

# OBESITY AND OVERWEIGHT AMONG ASIAN AMERICAN CHILDREN AND ADOLESCENTS

Childhood obesity and overweight have been linked to a host of health, behavioral, and psychological problems. They include: chronic health conditions such as Type 2 diabetes and asthma (1-4), developmental problems such as low self-esteem, becoming victims or perpetrators of bullying or other disruptive behaviors, and performing poorly academically (5-13). Children who are obese or overweight are also more likely to be obese or overweight as adults and therefore have high risk for associated adult health problems such as hypertension, dyslipidemia, Type 2 diabetes, cardiovascular disease, and certain cancers (14-18). To inform policy and community efforts to address childhood obesity and overweight, it is critically important to improve understanding of childhood obesity and overweight and associated risk factors.

## DATA BRIEF HIGHLIGHTS

- About 20% of Asian American children were overweight. Prevalence of overweight was higher among males (24.9%) than females (15.2%).
- Among Asian ethnic groups, Filipinos (29.5%) and Southeast Asians (27.3%) had the highest prevalence of overweight children, while Chinese (11.8%) had the lowest. Prevalence of overweight was even higher among foreign-born Filipino children (39.6%). Among the U.S.-born, Southeast Asian children had the highest prevalence (29.6%) of overweight, followed by Filipino children (26.2%).
- Prevalence of overweight was higher among pre-teens ages 9-12 (26.2%) than younger children ages 2-8 (16.4%) and adolescents ages 13-19 (21%).
- Prevalence of overweight was higher among U.S.-born Asian American children who did not have a parent or guardian with a 4-year college degree (25.7%) than those who did (16.6%).
- While the prevalence of overweight was lower for Asian American children than for other racial groups, current BMI cut points defining obesity and overweight may not be appropriate for Asian Americans and may underestimate their associated health risks. Future research should re-examine and better define BMI categories for obesity and overweight for Asian American children.

Asian American children and adolescents are an under-investigated subpopulation in obesity research. Little is known about who among Asian American children are at higher risk of childhood obesity and overweight than others. The Robert Wood Johnson Foundation funded the Asian & Pacific Islander American Health Forum (APIAHF) to analyze data from the 2011-2014 National Health and Nutrition Examination Survey (NHANES) to learn about the prevalence of obesity and overweight among Asian American children and to identify subgroups of Asian Americans at high risk of childhood obesity and overweight. This brief highlights key findings from this analysis.

