Environmental influences on childhood obesity: Ethnic and cultural influences in context

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Abstract

Ethnicity is associated with differences in food-related beliefs, preferences, and behaviors, and cultural influences may contribute to the higher than average risk of obesity among children and youth in U.S. ethnic minority populations. However, cultural attitudes and beliefs are not the only potential source of ethnic variation in childhood obesity prevalence and should not be studied in isolation. Demographic, socio-structural, and environmental variables must also be considered. Available evidence indicates ethnic differences along several pathways that may increase risks of obesity development during gestation, infancy, childhood and adolescence. These include above-average prevalence of obesity in adult females and of maternal diabetes during pregnancy, parental attitudes and practices that may lead to overfeeding children, above-average levels of consumption of certain high calorie foods and beverages, and inadequate physical activity. Environments with lower than average neighborhood availability of healthful foods and higher than average availability of fast food restaurants, along with exposure to ethnically targeted food marketing may contribute to reliance on high calorie foods and beverages, and these foods may be socially and culturally valued. Attitudes about and environmental contexts for physical activity are also relevant. Increasingly, it is acknowledged that individual behaviors and lifestyles, e.g., food choices or child feeding practices, are responsive to the ecological contexts in which they are practiced. Focusing attention on the fluid interactions of cultural influences with contextual factors, of recognized importance for the study of childhood undernutrition, can also lead to further understanding of how to address ethnic disparities in childhood obesity.

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1. Introduction

No discussion of environmental influences on obesity is complete without consideration of cultural factors. Attitudes and behaviors related to body size and shape have long been understood as culturally defined [1,2]. The cultural context of food and eating is equally well-established [3–6]. Types and amounts of food and beverages, flavors, textures, food combinations, and traditional uses and meanings of food mark differences among ethnic groups and societies, convey symbolic meanings, create social interactions, and define pleasure and punishment. Furthermore, in every cultural tradition there are concepts of how food relates to health, which foods are deemed harmful and which are protective [3]. These cultural influences apply to eating patterns of adults as well as what and how adults feed their children and how the children are socialized to choose foods for themselves. These cultural aspects of food are universal, yet their expressions differ greatly among populations, classes and groups, shaped and conditioned by interactions with the physical environment as well as socioeconomic and economic trends and events [3–6].

Cultural beliefs and practices related to food and feeding vary among ethnic groups, and these differences may contribute to different patterns of obesity in children and youth, related to...
their ethnicity. This is increasingly important for public health because the prevalence of obesity among children and youth in U.S. ethnic minority populations [7–9] is even higher than for children in the U.S. population as a whole. Also, the numbers of children in some of these populations are increasing. In addition, ethnic comparisons on food intake variables of relevance to childhood obesity may offer clues to the importance of these variables for the whole population, providing “natural experiments” that provide for more variation than can be observed within any one ethnic group. For example, specific child feeding behaviors prevalent in populations with higher than average obesity prevalence suggest that these behaviors may be important explanatory variables in obesity causation.

Ethnic group variations in the epidemiology of childhood obesity are described in the lead article in this symposium [10]. Other articles discuss environmental effects on childhood obesity from developmental and behavioral perspectives related to gestation, parental feeding practices and various environmental stimuli to eating as they may affect food preferences, satiety mechanisms, and actual food intake [11–13]. This article highlights evidence about related ethnic group variations and how cultural and other environmental variables that vary among ethnic groups may interact. Brief background is provided on relevant characteristics of U.S. racial/ethnic minority populations, followed by selected data on influences on childhood obesity in these populations during gestation, infancy, childhood, and adolescence and discussion of cultural and environmental influences.

2. Background

2.1. Racial/ethnic classifications

The classifications used to define racial/ethnic minority populations are based on self-categorizations as reported in the U.S. census data [14] or in similarly collected data from health services or health program records. These categories are used to track and report many social, economic, and health indicators for racial/ethnic subpopulations of interest within the United States, and they change over time to keep pace with changes in population demographics [14,15]. The familiar, broad classifications are black/African American [used interchangeably], Hispanic/Latino [also used interchangeably], American Indian and Alaska Native, Native Hawaiian, Asian American and Pacific Islander. Hispanic/Latino is an ethnic grouping that overlaps with the other, “racial”, categories but is usually pooled across racial categories and treated as a substitute classification with the footnote that Hispanics and Latinos may be of any race.

