Targeting Interventions for Ethnic Minority and Low-Income Populations

Shiriki Kumanyika and Sonya Grier

Summary

Although rates of childhood obesity among the general population are alarmingly high, they are higher still in ethnic minority and low-income communities. The disparities pose a major challenge for policymakers and practitioners planning strategies for obesity prevention. In this article Shiriki Kumanyika and Sonya Grier summarize differences in childhood obesity prevalence by race and ethnicity and by socioeconomic status. They show how various environmental factors can have larger effects on disadvantaged and minority children than on their advantaged white peers—and thus contribute to disparities in obesity rates.

The authors show, for example, that low-income and minority children watch more television than white, non-poor children and are potentially exposed to more commercials advertising high-calorie, low-nutrient food during an average hour of TV programming. They note that neighborhoods where low-income and minority children live typically have more fast-food restaurants and fewer vendors of healthful foods than do wealthier or predominantly white neighborhoods. They cite such obstacles to physical activity as unsafe streets, dilapidated parks, and lack of facilities. In the schools that low-income and minority children attend, however, they see opportunities to lead the way to effective obesity prevention. Finally, the authors examine several aspects of the home environment—breast-feeding, television viewing, and parental behaviors—that may contribute to childhood obesity but be amenable to change through targeted intervention.

Kumanyika and Grier point out that policymakers aiming to prevent obesity can use many existing policy levers to reach ethnic minority and low-income children and families: Medicaid, the State Child Health Insurance Program, and federal nutrition "safety net" programs. Ultimately, winning the fight against childhood obesity in minority and low-income communities will depend on the nation's will to change the social and physical environments in which these communities exist.

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Rates of childhood obesity, now far too high among all U.S. children, are even higher among the nation's ethnic minority and low-income children.[1] These ethnic and socioeconomic disparities in childhood obesity rates present yet another challenge for researchers, policymakers, and practitioners who are focusing on obesity prevention.

In this article, we present and summarize data from multiple sources on racial, ethnic, and related socioeconomic correlates of obesity. We document differences in child obesity across race and ethnic groups and between low- and high-income children. We then consider which obesity-promoting factors might be more prevalent or more intensified among low-income and ethnic minority children than among the general population, with an eye toward identifying modifications that would do the most to prevent obesity. We try to highlight issues for diverse minority populations, but because far more information is available about African Americans and Hispanic Americans than about other groups, the discussion focuses mostly on these two populations.[2]

Obesity Prevalence among Minority and Low-Income Children

No single data source provides information on trends in child obesity for all the major racial and ethnic groups in the United States. The National Health and Nutrition Examination Survey (NHANES), a nationally representative survey that has been conducted periodically since the early 1970s, has large enough samples of white, African American, and (since 1982) Mexican American children to estimate obesity rates within racial and ethnic groups at different points in time.

Table 1, which is based on NHANES data, shows rates of obesity for white, African American, and Mexican American boys and girls in two age groups, ages six to eleven and twelve to nineteen, for three time periods since the mid-1970s. Although obesity rates have increased for boys and girls within each ethnic and racial group, they have increased more for African American and Mexican American children. By 1999–2002, obesity rates were higher for both of these two groups than for white children within each age and gender group. In some cases, obesity rates for ethnic minority children exceeded rates for white children by 10 to 12 percentage points. For boys of both age groups, the obesity rate among Mexican Americans exceeded that among African Americans. For example, nearly a quarter of Mexican American adolescent boys were obese in 1999–2002, as against 19 percent of African Americans and 15 percent of whites. This pattern differs for girls, with the highest obesity rates found among African American girls. For example, among adolescent girls, 24 percent of African Americans, 20 percent of Mexican Americans, and 13 percent of whites were obese.