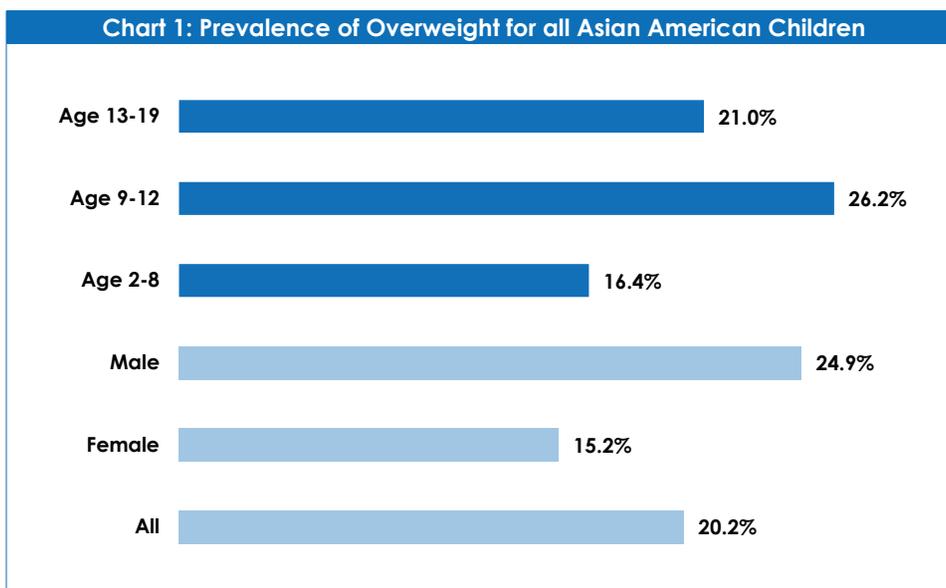
## **DID YOU KNOW?**

### **Body Mass Index and Definitions of Childhood Obesity and Overweight**

- High levels of body fat are associated with increased health risks such as cardiovascular disease and diabetes (23). However, measuring body fat is prohibitively expensive and time-consuming (24).
- Highly correlated with body fat, body mass index (BMI) is widely used to define overweight and obesity (18). High BMI values are associated with adiposity (or fatness), morbidity, and death (25).
- In children (ages 2-19), weight varies not only by height, but also by gender and age, so BMI values are compared with gender- and age-specific reference values. In the U.S., the 2000 CDC growth charts provide those values (26). Children with BMI values at or above the 85th percentile and below the 95th percentile for their gender and age are considered overweight, while those at or above the 95th percentile are considered obese (27).

For brevity of reporting, “overweight” includes both obesity and overweight in this brief. Due to a small number of obese adolescents in the NHANES Asian American sample, a separate category for obesity was not warranted. Below are key findings of APIAHF analyses of 2011-2014 NHANES data.

## Prevalence of Overweight among Asian American Children

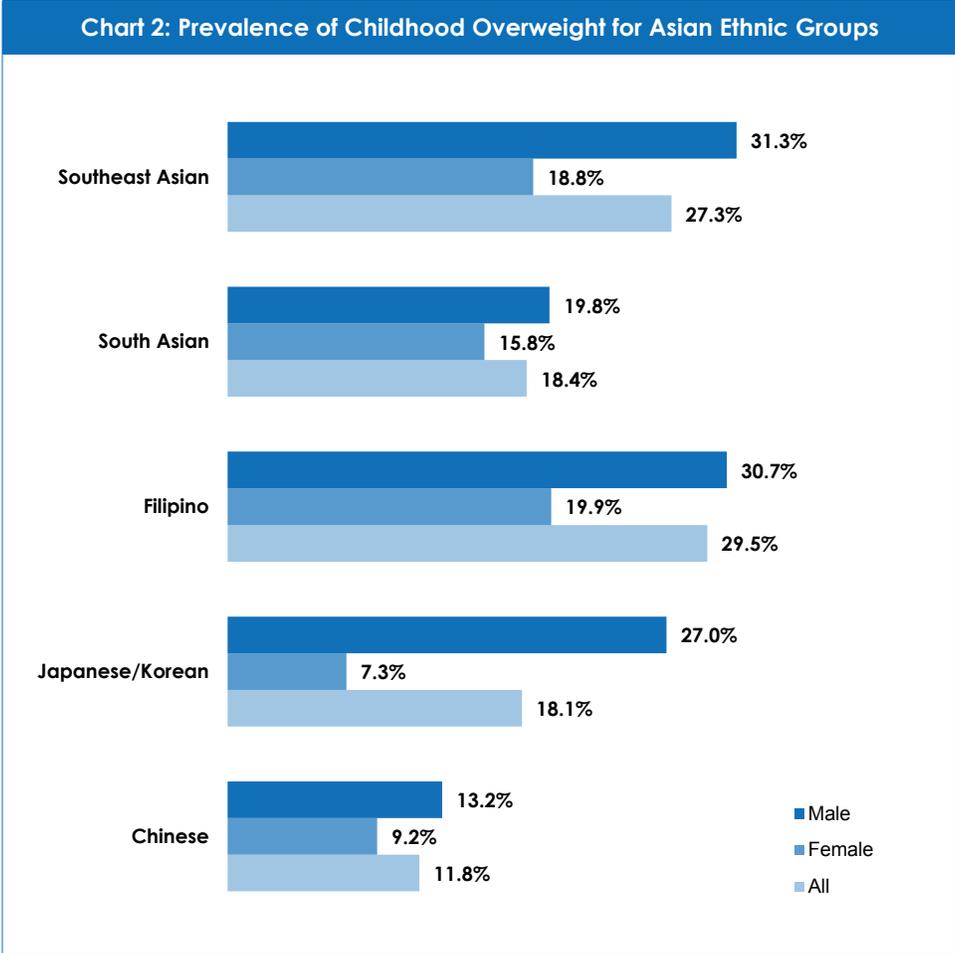


Source: 2011-2014 National Health and Nutrition Examination Survey  
 Childhood overweight defined as BMI at or above the 85<sup>th</sup> percentile of the 2000 CDC Growth Charts

As shown in Chart 1, prevalence of overweight was higher among Asian American males (24.9%) than females (15.2%). A higher proportion of Asian American pre-teens ages 9-12 (26.2%) were overweight than that of adolescents ages 13-19 (21.0%) or among younger children ages 2-8 (16.4%).

