The Role of Culture in the Context of School-Based BMI Screening

abstract

The high prevalence of overweight and obesity is a significant public health concern in the United States. Minority populations are disproportionately affected, and the impact of obesity on minority children is especially alarming. In this article we discuss school-based BMI reporting, which is intended to increase parental awareness of their children’s weight status. This information could potentially lead parents of overweight and obese children to carefully examine and possibly change their children’s diet and activity patterns. However, any program related to child weight status must consider culturally defined aspects of body size and shape. In other words, the cultural context in which information on child BMI is presented to and received by parents must be considered. In this article we review parental perceptions of child weight. Multiple studies have shown that parents of overweight or obese children often fail to correctly perceive their children as overweight. Possible reasons for, and implications of, this misperception of child weight status among minority parents are then explored within a cultural framework. The PEN-3 model is used to examine influences on health behaviors and could help inform the development of a culturally sensitive BMI-notification program for minority parents. Reporting materials congruent with the social and cultural values and practices of the target audience are likely to maximize program effectiveness. A culturally based BMI-notification program should be conceptualized as a small step in a comprehensive plan to reduce childhood obesity and improve the current and future health of minority children. *Pediatrics* 2009;124:S50–S62

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KEY WORDS

weight status, weight perception, minorities, overweight, African Americans, Latinos, PEN-3 model

ABBREVIATIONS

NHANES—National Health and Nutrition Examination Survey
WIC—Supplemental Nutrition Program for Women, Infants, and Children

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Although overweight and obesity pose a significant public health concern for the US population as a whole, ethnic minority populations are disproportionately affected. The impact of obesity on ethnic minority children is especially troubling. The significant increases in obesity-related chronic diseases among children and adolescents serve as both disturbing and sobering sequelae to this relatively recent national public health crisis.

Our culture, preoccupied with weight, food, diets, and thinness, is demanding a simple solution to this complex problem. A disturbing array of organizations and individuals are pleased to comply and offer products, pills, and diets as an overall “quick fix” to this multifaceted problem. It is a challenge to address this issue with scientific rigor and input from the diverse groups of stakeholders that it requires. Clearly, no single strategy will be sufficient to address this health problem. Research has suggested a variety of contributory factors, including excessive portions, fast food, skipping breakfast, sweetened beverages, excessive fruit juice consumption, irresponsible food marketing, sedentary lifestyles, insufficient sleep, television viewing, reduced breastfeeding, and lack of dietary calcium. However, it remains unclear why some individuals are more prone to weight gain, why weight loss maintenance is so difficult, and what individual, institutional, and environmental changes need to be made. To add to the challenge, obesity is an emotionally and politically charged condition that continues to stir controversy. For example, some have speculated that the public health emphasis on obesity contributes to an exaggeration of the health consequences, an increase in discrimination against and stigmatization of obese people, and an increase in disordered eating behavior. Furthermore, some have speculated that the claim of an obesity epidemic being used for economic gain.

Given these issues, it can be difficult to know how to intervene so as to best prevent and treat obesity, in general, and childhood obesity among minority children, specifically. Ultimately, a multifaceted approach is required. However, a recommendation in a recent Institute of Medicine report, “Preventing Childhood Obesity: Health in the Balance,” was for schools to conduct annual assessments of each student’s height, weight, and BMI (which is calculated as weight in kilograms divided by the square of height in meters). The report indicated that schools have traditionally taken the height and weight of children as part of an overall health screening. Although this may be true, using these data to calculate BMI and then reporting the BMI percentile to parents has not been a customary part of the process.

Nonetheless, sharing child weight-status information is thought to be one strategy for raising parental awareness of their children’s weight and related health risks. Parents have a significant influence on the development of lifestyle habits in their children, including those that may contribute to the maintenance of a healthy weight. For example, parents’ knowledge of nutrition, food-purchasing practices, home eating patterns, and activity choices provide models for their children’s knowledge and behavior. Thus, parents need to be armed with the knowledge of and, more importantly, the ability to use this information to make informed decisions.

The goal of BMI reporting is to encourage parents to assess and potentially change the diet and activity patterns of their children. To achieve this goal, it is imperative that careful thought be given to crafting a message with parents in mind. Given the higher prevalence of obesity among minority adults and children, this is especially true for messages sent to minorities. Cultural influences may be particularly salient for schools to consider in developing these programs, because culture shapes perceptions and practices related to health. In this article we focus on aspects to consider in the BMI-notification process, with an emphasis on the importance of culture, obesity prevalence among minority children and the role of schools, parental perception of child weight status, how culture affects weight perceptions, and BMI notification and behavior change.