Several other ethnic minority groups have high rates of child obesity. Measures of obesity for preschool children participating in Hawaii's Supplemental Nutrition Program for Women, Infants, and Children (WIC) indicate that more than a quarter of Samoan children are obese, a rate more than double that for any other ethnic subgroup represented in the sample.[3] Note, however, that the WIC sample is not representative—families must be low-income and nutritionally "at risk" to qualify. Obesity rates are also high among American Indian children. A large Indian Health Service study estimated obesity prevalence at 22 percent for boys and 18 percent for girls based on data for more than 12,000 five- to seventeen-

Table 1. Percentage of U.S. Children and Adolescents Who Are Obese (BMI ≥ 95th Percentile), by Sex, Age, Race, and Hispanic Origin, 1976–2002

Sex	Race and Hispanic origin[a]	1976–80[b]	1988–94	1999–2002
		6–11 years of age		
Boys	White	6.1	10.7	14.0
	African American	6.8	12.3	17.0
	Mexican American	13.3	17.5	26.5
Girls	White	5.2	9.8[c]	13.1
	African American	11.2	17.0	22.8
	Mexican American	9.8	15.3	17.1
		12–19 years of age		
Boys	White	3.8	11.6	14.6
	African American	6.1	10.7	18.7
	Mexican American	7.7	14.1	24.7
Girls	White	4.6	8.9	12.7
	African American	10.7	16.3	23.6
	Mexican American	8.8	13.4[c]	19.6

Source: National Center for Health Statistics, *Health, United States, 2004, with Chartbook on Trends in the Health of Americans* (Hyattsville, Md., 2004), table 70.

a. Data for whites and African Americans are specifically for those without Hispanic or Latino origin; Mexican Americans may be of any race.

b. Data for Mexican Americans are for 1982–84.

c. Estimates are considered unreliable (standard error: 20 to 30 percent).

year-old American Indian children in North and South Dakota, Iowa, and Nebraska.[4] A study of seven American Indian communities in Arizona, New Mexico, and South Dakota reported obesity prevalence of 26.8 percent for boys and 30.5 percent for girls based on data for 1,704 elementary school children with an average age of 7.6 years.[5] As with U.S. children generally, trend data for Navajo six- to twelve-year-olds showed an increase in obesity rates over time.[6]

Asian American children are an exception to the general pattern of higher obesity rates among ethnic minority groups. A 2003 study of New York City elementary school children found obesity rates of 31 percent for Hispanics, 23 percent for African Americans, 16 percent for whites, and 14 percent for Asian Americans.[7] Another study compared overweight (with an 85th percentile BMI cutoff) for white, African American, Hispanic, and Asian American adolescents in 1996, using data from the National Longitudinal Study of Adolescent Health.[8] This survey of more than 14,000 students in seventh through twelfth grade indicates that Asian American adolescents have relatively low rates of overweight. The share of boys that were overweight was 23 percent among Asian Americans, 26 percent among African Americans, 27 percent among whites, and 28 percent among Hispanics. Among girls, only 10 percent of Asian Americans were overweight, as against 22 percent of whites, 30 percent of Hispanics, and 38 percent of African Americans. However, in adults, a BMI below the usual cutoff for obesity is associated with higher health risks in people of Asian origin when compared to other populations.[9] If this case is also true in children, the lower prevalence of obesity in Asian American children does not

necessarily reflect an equivalent lower level of health risk.

Low-income children are at excess risk of obesity regardless of ethnicity, although ethnic differences in pediatric obesity appear at lower-income levels.[10] Several authors have analyzed NHANES data on the links between socioeconomic status and obesity among children and youth overall and in specific age groups.[11] One analysis of two- to nineteen-year-old children in NHANES surveys between 1971–74 and 1999–2002 finds higher rates of obesity among low-income children than among all children after 1976–80.[12] Similarly, the National Longitudinal Survey of Youth for four- to twelve-year-olds indicates that low-income children have higher obesity rates than do wealthier children.[13]

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The association between socioeconomic status and obesity in school-aged children and adolescents varies by ethnicity and gender and appears to be quite complex.[14] In general, among white children, obesity typically declines as income and parental education increase. Different patterns have been found for children from ethnic minority groups. For example, among twelve- to seventeen-year-old non-Hispanic white children in the 1988–94 NHANES survey, rates of obesity decline for both boys and girls as family income increases. By contrast, among African Americans and Mexican Americans, girls' obesity rates increase with income; boys' rates show no consistent pattern.[15] Another study found that although rates of obesity for white girls decrease as family income rises, rates for African American girls are higher in the lowest and highest income ranges than in the in-between bracket.[16] For both groups, however, obesity rates decline with higher parental education. An analysis of the National Heart, Lung, and Blood Institute Growth and Health Study also noted ethnic differences in the relationship between socioeconomic status and obesity.[17] It found the expected inverse link between obesity and both parental income and education—with obesity decreasing as income or education increased—in white girls but not in African American girls. Overall, these studies indicate that differences in obesity rates across race and ethnic groups do not simply reflect differences in the average socioeconomic status across groups.