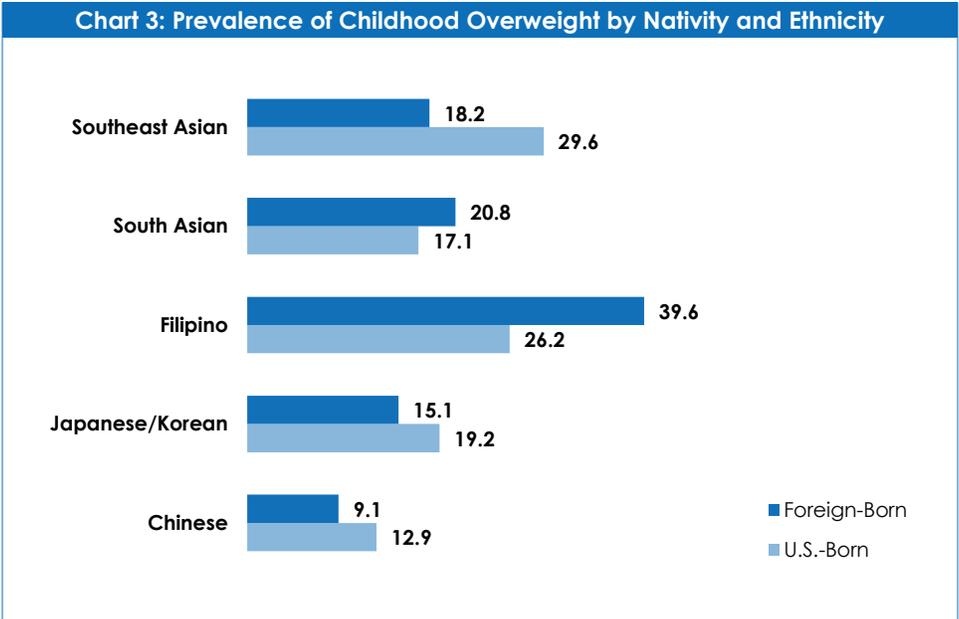
## Prevalence of Overweight across Asian Ethnic Groups

Five self-identified Asian ethnic categories were used in our analysis: 1) Chinese, 2) Japanese/Korean, 3) Filipino, 4) South Asian (including individuals of Indian, Bangladeshi, Pakistani, Sri Lankan, Bhutanese, and Nepalese descent) and 5) Southeast Asian (including individuals of Burmese, Cambodian, Indonesian, Laotian, Malaysian, Thai, and Vietnamese descent). Due to small numbers of survey respondents in a number of Asian ethnic groups, NHANES did not allow the use of more detailed ethnic categories.



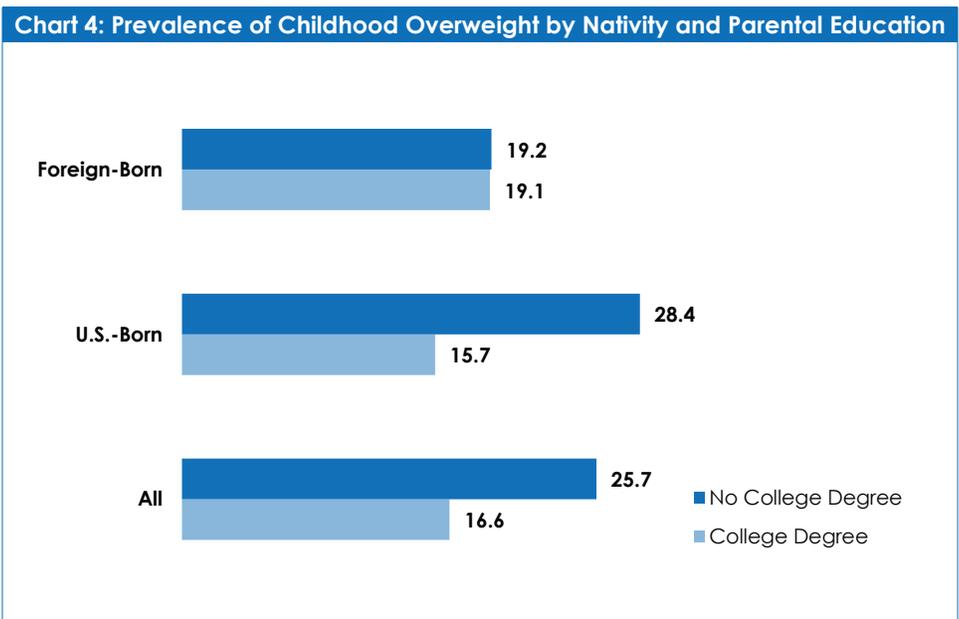
Source: 2011-2014 National Health and Nutrition Examination Survey  
 Childhood overweight defined as BMI at or above the 85th percentile of the 2000 CDC Growth Charts