These broad categories are not homogeneous and must be interpreted with caution. The majority of black/African Americans are U.S. born, but this category may include people with origins in the Caribbean and Africa. Hispanics/Latinos include U.S. born and immigrant populations with origins from Mexico, Puerto Rico, Cuba, Central and South America, and Spain [16]. American Indians and Alaska Natives include hundreds of different, federally-recognized groups with origins and residence throughout the United States on tribal lands or in other communities. Asian Americans include people with origins from all parts of Asia and were, until recently, classified together with Pacific Islanders. However, many health indicators differ markedly for Asians and Pacific Islanders, and it is helpful when these groups are reported separately. Pertinent here, the prevalence of obesity in Asian Americans and Pacific Islanders tends to be at opposite poles (lower than average and higher than average, respectively) [8]. In addition, standard definitions for obesity may underestimate weight related health risks in Asian Americans and overestimate them in Pacific Islanders [17].

2.2. Interpretation of racial/ethnic differences

Racial classifications imply a biological basis, but the biological significance of these classifications and the validity of using them as proxies for genetic variations is questioned increasingly, particularly as we now have the tools to explore genetic differences directly [15,18]; also see the article by Fernandez in this symposium [19]. On the other hand, the sociopolitical significance of these classifications is increasingly recognized [15]. That is, the commonly used racial and ethnic categories are valid but not necessarily in ways that might usually be assumed when racial differences are mentioned. To the extent that these categories identify “minority status” rather than simply identifying sources of ethnic diversity, they are associated with the social and political disadvantages that accrue from neglect or discrimination on the basis of race or ethnicity. While some aspects of minority status are independent of social class [20], being in a minority population impacts negatively on social position. Racial/ethnic minorities in the United States are generally more likely than whites to live in poverty and to be undereducated and underemployed [16]. Such social and economic disadvantage is not necessarily dependent on being in a numerical minority. The aggregate size of the racial/ethnic minority populations is increasing and will exceed 50% in the coming decades [21]. In some states “minorities” are numerically already in the majority.

Ethnic differences include variations in cultural attitudes and practices but also reflect many other factors on which minority populations differ, among themselves and from the majority, white populations. These factors include differences in the geographic region of residence or degree of urbanization, family size and type and household composition, health care access and health related behaviors, and neighborhood characteristics, including safety, number and type of services available, and the degree of racial/ethnic segregation. Segregation is highest for African Americans [22], worsens poverty qualitatively [23] and generally limits personal choices as well as flexibility in exercising those choices [24,25].

The table gives examples of differences in census indices of socioeconomic status (SES) and maternal–infant health variables for four aggregate minority populations, based on U.S. year 2000 census data from urban areas, which were 50.7% white, 25.4% black, 16.3% Hispanic, and 5.8% Asian [26]. SES differences are evident. The higher percentage of single-mother households among African Americans and, to a lesser extent,
Hispanics are noteworthy. Also, low birthweight is more frequent in African Americans, and teen pregnancy is more common in both blacks and Hispanics. Early prenatal care is less common in all three of the ethnic minority groups shown.

2.3. Ethnic differences in obesity prevalence

As described in the epidemiological overview by Adair [18], data from the National Health and Nutrition Examination Survey (NHANES) show higher than average obesity prevalence in non-Hispanic black and Mexican American children compared to non-Hispanic white children at most ages [7]. In boys the excess obesity is apparent primarily in Mexican Americans ages 2 through 11, compared to non-Hispanic black or white boys in those age groups. In girls, excess obesity is apparent in both non-Hispanic black and Mexican American girls at all ages and is particularly marked among non-Hispanic black girls compared to other girls at ages 6 through 19. This suggests that the predisposing factors leading to excess obesity may differ by gender as well as developmental timing. These prevalence differences reflect steeper than average rates of increase in obesity in Mexican American and particularly non-Hispanic black children during the past three decades [27], and especially in children ages 6 and over.