In summary, obesity rates are higher for African American and Hispanic children and adolescents than for their white peers. Among African Americans rates are particularly high among girls, although the disparity varies by age and socioeconomic status. Hispanic boys seem to be at particularly high risk for obesity. Obesity rates for American Indian children appear to be comparable to or in some cases higher than those for African American children. Samoan children are also at high risk. Asian American children, by contrast, are less likely than those from other ethnic groups to be obese by standard definitions although the applicability of the standard definitions to Asian Americans is unclear. Although poorer children are more likely to be obese when all children are considered, this link varies across ethnic and racial groups.

Health Effects of Childhood Obesity on Minority and Low-Income Populations

Early observers tracking the increase in childhood obesity were concerned that obese children would become obese adults and suffer obesity-related health complications.[18] Their concerns, however, are now more immediate: obese children are already suffering from these complications. Stephen Daniels, in an article in this volume, documents the many health problems that accompany childhood obesity. Obesity-related diseases seen in children include precursors of cardiovascular disease, type 2 diabetes, and sleep-disordered breathing.[19]

Ethnic minority and low-income children appear more likely to experience some of the obesity-related health problems. Type 2 diabetes provides a useful example. Among adults, type 2 diabetes is more common among African Americans and Hispanics than among whites. Although many of the data on type 2 diabetes in children come from clinic records or case studies rather than from population samples, the data strongly suggest that the patterns of diabetes risk for children and adolescents parallel those for adults.[20] Similarly, symptoms of metabolic syndrome—an important risk factor for diabetes and cardiovascular disease among adults—are more prevalent in some although not all minority youth populations.[21] In the 1988–94 NHANES, the metabolic syndrome was more prevalent in Mexican American adolescents than in whites (girls only) but less prevalent in blacks than in whites (both sexes).[22] Left ventricular hypertrophy, or thickening of the heart's main pumping chamber, and sleep apnea are two other health consequences of pediatric obesity that are also more prevalent in some ethnic minority groups. For example, one study of a sample of children (with an average age of 13.6 years) being evaluated for high blood pressure found left ventricular hypertrophy in 70 percent of Hispanics, 39 percent of African Americans, and 33 percent of whites.[23] In an overnight sleep-monitoring study of children aged two to eighteen years, African Americans had higher odds than whites of having sleep apnea.[24]

The higher rates of obesity among ethnic minority and low-income children, when combined with the adverse health effects of child obesity, are likely to produce continued racial and economic differences in health outcomes. Preventing obesity for all children may be a way to reduce socioeconomic and ethnic health disparities.

Understanding and Closing the Gap

Effectively addressing ethnic and socioeconomic disparities in childhood obesity requires understanding which causes of obesity might be especially prevalent or intensified in ethnic minority and low-income populations; understanding how aspects of the social, cultural, and economic environments of minority and low-income children might magnify the effects of factors that cause obesity; and determining which changes in those environments would help most to reduce obesity. In what follows, we discuss these issues in relation to media and marketing influences, community food access, built environments, schools, and home environments, noting in each case how factors that may promote obesity are particularly likely to affect low-income and minority youth.

Media and Marketing

Research suggests that low-income and ethnic minority youth are disproportionately exposed to marketing activities.[25] A Kaiser

Foundation report found that among children eight to eighteen years old, ethnic minorities use entertainment media more heavily than majority youth do. African Americans and Hispanics spend significantly more time watching TV and movies and playing video games than do white youth.[26] African American youth also watch on-screen media (TV, DVDs, videos, movies) more than Hispanics and whites do, and Hispanics watch such media significantly more than whites do. Television is especially prevalent in African American and low-income households. Media use differs, as well, by socioeconomic status. Low-income children watch TV for more hours and have significantly higher levels of total media exposure than higher-income children.[27] Consumers in low-income households, who are heavy viewers of daytime television, are more likely to view television advertising as authoritative and as helpful in selecting products, and they may prefer it to print media.[28]