**OBESITY PREVALENCE AMONG MINORITY CHILDREN AND THE ROLE OF SCHOOLS**

Between 1980 and 2004, the prevalence of overweight in children (6–11 years) increased from 6.5% to 18.8% and in adolescents (12–19 years) increased from 5.0% to 17.4%. In the United States, “overweight” in children has generally been defined as a BMI at ≥95th percentile for age and gender on the basis of the 2000 Centers for Disease Control and Prevention growth charts. “At risk for overweight” has been defined as a BMI between the 85th and 95th percentiles. However, an expert committee convened by the American Medical Association recently recommended classifying children with a BMI at ≥95th percentile as “obese” and those with a BMI between the 85th and 95th percentiles as “overweight.” Unfortunately, there is no one data source that reports information on child weight status for all major ethnic groups in the United States. The National Health and Nutrition Examination Survey (NHANES), a nationally representative survey, has conducted surveys since the early 1970s and has a large enough sample of white, black,
and Mexican American children to calculate overweight and obesity rates and changes over time. The gender-specific BMI-for-age growth charts were created by using data from national surveys conducted between 1963 and 1994, although data collected after 1980 were only used for children younger than 8 years. In 2003–2004, 19.2% of Mexican American children, 20.0% of black children, and 16.3% of white children were overweight (BMI ≥ 95th percentile) according to NHANES data (see Table 1). Mexican American children of both genders were more likely to be overweight than white children. However, although black girls were more likely to be overweight than white girls, black boys were not more likely to be overweight than white boys. The higher prevalence of overweight among ethnic minority children parallels the higher prevalence of obesity among ethnic minority adult women. In 2003–2004, 53.9% of non-Hispanic black women, 42.3% of Mexican American women, and 30.2% of non-Hispanic white women were obese (BMI ≥ 30 kg/m²). Other ethnic groups, such as American Indian people, also have higher rates of childhood obesity than white people. For example, a recent study of >11,000 American Indian school-aged children reported that at 5 years of age, 47% of boys and 41% of girls were overweight (defined as BMI ≥ 85th percentile), and 24% of the children were obese (BMI ≥ 95th percentile). In this article, we attempt to highlight the role of culture in the context of BMI screening for minority populations in the United States. However, because there is significantly more information available on black and Latino populations than on other populations, we focus predominantly on these 2 ethnic groups.

Although BMI is a convenient and widely used measure of obesity, there are few or no reliable data on the association between BMI at any given age and future health. Therefore, in 2005, the Childhood Obesity Working Group of the US Preventive Services Task Force reported that “[w]e do not know the best way to identify children who are at risk for future adverse health outcomes due to obesity or overweight.” A review of the evidence showed a number of areas in which information is lacking on the links between children’s weight and future health outcomes. In terms of health outcomes, the US Preventive Services Task Force did not find enough evidence to recommend screening for BMI among children and adolescents. This finding does not negate the utility of screening, but it does underscore the need for additional evidence to draw firmer conclusions. In addition, researchers, legislators, and the popular press are increasingly interested in the idea of measuring the BMI of students in schools. Schools and parents have an established tradition of communication with each other concerning student-related health matters such as delivery of medication to children with chronic health conditions and immunization needs. Schools also offer health screenings, which have most often included vision and hearing screening and height/weight measurement. Therefore, schools could potentially screen students for overweight and communicate potential risks to parents. This could place schools in a pivotal role to partner with parents, and parents who perceive their child’s weight as a concern may be more likely to take ameliorative action.

**PARENTAL PERCEPTION OF CHILDREN’S WEIGHT STATUS**

Children who are obese are more likely to become obese adults than normal-weight children. Moreover, obese adults are more likely to suffer from hypertension, type 2 diabetes, coronary artery disease, and high cholesterol levels. This has led to an increasing focus of study on obesity-prevention efforts in childhood. However, weight-status misperception may make prevention efforts more difficult. Parents are unlikely to initiate action to prevent overweight or obesity if the weight status of a child is not perceived as problematic or if parents do not consider the link between obesity and the possibility of current or future adverse health outcomes for their children.