The NHANES only reports ethnicity specific data for non-Hispanic blacks and whites and Mexican Americans. Surveys of selected community or school based populations, cohort studies, or health system data [28–33] clearly show an excess risk of obesity affecting Hispanic/Latino children generally as well as American Indian, Native Hawaiian, and Samoan children at various ages. With the exception of African American girls, excess obesity observed among children in ethnic minority compared to non-Hispanic white children was often noted prior to recognition of the obesity epidemic [34]. Factors predisposing to obesity in African American children may, therefore, reflect relatively recent social—cultural and environmental changes to a greater extent than in some of the other populations of color.

In contrast to the other ethnic minority populations, obesity prevalence is often found to be lower than average in Asian American children [29,33]. However, this does not necessarily mean that Asian American children are at commensurately lower health risks. BMI levels are not synonymous with body fatness levels, and fatness levels at any given body weight level are higher, on average, in Asian Americans than whites [35]. Data for adults suggest that the health risks of obesity in Asian Americans may become evident at BMI levels lower than the usual cutoffs used to define obesity [17]. Hence, factors that predispose to or protect against excess weight gain in Asian American children are still of potential interest.

Obesity prevalence also varies by SES, but ethnic differences are often observed even within SES categories [36,37]. Wang and Zhang [38] point out that the associations of SES with obesity are not the same in all groups. For example, these authors found that the inverse association of SES with obesity that is usually seen in females in westernized countries is only seen in white girls; obesity prevalence is seen to increase with increasing SES in black girls. Overall, however, associations of SES related variations in obesity in the U.S. population appear to be diminishing [9].

In immigrant populations, obesity prevalence increases across generations and with longer duration of residence in the United States. For example, in data from a large study of U.S. adolescents from diverse ethnic groups, the likelihood of being obese was twice as high among both Hispanic and Asian Americans who were born in the United States compared to those born elsewhere and newly immigrating [39]. Indirectly, this underscores the fact that ethnic differences in obesity are strongly determined by environmental factors.

3. Racial/ethnic group differences in factors linked to childhood obesity

3.1. Gestation and early infancy

Maternal obesity and diabetes are associated with having higher birthweight infants. Although this could reflect a genetic predisposition in the mother transmitted to the infant, other mechanisms related to fetal exposures to circulating glucose or metabolic programming of appetite or energy balance regulation are also possible [40–42]. Whatever, the mechanism, maternal obesity and diabetes may explain some of the higher risk of childhood obesity in minority populations. The prevalence of obesity is higher among African American, Hispanic/Latino, and Native American women compared to white women [7,43,44], and the prevalence of diabetes during pregnancy is also higher among women in these ethnic groups as well as in some subgroups of Asian American women [45] (See Fig. 1). Excess pregnancy weight gain, which is more common among black than white women, for example [46], may also increase the likelihood of having infants with high birthweight [40]. However, as noted previously (see Table 1), African American women are at marked excess risk of having infants with low rather than high birthweight [44]; the significance of maternal weight status in the development of early obesity in African American children is unclear. Low birthweight has been associated with subsequent risks of central obesity but not necessarily generalized obesity occurring during childhood.

A study of adolescent overweight according to environmental temperature at birth provides clues to factors that might operate during gestation to predispose to excess weight in adolescent African American girls [47]. The study was motivated by evidence of a possible relationship between obesity development and season of birth based on animal data and some observations in humans. Data on weight, height, birth date, and birth place were obtained by self-report from 1100 school children ages 15 to 19 in Philadelphia. For the 578 students who were born in Philadelphia, the information on birth date was linked to archived meteorological records for the Philadelphia area. Results indicated that being overweight was correlated with higher environmental temperatures in the 2nd and 3rd trimesters of gestation and at birth, in females but not males. The association of overweight with higher (≥ versus ≤
13.2°C (56°F)) environmental temperature at birth was statistically significant in the African American but not white females: relative risk 2.51 (95% Confidence Interval 1.07–5.91) and relative risk 1.94 (0.61–1.94) in African American and white females, respectively. The authors noted several possible mechanisms leading to differential effects on fetal appetite regulation or fat deposition—variations in melatonin levels associated with day length or effects of environmental temperature or seasonal changes on maternal carbohydrate and fat intake. Given the gender specificity of the association, mechanisms that might impact differently on females and males in utero would be of particular interest.