Because of their heavy media use, ethnic minority and low-income youth are exposed to a great deal of food advertising at home. Research has found that such advertising can affect children's food preferences after even brief exposure.[29] A study of media use among Latino preschoolers confirmed just how influential such commercials can be. Sixty-three percent of mothers said that in the past week their preschooler had asked for a toy advertised on television, 55 percent reported that their preschooler had asked for an advertised food or drink, and 67 percent noted that their preschooler had asked to go to an advertised store or restaurant.[30] Older elementary school children exposed to television commercials for sweets and other snacks were more likely to choose candy and sugary drinks and less likely to choose fruit and orange juice when offered a snack.[31]

Most research on food advertising, however, does not focus on ethnic minority or low-income youth. A systematic review of the effects of food promotion on children examined more than 100 articles, fewer than six of which dealt explicitly with ethnic minority or low-income children.[32] Experimental evidence, however, indicates that ethnic minorities seem especially responsive to targeted ads.[33] African American adolescents, for example, identify with black characters in advertisements, and they rate advertisements featuring these characters more favorably.[34] Such responses may lead them to buy and consume less nutritious food products when advertised by these characters.

Ethnic minority and low-income children may also be exposed to a different mix of information than are other children. Content analyses of television advertising have found that shows featuring African Americans have more food commercials than do general prime-time shows and that these commercials feature more energy-dense foods.[35] Advertisements for such products appear to be particularly effective in increasing children's total caloric consumption.[36] Advertisements in African American adult magazines are also dominated by low-cost, low-nutrition, energy-dense foods, and the magazines are less likely to contain health-oriented messages.[37] Similarly, a content analysis of the products advertised to low-income consumers found that most featured food and drinks, largely items such as cookies and other snacks.[38] Such an imbalanced information environment makes it harder for parents to know about and to provide more healthful options.

Food and food-related images, such as body size, are also pervasive in various media. A content analysis of movies—and ethnic minorities watch movies more often than whites

do—found stereotypical food-related behaviors with respect to body shape, gender, and ethnic background.[39] More healthful, low-fat foods often appeared in scenes involving well-educated and affluent characters. Overweight characters were underrepresented, but when they did appear, they ate more high-fat, high-calorie foods than did their thinner counterparts. There is no evidence, however, on whether the movies' representation of food and food-related images affects how children perceive themselves or alters the foods they consume.

More research on the specific marketing environments of ethnic minority and low-income consumers is urgently needed. Policymakers and practitioners should consider policy interventions, including strengthening marketing and advertising guidelines in ways that reduce the overexposure of all children to marketing for high-calorie, high-fat foods.[40] Because ethnic minority and low-income children are exposed to more media than other children, policies that improve marketing and advertising may be most beneficial for these groups of children. Researchers have also suggested that schools can reduce the negative effects of advertising on minority and low-income children by teaching media literacy courses that make children aware of the many messages they receive daily from the media and how those messages can affect their attitudes and behavior.[41]

Food Access and Availability

The characteristics of communities in which ethnic minority and low-income children live may affect the foods that are available for their consumption. Compared with more affluent communities, minority and low-income communities have fewer than average supermarkets and convenience stores that stock fresh, good-quality, affordable foods such as whole grains or low-fat dairy products and meats.[42] A 1995 study estimated that supermarket flight from the inner cities left the typical low-income neighborhood with 30 percent fewer supermarkets than higher-income areas. At least one study that included a large cohort of African Americans has linked supermarket availability directly to fruit and vegetable intake.[43]

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With fewer supermarkets available, low-income minority families may be more likely to shop in small corner stores or bodegas. These stores tend to offer markedly less healthful foods in lower-income neighborhoods, as demonstrated in a New York study comparing in-store food availability in low-income, minority East Harlem and the adjacent, affluent Upper East Side.[44] Prices of more healthful foods may also be higher in bodegas and corner stores than in supermarkets. One study reported that although low-fat milk was available in more than two-thirds of the bodegas in areas where residents were less educated, had lower incomes, and were Latino, some such stores charged more for low-fat milk than for regular milk.[45] Evidence shows that higher prices for more healthful foods have an effect on children's weight. A

recent study based on a nationally representative sample of elementary school children concludes that children living in areas with lower prices of fruits and vegetables had significantly lower gains in BMI between kindergarten and third grade. Further, these effects were larger for children in poverty, children who were obese or overweight in kindergarten, and Asian and Hispanic children.[46] This evidence is consistent with that from a study of low-income women in Baltimore that found the cost of fresh produce kept them from eating more fruits and vegetables.[47]

A study in New Orleans found that black neighborhoods had more fast-food restaurants per square mile than did white neighborhoods.

