref.
≥1 hour physical activity	0.64 [0.42–0.96]	0.67 [0.43–1.02]	0.75 [0.51–1.10]	0.85 [0.60–1.20]	0.65 [0.41–1.02]	0.58 [0.36–0.92]†	Ref.
0 sugar beverages	0.59 [0.25–1.39]	0.70 [0.41–1.20]	0.76 [0.37–1.56]	0.86 [0.42–1.80]	2.84 [1.07–7.58]	3.31 [1.34–8.24]†	Ref.
Met zero 5-2-1-0 goals	1.65 [0.98–2.81]	1.76 [1.04–2.98]†	2.05 [1.40–2.99]	1.82 [1.04–3.17]†	1.39 [0.94–2.07]	1.48 [1.08–2.04]†	Ref.

*Model adjusted for age, sex, BMI, parental marital status, household income-to-poverty ratio.

†Weighted models of daily recommended behaviors; $P < .05$.