Rapid weight gain in the first year of life may predispose to obesity development in childhood or later adulthood, regardless of birthweight [48–50]. For example, Stettler retrospectively analyzed the prevalence of overweight (CDC 95th percentile) at age 7 years in a cohort of more than 19,000 children born at full term (which excluded considerations related to preterm birth) according to the rate of weight gain during the first 4 months of life [48]. A significant increased risk of being overweight at age 7 (odds ratio 1.38 (CI 1.32–1.44 per 100g weight gained per month) was observed. This association was present in each quintile of birth weight, after adjustment for several confounding factors. The persistence of this association after control for attained weight at 1 year of age suggested that this effect was not simply due to tracking of weight from early infancy to age 7. Whether the determinants of the rate of weight gain were genetic (e.g., expression of an underlying predisposition to obesity), were based on developmental factors acting in utero, or related to infant feeding practices cannot be determined. In particular, the data from this cohort did not include sufficient information to allow analysis of the role of breastfeeding.

Breastfeeding may protect against the development of childhood obesity, although the issue continues to be debated [50,51]. Even where such protection may be found among whites, the potential protective effects of breastfeeding in African Americans

Table 1
Selected socioeconomic status and maternal–infant health status indices in 1990 and 2000 in U.S. cities, by ethnicity

<table>
<thead>
<tr>
<th>Race/ethnicity</th>
<th>Year of U.S. census and percent change</th>
<th>Education</th>
<th>Poverty and family composition</th>
<th>Maternal–infant health</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Adults ages 25+ without high school diploma</td>
<td>Adults ages 25+ with any college attendance</td>
<td>% living below 100% poverty</td>
</tr>
<tr>
<td>White</td>
<td>1990</td>
<td>20.7</td>
<td>53.5</td>
<td>11.5</td>
</tr>
<tr>
<td></td>
<td>2000</td>
<td>16.5</td>
<td>60.0</td>
<td>11.5</td>
</tr>
<tr>
<td></td>
<td>% change</td>
<td>–20.4</td>
<td>12.2</td>
<td>0.1</td>
</tr>
<tr>
<td>Black</td>
<td>1990</td>
<td>32.3</td>
<td>40.7</td>
<td>30.3</td>
</tr>
<tr>
<td></td>
<td>2000</td>
<td>25.1</td>
<td>46.1</td>
<td>26.5</td>
</tr>
<tr>
<td></td>
<td>% change</td>
<td>–22.4</td>
<td>13.3</td>
<td>–12.6</td>
</tr>
<tr>
<td>Hispanic</td>
<td>1990</td>
<td>39.1</td>
<td>38.5</td>
<td>24.4</td>
</tr>
<tr>
<td></td>
<td>2000</td>
<td>42.8</td>
<td>34.8</td>
<td>23.9</td>
</tr>
<tr>
<td></td>
<td>% change</td>
<td>9.7</td>
<td>–9.6</td>
<td>–2.1</td>
</tr>
<tr>
<td>Asian</td>
<td>1990</td>
<td>25.1</td>
<td>58.2</td>
<td>23.4</td>
</tr>
<tr>
<td></td>
<td>2000</td>
<td>23.6</td>
<td>59.8</td>
<td>18.8</td>
</tr>
<tr>
<td></td>
<td>% change</td>
<td>–6.2</td>
<td>2.8</td>
<td>–19.7</td>
</tr>
</tbody>
</table>

and Latinos are less evident [52,53]. This may relate in part to the duration of breastfeeding. Some data suggest that short duration of breastfeeding (i.e., less than 3 months) may be a risk factor for overweight, while only the longer duration breastfeeding is protective [52]. In addition, there may be cultural differences in the type of breastfeeding, e.g., whether exclusive or in combination with formula feeding and early introduction of solid foods, or in other risk factors for overweight that can overwhelm any protective effects of breastfeeding [52,54].

If breastfeeding is an important determinant, then the lower rates of breastfeeding observed in African Americans may contribute to childhood obesity development. In national data for 2001, 33.7% of African American infants were breastfed for 3 months or more, compared to 49.7 of white infants and 54.3% of Hispanic infants [55]. However, lower income women in minority populations (as well as in whites) who participate in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) may be generally less likely than their peers to breastfeed [56]. In the Ross Laboratories survey data for 2003, the percent of mothers breastfeeding at 6 months among non-WIC participants was 44, 36, 37, and 51% for white, black, Hispanic, and Asian American women, respectively, but was 20, 15, 26, and 33 among the WIC participants in these groups. Although WIC mothers may be advised to breastfeed, WIC policies that provide more benefits to mothers who feed infant formula may counteract this advice [54]. In addition, the higher rates of teen pregnancy in African Americans and Latinos may contribute to lower breastfeeding rates, since mothers under age 20 years at the time of the baby’s birth are the least likely to breastfeed for 3 months or more [55].