Notwithstanding the higher prevalence of obesity among black and Latina women in the United States, a large body of research suggests that the desire to be thinner is stronger among white women. This does not mean that minority women are not attempting to lose weight or have uniformly positive body images. However, on average, ethnic minority women have a greater acceptance of overweight and have higher rates of body-image satisfaction independent
of body weight than white women. Data also suggest that black women do not report a discrepancy between their current and ideal body image until they are obese. Other research has shown that black and Mexican American men and women are less likely to perceive themselves as overweight than white men and women. These findings could certainly have implications for how minority parents perceive the weight status of their children.

Parents frequently fail to perceive that their children are overweight. Table 2 contains a list of articles published between 2000 and 2007 that report on studies of parental perception of overweight in children. Only studies conducted in the United States are listed, although a number of similar studies have been conducted outside the United States. Some of the studies focused specifically on minority children, whereas others included multiethnic samples. A number of studies focused on low-income parents, recruiting participants from the Supplemental Nutrition Program for Women, Infants, and Children (WIC) or Head Start. Income was not a criterion for participation in most of the other studies, although Baughcum et al found that mothers with a high school education or less were less likely than mothers with education beyond high school to correctly identify their children as overweight. To assess the mothers' weight perception in this study, each mother was asked to complete a statement asking about her perception of her child’s weight. The possible responses were “very underweight,” “a little underweight,” “about the right weight,” “a little overweight,” and “very overweight.” The overweight and underweight categories that included 2 responses were then collapsed. Mothers who answered either very underweight or a little underweight were classified as perceiving their child as underweight, and mothers who responded that their child was a little heavy.

In general, ethnicity did not seem to be a predictor of parents’ perception of their child’s weight status. In studies that included a broad age range, parents of older children were more likely to correctly identify a child as overweight than parents of younger children. Baughcum et al found that mothers with a high school education or less were less likely than mothers with education beyond high school to correctly identify their children as overweight. It seems that inaccuracy in assessing weight status is not necessarily specific to ethnic minority populations. However, the consequences of the misperception may be greater for minority children, given the disparities in weight status and weight-related comorbidities between ethnic minority and white people in the United States. Therefore, factors that underlie the misperception and the cultural context in which they develop and are maintained need to be examined.

WEIGHT-RELATED PERCEPTIONS AND ATTITUDES: THE ROLE OF CULTURE

As shown in the previous section, overweight children are frequently not perceived as such by their parents, and the misperception of a child’s weight status does not seem to be specific to any one ethnic group. However, data from the NHANES III showed that, among adults, overweight and obese black and Latino men and women were more likely to misperceive their own weight status compared with white men and women, which could pose an impediment not only for their own weight control but also for that of their children.