As Chart 2 shows, the prevalence of overweight was highest among Filipinos (29.5%) and Southeast Asians (27.3%) and lowest for Chinese (11.8%). Gender differences in the prevalence of overweight were largest among Japanese/Koreans (27.0% for males and 7.3% for females), followed by Southeast Asians (31.3% for males and 18.8% for females) and Filipinos (30.7% for males and 19.9% for females). There was no statistically significant difference by gender in the prevalence of overweight among Chinese and South Asians.



Source: 2011-2014 National Health and Nutrition Examination Survey  
 Childhood overweight defined as BMI at or above the 85th percentile of the 2000 CDC Growth Charts

As shown in Chart 3, prevalence of overweight was highest for foreign-born Filipinos (39.6%), about twice as high as foreign-born South Asians (20.8%) and Southeast Asians (18.2%), and over four times as high as Chinese (9.1%). Among the U.S.-born, Southeast Asians had higher prevalence (29.6%) of overweight than Filipinos (26.2%) and all the other ethnic groups.



Source: 2011-2014 National Health and Nutrition Examination Survey  
 Childhood overweight defined as BMI at or above the 85th percentile of the 2000 CDC Growth Charts

As shown in Chart 4, prevalence of overweight was higher among Asian American children who did not have a parent or guardian with a 4-year college degree (25.7%) than those who did (16.6%). The difference by parental education was more pronounced for the U.S.-born: those who did not have a parent or guardian with a 4-year college degree (28.4%) had prevalence of overweight almost twice as high as those who did (15.7%). There was no significant difference by parental education for the foreign-born.

## Explanation of Key Findings

The finding that one in five Asian American children is overweight is a cause for concern. While the prevalence of overweight is lower among Asian American children than in other racial groups, this should be interpreted with caution. Importantly, whether the current BMI-based categories to define childhood obesity and overweight are appropriate for Asian American children needs to be closely examined. The relationship between BMI categories and body fatness varies by race (28). While research on the appropriateness of BMI-based obesity and overweight categories for non-White children is rare, there is evidence that BMI may not be an equivalent measure to assess the percentage of body fat in a multi-ethnic population of U.S. adolescents (29).

Prior studies have demonstrated that Asian adult populations had a higher percentage of body fat at a lower BMI compared to non-Hispanic Whites, in part because of differences in body build and muscularity (23) and that the prevalence of metabolic syndrome (chronic health conditions associated

## DATA SOURCES AND METHODS

A sample of Asian American children and adolescents from the National Health and Nutrition Examination Survey (NHANES) for survey years 2011-2012 and 2013-2014 was used for these analyses. NHANES is a cross-sectional survey designed to monitor the health and nutritional status of the civilian noninstitutionalized U. S. population. The survey consists of interviews conducted in participants' homes and standardized physical examinations conducted in mobile examination centers. Asian Americans, along with non-Hispanic African Americans and Hispanics, were oversampled for the first time in 2011-2012 and then in 2013-2014 to obtain reliable estimates for these populations. Examination sample weights, which account for the differential probabilities of selection and nonresponse, were incorporated into the estimation process. Statistical analyses were conducted using Stata Version 13.