Following are two additional examples of cultural attitudes about body weight and what constitutes appropriate infant feeding. Baughcum and colleagues [57] explored child feeding practices in focus groups with WIC mothers in Northern Kentucky. The sample was primarily white, highlighting that cultural attitudes related to weight and overfeeding are identified not only in ethnic minority populations but also in high risk populations defined by income or rural residence. Some African American mothers were included but findings were not reported separately for this group. The mothers in this study did not indicate awareness of an upper limit to acceptable infant weight. They believed that it was better for infants to be heavier and that heavier and faster growing infants were healthier and better cared for. They also expressed a fear that infants would not get enough to eat unless given cereal and other solid foods early on—earlier than recommended by health professionals. In fact, they tended to feed children who seemed to be hungry even if they knew that the child had just eaten, and they were concerned about children being overweight even when they were clearly not in the underweight range. Mothers expected their children to be hungry if they themselves were hungry and found it more convenient to feed infants the same types of foods eaten by adults. Food was also used by these mothers to reward children’s behaviors or to calm them when they were fussy.

Bentley [58] conducted in depth interviews with African American mothers recruited from WIC programs in Baltimore, Maryland, limiting the sample to those 13 to 20 years of age, living with their own mothers, and having their first child, with children newborn through age 24 months at the time of the interview. Both mothers and maternal grandmothers were interviewed multiple times. Interviews were guided by a conceptual model that prompted for influences of cultural beliefs about parenting, social support provided by the grandmother, the mother’s own resources and sources of stress as interrelated influences on the pattern of infant feeding, and the additional influence of the child’s temperament or appetite on the feeding pattern. The results confirmed the prevalence of the cultural norm to feed cereal in the infant’s bottle from as early as 1 to 2 weeks of age and to feed other semi-solid foods within the first month of life. Grandmothers often dominated decisions about what infants were fed, having particular influence when actually responsible for or involved directly in caregiving.

3.2. Childhood and adolescence

As discussed by other authors in this symposium [12,13] and reviewed elsewhere [59] determinants of obesity during childhood and adolescence may include child feeding practices, parental decisions about the types of foods available in the home and their children’s access to these foods, children’s consumption of high fat foods and soft drinks, social interactions around food, amount of TV watching, sports participation or active recreation, and influences of parents as role models related to eating, physical activity, and body size. All of these variables may contribute to the high risk of obesity among children in one or more minority populations or at least are worthy of further study in this respect [60]. Some examples follow.

In the National Heart, Lung, and Blood Institute Growth and Health Study, fast food consumption was associated with higher caloric consumption [61]. Black girls in this cohort consumed more fast food than white girls and had higher fat consumption than white girls at a given level of fast food consumption. The physical activity levels of the black girls were markedly lower compared to white girls [62]. In the California Health Interview Survey both soft drink consumption and fast food consumption were highest in African American and Latino compared to white and Asian adolescents [63]. Data from a comprehensive, nationally representative survey of 8th, 10th, and 12th graders also reported higher levels of several obesity promoting behaviors (breakfast skipping, low intake of fruits and vegetables, and high levels of TV watching) in black and Hispanic compared to white children, often independent of SES [64]. Eating at fast food restaurants was associated with higher rates of childhood overweight in Mexican American school children in San Diego, whereas eating in Mexican restaurants was protective [65]. Higher levels of TV watching in black and Hispanic children have been reported in other surveys of media use [66,67]. TV watching may predispose to obesity because it is a physically inactive pastime and also because it exposes children to advertisements for high calorie foods and may therefore lead to increased intake of high calorie foods.