African American and low-income neighborhoods also have many fast-food restaurants. A recent study found that African American adults ate more fast foods than did whites, perhaps because of their greater availability.[48] A study in New Orleans found that black neighborhoods had more fast-food restaurants per square mile than did white neighborhoods.[49] Another study found that areas of South Los Angeles with fewer African American residents (8 percent on average) were twice as likely as areas with more African Americans (36 percent on average) to have full-service rather than limited-service, fast-food restaurants.[50]

Studies of parents' attitudes toward fast-food restaurants highlight the problems that may be produced by having fast-food outlets nearby as well as the reasons why fast-food outlets are popular among low-income families. Hispanic women in a low-income community reported that the overabundance of fast-food restaurants and their intensive marketing interfered with their ability to exercise control over their children's eating habits. They also reported that acculturation to fast food caused their children to reject more healthful, traditional Hispanic foods.[51] But Latino women in a California study preferred fast-food restaurants and especially valued their family- and child-friendly aspects.[52]

On the important question of whether living near fast-food restaurants increases the chance that children become obese, the evidence is inconclusive. Research has found that foods served in fast-food outlets are much more energy-dense and have a higher fat content than meals consumed at home.[53] Furthermore, there is a correlation between fast-food consumption and body weight, at least among adults. In a survey of women aged twenty to seventy years in North Carolina, those who reported eating at fast-food restaurants "usually" or "often" had higher energy and fat intakes and higher body mass indexes than those who reported eating at them "rarely" or "never."[54] In the Coronary Artery Risk Development in Young Adults (CARDIA) Study, which followed for fifteen years a group of young adults aged eighteen to thirty at the time of enrollment, those who ate at fast-food restaurants more than twice a week weighed an average of 4.5 kilograms more than those who ate in them less than once a week.[55]

This evidence suggests that if children who live close to fast-food outlets consume more fast food, they may be more likely to become obese. But the few studies that specifically examine how the proximity of fast-food out-

lets affects children's fast-food consumption and their weight status do not find a connection. Living close to fast-food restaurants was not linked with being overweight among three- to five-year-old children in Cincinnati or to the self-reported frequency of fast-food restaurant use among seventh- to twelfth-grade students in Minnesota.[56] Researchers require more evidence, based on children from more geographical regions and age groups, before they can draw a definitive conclusion on this issue.

Built Environments

Where and how often children and adolescents engage in physical activity depends on the physical design and quality of their neighborhoods.[57] In low-income urban communities, the built environment affects children's physical activity much more than it affects that of adults. Because many adults do not own cars and must depend on public transportation, they often have to be physically active just to get to and from work or shopping.[58] By contrast, for safety reasons, parents may restrict their children's outdoor activities by using a combination of TV and easy access to snack foods to get children to go straight home from school and stay there. Children's limited access to parks and recreational facilities may also curtail their physical activity.[59] Neighborhood or community constraints on children's physical activity are likely to vary regionally and across ethnic groups. In low-income communities, family work schedules, discretionary time, money, and car ownership may make it hard for parents and caregivers to transport children to sports and other recreational activities, suggesting the need to develop nearby after-school or community-based, supervised programs.

Despite the logic that inadequate opportunities for physical activity should adversely affect children's weight, the evidence on this issue is limited. Several observational studies have failed to link children's weight status to the availability of neighborhood parks or to parental perceptions about safety.[60] A better approach would be to study direct links between specific neighborhood-based physical activity options and the types and amounts of physical activity in which children engage, taking into account how their family or home life, as well as the neighborhood's social organization, affects their access to these options. Additional research on this topic that focuses on low-income and minority children is needed.

School Settings

Schools offer opportunities for improving children's nutrition, increasing their physical activity, and preventing obesity. But schools in inner-city or low-income communities may be unable to take advantage of these opportunities, as most obesity-prevention initiatives proposed to date require significant funding and some depend on a school's physical facilities and neighborhood characteristics.[61] In addition, school officials, teachers, and parents have many competing priorities, such as new academic accountability standards and efforts to prevent drug abuse and violence.