It is noteworthy that in an article by Baturka et al the authors reported that among a sample of black women from all weight categories, most reported feeling dissatisfied with their weight. However, they also reported that their dissatisfaction was not consistent with their cultural belief in self-acceptance and placing character above appearance. Therefore, among
<table>
<thead>
<tr>
<th>Authors</th>
<th>N (Children)</th>
<th>Age</th>
<th>Ethnicity</th>
<th>Site</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>May et al (2007)</td>
<td>Total: 967; obese: 108</td>
<td>24–59 mo</td>
<td>79% W, 15% H, 6% AA</td>
<td>4 WIC clinics in Minnesota</td>
<td>Twenty-one percent of the obese children were perceived as overweight, with no difference between white and Hispanic children. No obese black children were perceived as overweight, but the sample was small (N = 6).</td>
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<tr>
<td>Watkins et al (2007)</td>
<td>Total: 74; obese: 74 (all)</td>
<td>2–20 y</td>
<td>Multiethnic, majority white</td>
<td>Weight-assessment clinic, University of Michigan</td>
<td>All parents perceived their children as overweight, although 30% did not describe themselves as concerned about their child’s weight. There was no relationship between the child’s BMI score and the parent’s description of the child’s weight (little overweight, overweight, very overweight, obese). All children had been referred to the clinic by a physician.</td>
</tr>
<tr>
<td>Eckstein et al (2006)</td>
<td>Total: 223; obese: 45; overweight: 45</td>
<td>2–17 y</td>
<td>42% W, 35% H, 17% AA, 7% O</td>
<td>7 pediatric practices in or near Chicago, IL</td>
<td>Fifty-one percent of the obese children and 21% of the overweight children were described as a little overweight or overweight. Parents of older children (≥6 y) were more likely to correctly perceive a child as overweight, but ethnicity did not influence perception. When asked to choose the figure that most closely resembled the current size of their children, mothers, on average, perceived their children to be thinner than they really were. However, 49% of the mothers of obese children wanted their children to be thinner. Only 16% of the mothers of overweight children wanted their children to be thinner.</td>
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<tr>
<td>Killion et al (2006)</td>
<td>Total: 192; obese: 35; overweight: 31</td>
<td>3–5 y</td>
<td>57% H, 43% AA</td>
<td>10 Head Start centers in southeast Texas</td>
<td>Fifteen percent of the obese children were described as “already overweight.” Children whose parents classified them as overweight had a mean BMI above the 95th percentile. All children were at ≥95th percentile of weight for length, but 50% of the parents were not concerned about the child’s weight.</td>
</tr>
<tr>
<td>Adams et al (2005)</td>
<td>Total: 566; obese: 86</td>
<td>4.5–8.5 y</td>
<td>94% Native American</td>
<td>3 reservations in Wisconsin</td>
<td>Forty percent of the children with WHI at ≥95th percentile were perceived as overweight. Parents classified 30% of overweight adolescents as somewhat or very overweight. Only 14% of obese adolescents were described as very overweight. In a multivariate analysis, adolescent and maternal race/ethnicity were not related to accuracy, although each was related to accuracy in a bivariate analysis.</td>
</tr>
<tr>
<td>Rich et al (2005)</td>
<td>Total: 76; weight for length ≥95th percentile: 76 (all)</td>
<td>14–47 mo</td>
<td>87% H, 9% AA, 4% W</td>
<td>5 WIC clinics in Dallas, TX</td>
<td>Each caregiver was asked to choose the figure that resembled her daughter’s current body size. There was a statistically significant correlation (r = .50, p = .002) between perceived body size and the girls’ BMI.</td>
</tr>
<tr>
<td>Ariza et al (2004)</td>
<td>Total: 80; WHI ≥ 95th percentile: 26%</td>
<td>5–6 y</td>
<td>100% H</td>
<td>2 inner-city public schools in Chicago, IL</td>
<td>Sixty-seven percent of the children with WHI at ≥90th percentile were perceived as overweight. Mothers with a high school education or less were less likely than mothers with education beyond high school to correctly identify their children as overweight. Ethnicity was not a predictor of the mothers’ perceptions.</td>
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<tr>
<td>Boutelle et al (2004)</td>
<td>Total: 755; obese: 16.5%; overweight: 16.5%</td>
<td>Adolescents, mean (SD): 1.46 (1.7) y</td>
<td>13% H, 15% Asian, 13% Other</td>
<td>Middle and high schools in the Minneapolis/St Paul, MN metropolitan area</td>
<td>Eighty-three percent of the mothers correctly identified their obese child as overweight; 29% of children with WHI at ≥95th percentile were perceived as overweight. Mothers with a high school education or less were less likely than mothers with education beyond high school to correctly identify their children as overweight. Ethnicity was not a predictor of the mothers’ perceptions.</td>
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<tr>
<td>Katz et al (2004)</td>
<td>Total: 35 girls; obese: 15; overweight: 7</td>
<td>6–9 y</td>
<td>100% AA</td>
<td>3 churches in North Carolina participating in an obesity prevention pilot program</td>
<td>Sixty-seven percent of the mothers correctly identified their obese child as overweight; 14% of overweight boys and 25% of overweight girls were perceived as overweight. Younger obese children were less likely to be perceived as overweight. Among overweight children, boys, younger children, and children of heavier mothers were less likely to be perceived as overweight. Ethnicity was not a predictor of the mothers’ perceptions.</td>
</tr>
<tr>
<td>Elston et al (2003)</td>
<td>Total: 85; obese: 19</td>
<td>4–8 y</td>
<td>Not shown</td>
<td>Private pediatric faculty practice in Westchester, NY</td>
<td>Sixty-seven percent of the mothers correctly identified their obese child as overweight; 14% of overweight boys and 25% of overweight girls were perceived as overweight. Younger obese children were less likely to be perceived as overweight. Among overweight children, boys, younger children, and children of heavier mothers were less likely to be perceived as overweight. Ethnicity was not a predictor of the mothers’ perceptions.</td>
</tr>
<tr>
<td>Maynard et al (2003)</td>
<td>Total: 5500; obese: 570; overweight: 682</td>
<td>2–11 y</td>
<td>W, AA, Mexican American</td>
<td>Nationally representative sample of US residents (NHANES III, 1988–1994)</td>
<td>Sixty-seven percent of the mothers correctly identified their obese child as overweight; 14% of overweight boys and 25% of overweight girls were perceived as overweight. Younger obese children were less likely to be perceived as overweight. Among overweight children, boys, younger children, and children of heavier mothers were less likely to be perceived as overweight. Ethnicity was not a predictor of the mothers’ perceptions.</td>
</tr>
<tr>
<td>Jain et al (2001)</td>
<td>Total: 18; WHI ≥ 90th percentile: 15</td>
<td>26–56 mo</td>
<td>72% AA, 28% W</td>
<td>WC clinic in Cincinnati, Ohio</td>
<td>Sixty-seven percent of the mothers correctly identified their obese child as overweight; 14% of overweight boys and 25% of overweight girls were perceived as overweight. Younger obese children were less likely to be perceived as overweight. Among overweight children, boys, younger children, and children of heavier mothers were less likely to be perceived as overweight. Ethnicity was not a predictor of the mothers’ perceptions.</td>
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<tr>
<td>Baughcum et al (2000)</td>
<td>Total: 622; WHI ≥ 95th percentile: 66; WHI = 90th percentile: 99</td>
<td>23–60 mo</td>
<td>81% W, 13% AA, 4% O, 2% H</td>
<td>9 WC clinics in Kentucky and 3 pediatric practices serving middle- and upper-middle-income families in Ohio and Indiana</td>
<td>Sixty-seven percent of the children with WHI at ≥90th percentile were perceived as overweight; 29% of children with WHI at ≥95th percentile were perceived as overweight. Mothers with a high school education or less were less likely than mothers with education beyond high school to correctly identify their children as overweight. Ethnicity was not a predictor of the mothers’ perceptions.</td>
</tr>
<tr>
<td>Myers and Vargas (2000)</td>
<td>Total: 200; child WHI ≥ 90th percentile: 200</td>
<td>2–5 y</td>
<td>95% H</td>
<td>WC clinic in Arlington, VA</td>
<td>Sixty-four percent of the mothers believed their child was overweight.</td>
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<tr>
<td>Young-Hyman et al (2000)</td>
<td>Total: 111; obese: 100</td>
<td>5–10 y</td>
<td>100% AA</td>
<td>Primary care offices</td>
<td>Sixty-four percent of the mothers believed their child was overweight.</td>
</tr>
</tbody>
</table>