Although the optimum parental feeding style for obesity prevention has not been clarified, key objectives are to preserve
any innate appetite regulatory mechanisms that may be present in childhood (e.g., not forcing children to eat when they are not hungry or after they feel that they have had enough) and to offer nutritious foods such as milk, fruits and vegetables in preference to soft drinks, chips, French fries, and candy [12,13]. Potentially relevant ethnic and cultural differences in infant feeding styles [57,58] have already been noted. There may also be important ethnic differences in feeding styles during preschool and school age years, e.g., parent- versus child centered [68] or authoritative versus authoritarian [69] and in how various feeding strategies related to obesity development.

Parental concern about children’s weight may be one element of feeding styles, e.g., lack of perception that the child is overweight or a perception that a normal weight child is underweight may predispose to overfeeding. This possibility is supported by data from focus groups with WIC mothers of preschool children, in Cincinnati, Ohio [70]. Most (13 of 18) women in the focus groups were African American. Most were overweight or obese and had children in the overweight or obese range. The mothers were asked questions such as: How do you know a child is at a healthy weight? What are the warning signs that a child is becoming overweight? What does the word obese mean to you? What causes a child to be overweight? Whose responsibility is the control of eating? Responses indicated that the mothers did not accept growth charts as the basis for determining their children’s weight and that having a large body size was culturally acceptable as long as the children were healthy, active, had good self-esteem and were not teased by their peers. The mothers saw physical inactivity as related to weight but perhaps limited by rather than a cause of overweight. Difficulties in restricting food related to concern about withholding food from a child who claimed to be hungry, use of food as a parenting tool or reward, pride in being able to afford treats, and—in some cases—challenges to their authority by the child’s father or grandmother.

In addition, the excess of obesity among women in ethnic minority populations creates a socio-cultural milieu in which obesity is normative in children’s female role models. This applies even for women in their 20’s and 30’s, the likely ages of parents of young children. Based on NHANES data for adults aged 20 to 39 years in the 2003–2004 survey [7], 50.3% of black women are obese (i.e., have a BMI of 30 or above) and 15.7% are in the extremely obese category (i.e., have a BMI of 40 or above). Obesity and extreme obesity occur in 35.7 and 8.6% of Mexican American women in this age range, but only 23.8 and 6.4%, respectively in 20 to 39 year old non-Hispanic white women. Rates of obesity do not differ as much in men in these ethnic groups, although the prevalence of obesity (32.3 and 32.7%, respectively) in 20 to 39 year old non-Hispanic black and Mexican American men exceeds the 27% in white men in this age range. Furthermore, relatively more black men (7.1%) compared to Mexican American (1.9%) or white (3.9%) men in this age range have BMI levels in the extremely obese category. Leisure time physical activity levels of African American and Hispanic adults are generally lower in comparison to those of whites, especially in females [71,72], suggesting that family engagement of children in sports and active recreation may be limited.

4. Environmental contexts

The question posed in this article is to what extent to the ethnic differences in obesity relate to cultural factors—in the sense of culturally influenced attitudes and beliefs—and to what extent they relate to other aspects of environments differentially affecting ethnic minority populations in comparison to white populations. As noted in the Introduction, this is not really a case of “either/or”. The expression of these cultural influences is in a dynamic, fluid interaction with the surrounding social and environmental contexts. In some cases factors in these contexts may enhance cultural predispositions. In other cases they may limit or prevent the expression of cultural preference. In addition, both cultural and environmental influences may interact with biological determinants of obesity.

4.1. Socio-cultural environments

As implied by the data highlighted in the previous section, aspects of the socio-cultural environments of some U.S. ethnic groups appear to favor obesity development. The cultural acceptability of overeating may be conditioned by past or recurrent economic deprivation, i.e., “feasting” whenever food is available [4]. Cultural wisdom related to avoiding hunger may be strongly entrenched, while wisdom related to avoiding obesity has not yet evolved. The most highly valued foods may be those that are associated with the ability to survive, that were scarce or unaffordable in the past, e.g., meat, fats, and sugars, and that are emotionally rewarding. Many of these foods are also associated with high social status and, therefore, strongly desired as symbols of integration into the mainstream society or of upward social mobility. These preferences and values may persist for generations even when these “status foods” become cheap and abundant. The intrinsically rewarding nature of fat and sweet perpetuates their intake [12]. In addition, data for African Americans suggest a heightened sensory preference for sweet foods [73,74], which may further reinforce consumption of these foods.