Research on whether schools in low-income areas are less able to provide students with healthful foods or physical activity options is inconclusive. Several reports have compared environmental quality, resources, and per-student spending in schools with differing community income or differing shares of minority students. A report by the U.S. General Accounting Office (GAO) focused on such school problems as inadequate or unsatisfactory buildings, building features, or environmental conditions as well as expenses above the national average. Schools reporting the

most problems in all areas were large schools, central-city schools, schools in the western United States, schools with populations of at least 50.5 percent minority students, and schools with 70 percent or more poor students.[62] The differences, however, were often not striking, and the greatest variations were often by state.

A Centers for Disease Control and Prevention analysis addressed general health and safety issues as well as conditions and policies with more direct implications for physical activity and nutrition. It included athletic facilities and playground equipment, kitchen facilities and equipment, the presence of a cafeteria, soft drink vending contracts, and junk food promotion.[63] Contrary to expectation, schools in urban areas, schools with a high share of minority children, and schools with a low share of college-bound students were not worse off than other schools. Schools with the best health-protective environments turned out to be elementary schools, public schools, and larger schools.

Poorer children benefit from the National School Lunch and National School Breakfast Programs. These food programs, which provide free or reduced-price meals to low-income children, disproportionately enroll minority children. In 2004, in fourth grade, for example, nearly 70 percent of African American students, as against 23 percent of whites, were eligible for free or reduced-price lunches. Nearly half of African American students, as against only 5 percent of whites, attended schools where most children are eligible for subsidized meals.[64] Because these meals must meet federally set nutritional standards, these programs offer an opportunity to improve the nutrition of low-income minority children.

Although poorer children are eligible for free or reduced-price lunches in school, many schools offer a wide variety of "competitive" foods that do not meet nutritional standards. Schools that participate in the school lunch program face some federal restrictions on what foods they can serve during lunch periods in the school cafeteria, and many states and school districts are imposing additional standards.[65] But children can often purchase sodas and high-fat, high-sugar foods at school. As noted by the Government Accountability Office, these unregulated competitive foods undermine the school breakfast and school lunch programs, with negative nutrition implications for the children, but they may generate substantial revenue for the schools.[66] The GAO report does not indicate whether schools with limited resources depend more on revenue from competitive food sales than do wealthier schools. If they do, limitations on competitive food sales may impose a relatively larger burden on low-income schools. More research on this topic is needed. If in fact low-income schools will be disproportionately harmed by restrictions on competitive foods, then new regulations on competitive food sales might be coupled with compensatory financing for the schools most harmed.

In addition to restricting the sales of less healthful foods, many schools are considering interventions to promote the consumption of more nutritious foods. Some of these initiatives may be more effective in schools serving low-income children than in schools with more resources. For example, an intervention that lowered the prices of fruits and vegetables had a greater impact in inner-city schools than in suburban schools and suggests that making nutritious foods more accessible in these schools can increase demand.[67] In-school free fruit and vegetable distribution should be of particular benefit to

low-income children, who have less access to fruits and vegetables than their more affluent counterparts. Such approaches as salad bars with links to local farmers' markets or even student gardening programs could also be useful.[68] But before any such programs can begin on a large scale, comparative analysis of the availability of the community resources required for feasibility is essential.

Home and Family Settings

Another important question for researchers analyzing ethnic and socioeconomic disparities in childhood obesity is whether differences in home environments contribute to differences in child obesity rates. There are various underlying reasons why parenting practices may differ across ethnic and socioeconomic groups. Minority and low-income households have a higher share of female-headed families, lower parental education, and higher rates of teen parenting, all of which may profoundly affect the home environment.[69] Economic insecurity can influence food choices directly, by encouraging the purchase of cheaper, energy-dense foods, and indirectly, by producing psychosocial stress that affects parenting.[70] The higher prevalence of obesity among adults in minority and low-income populations may also affect children's weight status.[71] Maternal obesity and diabetes, both relatively more common among minority women, may predispose children to obesity.[72] In addition, obesity among parents may affect both the weight norms their children develop and the modeling of eating behaviors and physical activity they observe.

In what follows, we focus on three aspects of the home environment—breast-feeding, television viewing, and parental attitudes and behaviors. Each may be of particular importance for the development of obesity in ethnic minority and low-income children and may be amenable to change through targeted interventions.