### *Sample Characteristics*

This sample included 796 Asian American children and adolescents ages 2-19 who identified themselves as "Asian." The sample was nearly evenly split between female (50.5%) and male (49.5%). By age group, 42.7% were younger children (2-8 years), 18.7% were preteens (9-12 years), and 38.6% were adolescents (13-19 years). Over half (56.5%) of the children had at least one parent/guardian with a 4-year college degree. About two thirds (66.3%) of the sample came from families at or below the U.S. median income level. About three quarters (74.3%) of the children were born in the U.S., while 80.4% of their parents/guardians were born outside of the U.S. By ethnicity, South Asians were the largest ethnic group (32.2%) in the sample, followed by Chinese (23.3%), Southeast Asian (19.2%), Filipino (14.0%), and Japanese/Korean (11.3%).

with high risk of cardiovascular disease and diabetes) is significantly higher in Asian Americans compared to non-Hispanic Whites for every BMI category (30-34). Based upon the evidence found in international studies that Asians tend to have a higher risk of cardiovascular disease and Type 2 diabetes at a lower BMI than Europeans (35-38), a World Health Organization expert consultation recommended lower BMI ranges for obesity and overweight in Asian populations (39). As was the case for Asian American adults, future research to re-examine and better define BMI categories for obesity and overweight for Asian American children and adolescents might be informative.

Although BMI cut-off points are not diagnostic criteria, elevated BMI among children may indicate increased risk for future adverse health outcomes and/or development of disease (40). BMI values, therefore, serve as screening values to indicate the need for possible obesity-related health conditions (27). The health risk increases in overweight children may be influenced by parental obesity, family medical history, and current cardiovascular risk factors, which might also be considered in assessing health risks associated with overweight (41).

APIAHF analysis also found that the prevalence of overweight was higher among Asian American male children than their female counterparts. This may indicate that the former face a greater risk of health problems associated with overweight. Somewhat surprisingly, pre-teens were at higher risk of overweight than adolescents. While these findings may point to the subgroups defined by gender and age at higher risk than others, these differences may be due, at least in part, to the difference in timing of the growth spurts of height and weight and the physiologic differences between Asian boys and girls, which the 2000 CDC growth charts based on the U.S. child population may not capture. Future research is warranted on the growth patterns of Asian American children that may differ from those of the U.S. population captured in the 2000 CDC growth charts, which provide the reference values for childhood weight categories.

According to APIAHF analysis, Filipinos and Southeast Asians had the highest prevalence of childhood overweight among Asian ethnic groups. To a certain degree, the high prevalence of overweight among Filipino children is not surprising, given the high prevalence of obesity-related health conditions such as diabetes among Filipino adults (42-44). Our finding regarding the high prevalence of overweight among Southeast Asian children is entirely new, and has a potential to significantly inform targeted future interventions. The particularly high prevalence of overweight among foreign-born Filipinos is worth noting. What explains the ethnic differences is not clear. A closer examination of dietary and other health behaviors within the socio-cultural conditions of each ethnic community might help elucidate the processes that lead to high prevalence of childhood overweight in some ethnic groups.

The finding pointing to higher prevalence of overweight among Asian American children of lower socioeconomic status (as indicated by not having a parent or guardian with a 4-year college degree) is consistent with the findings of past research for other populations that linked childhood overweight to low socioeconomic status (16, 45-47). Of note, such a difference by parental education level was only found among the U.S.-born.

Socioeconomic factors in childhood and adolescence may provide different environmental exposures that influence eating and physical activity, parental modeling, and home food availability and accessibility (48-50). However, the nature and impact of these mechanisms with respect to populations with a high proportion of immigrants—such as Asian Americans (about two thirds of whom are foreign-born)—are poorly understood, warranting further investigation.

## Conclusions

Past research has indicated that obesity and overweight may persist from childhood into adulthood (51). Early screening and prevention of childhood overweight is essential to addressing obesity-related health problems. Future interventions to prevent or reduce health risks associated with Asian American obesity and overweight should target the subgroups with high prevalence identified in this brief. To examine potential long-term health risks associated with overweight for Asian Americans more effectively, future research might investigate BMI categories that may better define obesity and overweight for Asian American children.

The 2011-2014 NHANES oversampling of Asian Americans offered an important opportunity to improve understanding of Asian American childhood overweight using a nationally-representative sample. High prevalence of obesity and overweight among Native Hawaiian and Pacific Islander (NHPI) adults is documented (52-55), but little is known about obesity or overweight for NHPI children and specific risk factors associated with it. Native Hawaiian and Pacific Islander adults and children were oversampled in the 2014 National Health Interview Survey. An analysis of these data might help inform future interventions to address childhood obesity and overweight in this high-risk group.

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