W indicates white; AA, black/African American; H, Hispanic; O, other; WHI, weight for height.

Obese children BMI for age and gender at ≥95th percentile; overweight children BMI for age and gender at ≥85th percentile but <95th percentile.
minority populations, strong self-images may transcend weight issues and serve to buffer some people against mainstream weight discrimination. This is a dilemma that is not easily resolved when making day-to-day eating and physical activity decisions, particularly when being overweight and obese may be normative in one’s own community. With a focus on understanding the cultural influences on health behaviors, this section discusses the PEN-3 model, which could potentially inform the development of a BMI-notification program. The PEN-3 model was developed to help align health education programs with a culture’s existing beliefs and practices. The model consists of 3 dimensions of health beliefs and behaviors that are interdependent and interrelated. These dimensions include (1) cultural identity, (2) relationships and expectations, and (3) cultural empowerment. Within each of these 3 dimensions, there are 3 categories that form the acronym PEN. The model is illustrated in Fig 1.

The 3 categories of the cultural-identity dimension include “person,” “extended family,” and “neighborhood.” This first dimension recognizes that health promotion can occur at the person (individual), extended-family, and neighborhood (community) levels. That is, the target audience is potentially larger than just the individual. This conceptualization is in contrast to a number of health behavior-change models that focus predominantly on the individual (eg, theory of reasoned action, health belief model). Targeting all 3 levels (ie, person, extended family, and neighborhood) is particularly salient when designing health-information programs for cultures in which health decisions are more likely influenced by a collectivist rather than an individualist perspective. For example, in black families, women are often heads of household, have extended roles that bridge several generations, and influence large networks of family members. This could include roles related to food purchasing and preparation that are integral to their role in the family, extended family, and community. An equivalent concept in Latino families is that of “familismo” or familism, a term that refers to the significance of the family and community. Also, the central role of men in the decision-making of the family in Latino culture should not be underestimated. The family, both nuclear and extended, plays a pivotal role as a supportive network for both healthy and unhealthy behaviors. In this way, the family as a group may take precedence over individual interests. For example, if a child’s BMI percentile is high, but the grandparents insist that the child is not overweight, the parents may feel compelled not to make any substantive changes. In this case, the extended family would need to be involved before any action is taken. Stressing family-centeredness rather than individual self-management in providing information about children’s weight may facilitate acceptance and consideration of the information by parents and family members. Related to this is the possible involvement of neighborhood or community leadership, such as spiritual leadership, when designing health-related messages for minority parents that could include educating families about the significance of excessive weight, risk factors, and prevention.