Breast-feeding. Although breast-feeding rates for all groups have increased notably in recent years, disadvantaged minority groups still have lower rates than others.[73] As of 2001, the rates of breast-feeding for African American infants were 53 percent in-hospital and 22 percent at age six months. For Hispanics, the rates were 73 percent in-hospital and 33 percent at six months, whereas for whites, the rates were 72 percent in-hospital and 34 percent at six months.[74] High rates of teen pregnancy may contribute to lower breast-feeding rates, early introduction of solid foods, and early feeding of high-sugar foods for African American infants.[75] In another article in this volume Ana Lindsay and several colleagues note that the evidence on whether children who are breast-fed longer are less likely to become obese is inconclusive. Instead, mothers who choose to breast-feed may be more likely to adopt other behaviors that reduce the chance of obesity. Nonetheless, the link between longer breast-feeding and a lower risk of obesity, combined with the other well-documented benefits of breast-feeding, argues for efforts to increase breast-feeding among ethnic minority families.

Schools with the best health-protective environments turned out to be elementary schools, public schools, and larger schools.

Television viewing. TV watching may contribute to obesity by increasing sedentary be-

havior, increasing snacking while watching TV, and exposing children to advertisements for unhealthful foods and beverages.[76] The Institute of Medicine has recommended that parents restrict their children's television watching to fewer than two hours a day.[77]

Television's pervasive role in the lives of minority and low-income children, however, may make it hard for parents to turn off the TV. As noted, ethnic minority and low-income children have, as a group, high average levels of television viewing. African American households that can afford them are more likely than others to have premium channels and to have three or more TV sets.[78] Interestingly, the lower their parents' education, the higher the likelihood that a child will have a VCR or DVD in the bedroom. African American children are also more likely than whites to report having televisions in their bedrooms, along with DVDs, cable and satellite connections, premium channels, and video game consoles. Youth from the lowest income group are the most likely to have their own television sets. Watching television during meals is also more common in families with lower parental education, or lower income, as well as among Hispanics and African Americans. The National Heart, Lung, and Blood Institute Growth and Health Study found that eating while watching TV was more common among African American girls. This practice is also linked with reported higher caloric intake.[79]

High rates of teen pregnancy may contribute to lower breast-feeding rates, early introduction of solid foods, and early feeding of high-sugar foods for African American infants.

Developing interventions, possibly school- or child care center–based, to help low-income and minority parents reduce their children's TV time is important. Such interventions could also teach parents to help their children learn to evaluate critically the advertisements and programs they see at home.

Parental attitudes and behaviors. Efforts to get parents to pay closer attention to their children's weight and BMI can be controversial, because some parents can become overly restrictive about their children's food intake. Addressing childhood obesity issues with parents in minority and lower-income communities requires particular sensitivity to differences in attitudes about weight that may be the products of culture or economic insecurity.

Societal attitudes about weight may be changing as more and more adults become overweight and obese. But in communities where most women or adults are obese, as in many ethnic minority and low-income communities, attitudes, norms, behaviors, and cultural influences may be in equilibrium with a high level of obesity. There may be a mixture of positive and negative attitudes about being overweight, especially where people who are thin are thought to be sick, addicted to drugs, too poor to have enough to eat, or to risk "wasting away" in the case of food shortage or of serious illness.[80] In such environments, parents and other family members may consider being overweight as normal, perhaps determined by heredity. Shapeliness, robustness, and nurturing quali-

ties may be standards of female attractiveness that encourage the overall acceptance of people who—by BMI standards—are otherwise considered overweight or obese. One study found that African American girls were more likely than white girls to try to gain weight, largely because their parents told them they were too thin.[81]

Several child feeding attitudes or practices that are theoretically associated with obesity development are common among low-income mothers. Among them are heightened concerns about a child being hungry; greater difficulty withholding food from a child, even one who has just eaten; and concern about underweight even if a child is above normal weight.[82] Focus groups have found that low-income parents may see their overweight or obese children as "thick or solid." And other family members might challenge parents if they try to control their child's diet.[83] The view that "a fat child is a healthy child" or that children's weight follows a natural trajectory where heavy children will "grow out of it" may be more common among families that are food insecure or where hunger concerns are part of a group's identity.