With respect to body image, the absence of prominent cultural practices related to weight control may be due in part to body size values that are positive or neutral to large body size. Body image attitudes that may be permissive for obesity development have been clearly documented in African Americans [70,75–78] although not necessarily in other minority populations. In studies with African Americans, body image attitudes that are relatively tolerant of excess weight are readily elicited in qualitative studies, although at a community level these attitudes probably co-exist with more typical perceptions of excess weight as negative. Being heavy is not considered synonymous with being unattractive and does not necessarily damage self-esteem, even in adolescent girls [79]. Being too thin may be equated with being ill (e.g., having cancer, tuberculosis, or HIV/AIDS) or being a drug user or, at best, having limited fat stores to draw on in the event of illness or “hard times” when money to buy food might be scarce. Overweight may be viewed as a problem only when it is clearly linked to health problems. These types of attitudes about
large body size may apply to any population where accumulation of excess fat is only seen when people are relatively healthy and food secure [2]. As discussed in the next section, such attitudes may be particularly likely to predispose to obesity when high calorie foods and beverages are abundant, in excess of the typical person’s caloric needs, are low in cost, and are heavily marketed.

Culturally determined attitudes also influence physical activity and inactivity. Interest in sports or traditions of being physically active may be favorable to children’s activity levels when safe options for physical activity are available and affordable. On the other hand, the prevailing cultural value for television and automobiles as status symbols and signs of economic sufficiency (e.g., being able to afford a car or buy a TV for the child’s bedroom) may predispose to sedentary behavior. Populations who see being physically active as “work” may seek sedentary rest and relaxation when possible even though their jobs may not require physical activity [80].

4.2. Physical environments

There is increasing awareness that physical environments can influence obesity development generally [81,82] and also that physical environments are less favorable to weight control in communities in which ethnic minority children live. Less neighborhood access to supermarkets or other retail outlets that provide access to a mix of healthful food products at reasonable cost and higher than average exposure to fast food restaurants have been documented in ethnic minority and low income communities [60,83,84]. Potential exposure to (urban) violence when outdoors and lack of access to supervised recreational facilities, or the cost of admission to recreational facilities may keep children from being physically active. In addition, when advertising of high calorie—low nutrition foods is seen as a part of the physical environment, current targeted marketing practices add to the contextual risks for obesity development [60]. Several studies that have examined the frequency and content of food advertisements in television markets with a high viewership of African American children have documented the higher than average occurrence of food ads and higher proportion of ads for high calorie snack foods, soft drinks and candy in comparison to ads in predominantly white markets [85–87].

4.3. Economic and policy environments

Given the disproportionate prevalence of poverty in minority populations, aspects of the economy and economic policy that relate to the potential to avoid caloric overconsumption are relevant to ethnic differences in risks of childhood obesity. Even though food has become relatively inexpensive, the price structure of the food supply is such that the least expensive foods are those with the highest energy density [88]. This means that people with limited discretionary incomes or unstable incomes may rely on foods with high energy density [89], and these foods increase the likelihood of passive overconsumption and, therefore, weight gain.

Federal nutrition policies geared to providing a nutrition safety net, e.g., the policies that support the school and child care feeding programs, food stamps, and WIC, can theoretically help to mitigate the risks of childhood obesity development [90,91]. However, although such policies have become better aligned with goals for dietary quality, the challenge of how one leverages nutrition policy to also support goals for appropriate caloric intake has yet to be met. For example, the food pattern used as the basis for the Food Stamp program uses questionable assumptions about the time that low income families will spend in food preparation [92]. Reducing time in food preparation raises the cost of food and increases reliance on foods with higher caloric content. Other policies or policy gaps related to school feeding programs may disadvantage children in ethnic minority groups, who are more likely to be income eligible for school feeding programs, e.g., policy gaps that allow high calorie snack foods or beverages to be sold in competition with the school lunch program or that provide insufficient opportunities for physical activity [90,91].

5. The culture–environmental interaction

Cultural influences on the predisposition to childhood obesity suggest the need for culturally-tailored interventions [91,93,94]. However, in designing potential interventions we must ask how important it is to focus solely on cultural attitudes and beliefs as potential targets for change versus focusing on the circumstances that give rise to or support certain of these cultural variables. Cultural influences are not static variables that occur independently of the environmental contexts in which they are embedded and with which they interact [95]. Therefore, consideration of ethnic differences in obesity must always refer to relevant social, economic, policy, and media influences. Increasingly, it is acknowledged that individual behaviors related to obesity, e.g. food choices or child feeding practices, are responsive to the contexts in which they are practiced [82,96]. As discussed by Wachs [97] elsewhere in this symposium, we have traditionally explored these contextual issues in relation to undernutrition. Focusing attention on interactions of cultural influences with contextual factors may also yield new insights about how to intervene effectively to reduce disparities in obesity prevalence among children and youth, particularly when potentially relevant biological context variables are incorporated as well [98].

Potential culture–environment interactions and interdependence can be illustrated by considering the home environment. The home is the innermost level of environmental influence on children’s behaviors where combined socio-cultural, physical, economic and policy influences are experienced. Parent/caregiver influences at home are particularly important for preschool and school age children; adolescents have more behavioral autonomy and access to food. Characteristics of minority and low SES households that may especially influence the context for parenting include the higher proportions of female-headed households, lower parental education levels and higher rates of teen parenting shown in the table. Family ecologies may be characterized by connectedness to extended family members and direct involvement of grandparents.
or elders in child rearing [58,99] to a greater extent in ethnic minority than white families. Also noted previously, the higher levels of obesity in ethnic minority families, especially among women, are a direct influence in the social context for obesity in terms of role models and weight norms.

The ability and, indirectly, the motivation of parents to provide healthful foods and beverages are influenced by food availability and access and by other market-related variables. The willingness to provide healthful foods will also be influenced by underlying cultural attitudes and habitual practices. Some attitudes that might predispose to consumption of high fat, high calorie foods can potentially be reshaped by a combination of changes in the food-related media and marketing environments. Other attitudes may relate to perceptions based on historical experiences, ethnocultural beliefs and values, or economic factors, including food insecurity, and they may be associated with core survival skills. These attitudes and perceptions, which may be more deeply held and reinforced by elders involved in caregiving or when giving advice to parents, may pose particular challenges or opportunities for obesity prevention in ethnic minority families with respect to their willingness to create more obesity protective environments. The receptivity to advice from health professionals may be limited if it contradicts the advice of elders, and it may also be limited generally by distrust in the health care system [100].

In addition, parents, families, and children in ethnic minority populations are likely to have higher than average levels of direct or indirect (i.e., by association or ethnic identification) exposure to environmental and psychological stress, e.g., associated with racial discrimination, violence, economic stress, concerns about economic security and personal safety, and perceived inability to improve one’s life circumstances or those of one’s children [23,101]. Day to day stress may be overlaid onto chronic stress caused by a sociopolitical history of oppression or social disruption, or factors related to immigration that are either retained in cultural memory or actively considered when processing experiences with the U.S. society as a whole. How this stress is experienced will vary from person to person and among different ethnic groups. It is relevant here because of the possibility that coping strategies may include the use of food—a not uncommon strategy and one that may indeed be effective for reducing stress [102–104]. Use of food for coping and the associated metabolic reactions may predispose to the deposition of abdominal fat and related metabolic aberrations, possibly increasing levels of obesity and related diseases during adulthood and predisposing to gestational transmission of obesity.

6. Conclusion

The observation that childhood obesity is more prevalent in ethnic minority populations is likely to reflect differences in a combination of factors that result in: 1) excess obesity and diabetes in adult females in these populations; 2) consequent effects on gestational environments and social norms with respect to establishing or expressing an underlying predisposition to gain excess weight; 3) infant and child feeding practices likely to result in excess consumption of calories; and 4) culturally and environmentally influenced food intake and physical activity patterns that result in excess weight gain beginning in childhood and adolescence. This combination of factors includes culturally influenced attitudes and beliefs but also includes adverse environmental exposures that are more common in ethnic minority populations than in others—particularly for the low income segment of minority populations. Recognizing the contributions of environmental variables that are rooted in the social structure and, therefore, beyond the control of individuals is key to understanding the nature of solutions that will be needed to impact upon the relevant pathways of excess risk.

References


Kumanyika SK / Physiology & Behavior 94 (2008) 61–70


Taylor WC, Poston WSC, Jones L, Kraft MK. Environmental justice: obesity, physical activity, and healthy eating. J Phys Activity Health 2006;3(Supplement 1) (on line).