In spite of such cultural differences, programs to motivate and educate low-income parents and caregivers in diverse ethnic minority populations about how to promote healthful eating and physical activity in their children, combined with programs for the children themselves, have yielded promising results.[84] Childhood obesity-prevention programs should also work with parents on their own weight issues. By promoting an understanding of the core principles of energy balance and by helping parents model the targeted nutrition and physical activity behaviors for their children, such programs could lead to favorable changes at home. Given the challenges of parenting in low-income communities, these programs should lessen rather than increase the stresses on parents by helping them and their children in ways that go beyond eating and physical activity. For example, after-school programs could include tutoring and time to do homework in addition to providing healthful snacks, dance, and active play.[85] Working with girls and their mothers together—counseling mothers about weight control and having them interact with their daughters—may be particularly effective for African American preadolescent or adolescent girls.[86] The ideal program simultaneously addresses many issues, including empowerment strategies, in the community, school, and home.

Conclusions and Implications

Any strategy to address childhood obesity in the overall population must include targeted interventions for children in the nation's minority and low-income families. Preventing child obesity in ethnic minority and low-income populations requires thinking through all the issues that apply to the population at large and then considering how these issues might differ in a population with different socio-cultural characteristics and usually less favorable health profiles, environmental circumstances, and life chances.

To date, the research on childhood obesity that is specifically focused on ethnic minority and low-income populations is limited. But the available evidence clearly shows that the higher rates of obesity in minority and low-income communities are associated with a plethora of unfavorable influences—economic stresses, reduced access to affordable healthful foods and opportunities for physical activity, overexposure to targeted advertising and marketing of energy-dense foods, and factors re-

lated to family ecologies. Simply counseling parents and children about weight control will be almost pointless in environments that work against carrying out recommendations for healthful eating and physical activity. To identify environmental changes that will most likely reduce childhood obesity in minority and low-income communities requires more investigation. Researchers also should focus on how culturally influenced attitudes and practices interact with environmental variables.

Although reducing obesity prevalence among minority and low-income children will not be possible without also improving their social and economic environments, clearly tremendous opportunities exist for targeted policies and interventions. In particular, policymakers can reinforce current programs that foster nutritional equity—food stamps, school and child care center feeding programs, and the supplemental WIC program—by adding a specific component on childhood obesity. They may also strengthen both routine and specialized health care services for obesity treatment and prevention for low-income and minority children through improvements in Medicaid, the State Children's Health Insurance Program, and services delivered in federally qualified and locally supported community health centers.[87] Such reforms, however, will almost certainly require a significant financial commitment.

Policies must also improve access to healthful foods and physical activity in low-income and minority communities. Families need more protection from the "invisible hand of the free market" as the primary determinant of affordable, accessible, and healthful food options. Food availability, access, and the closely related media and marketing issues should be top policy priorities in schools, families, and communities alike. The built environment must offer children more options for physical activity. Researchers and policymakers must face head-on the safety issues, such as violence and drug trafficking, that compromise socially disadvantaged inner-city neighborhoods. Because attention to these issues is highly specific for any locality and influenced by local policies, a feasible overall obesity-prevention strategy might address food-related and media-related initiatives at the national or regional level and built environment issues at the local level.

Underlying all these conclusions is one main message. Making serious progress in the fight against childhood obesity in minority and low-income communities will depend on our national will to radically alter the negative effects of the social and physical environments in which these communities exist.

Notes

1. In this article, "obesity" refers to children up to age eighteen whose body mass index (BMI, calculated as weight in kilograms divided by the square of height in meters) is at or above the 95th percentile of the appropriate age- and gender-specific BMI reference curve. Children with BMI values at or above the 85th percentile are classified as being "overweight." Note that this terminology differs from that used by the Centers for Disease Control and Prevention, which refers to children with BMI values at or above the 95th percentile as "overweight" and those with BMI values at or above the 85th percentile as "at risk for overweight."

2. Minority status is assigned to a set of diverse populations and subpopulations that fit the "non-white" U.S. Census Bureau's racial and ethnic classifications. The major minority group categories are African American, Hispanic or Latino, American Indian and Alaska Native, Native Hawaiian, Asian American, and Pacific Islander. These broad groupings mask substantial heterogeneity within groups. For example, the group "Hispanic or Latino" may include individuals of any race and includes U.S.-born and immigrant populations from Mexico, Puerto Rico, Cuba, Central and South America, and Spain. American Indians and Alaska Natives include hundreds of different federally recognized groups. Asian Americans come from all parts of Asia and are often classified together with Pacific Islanders, which can be misleading. Obesity rates may vary substantially across these subgroups.

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