The second dimension, relationships and expectations, focuses on determining the factors that influence the person, family, or neighborhood through the 3 categories of “perceptions,” “enablers,” and “nurturers.” Perceptions refer to the knowledge, attitudes, and beliefs that contribute to or impede engaging in a particular health behavior. For example, the concept of “fatalism” (fatalism), which is part of the Latino culture, refers to the acceptance of a chronic disease because it is determined by God. Fatalism is also thought to be prominent among some communities within black culture. In such communities, obesity among children and adults may be viewed as inevitable and not under one’s control. Adapting best practices in health communication to minority populations to convey BMI results and their meaning should be considered.

Enablers are cultural or structural influences that may enhance or impede behavior change, such as the availability or accessibility of resources. For example, schools must provide a supportive food and activity environment if a BMI-notification process is to have credibility. Schools can also develop a family approach to BMI notification and combine weight issues with academic and athletic issues. Schools could stress the importance of a healthy breakfast for brain acuity and attentiveness. Structural impediments such as a lack of health insurance could pose a challenge to seeking further assessment after a school-based BMI screening. These factors must be considered when delivering BMI results that imply a need for further evaluation and altering eating and activity patterns.

FIGURE 1
The PEN-3 model. (Used with permission from Collins O. Airhihenbuwa, PhD.)
The third category, nurturers, refers to the extended family, friends, the neighborhood, and often the spiritual community, who can reinforce or nurture health beliefs, attitudes, and behaviors.76 Within both Latino and black communities, belief in the importance of family, God, and spirituality needs to be considered in predicting how parents may interpret BMI results.80,86 Within the black community in particular, the church has a long tradition of disseminating health information to the congregation and its surrounding community in addition to meeting the spiritual needs of its membership.87–89 Similarly, among Latino populations, reliable sources of health information such as churches90 and lay health advisors (eg, promotoras or conse- jeras)91,92 have often been trusted as sources of community information. Overall, these individuals often serve as mediators between the community and formal institutions and offer social support to those in the community.85–86 BMI and weight information given to parents may go unheeded unless it is also sanctioned by trusted sources in their community.

Although minority populations often have trust in their churches and community leaders, there may be distrust or negative attitudes toward the medical profession and scientific authorities.86 For example, data suggest that Latinos with low educational attainment are more likely to distrust scientific experts on obesity.87 Trust and credibility are critical when delivering information on health risks, especially on controversial and sensitive topics such as childhood overweight and obesity.19 Science is an evolving process and at times seems contradictory. This has led some people to feel confused and skeptical about how to integrate research findings that may affect health care decisions.88 This confusion may lead to added distrust among communities that may feel marginalized or are linguistically isolated, which highlights the importance of crafting messages that engender trust by recognizing and responding to culturally based beliefs and attitudes.

The final, and possibly most critical, dimension of the PEN-3 model is the cultural-empowerment dimension, which emphasizes the central role of cultural appropriateness in any health-promotion program. According to Airhihenbuwa and Webster,75 the terms “culture” and “empowerment” are typically not used together; culture is often seen as a barrier, whereas empowerment is seen as a strength. The PEN-3 model, therefore, illustrates the full range of the possible influences of culture, from positive to negative. The perceptual and structural considerations gleaned from the relationships and expectations dimension should be evaluated within the 3 categories of this domain, which include “positive behaviors,” “existential behaviors” (culturally based but benign behaviors), and “negative behaviors.” The “positive” category refers to perceptions, enablers, and nurturers who serve to facilitate engagement in the healthful behavior. In contrast to a deficit model of health behavior, in which negative behaviors are often emphasized and highlighted, the PEN-3 model proposes that positive behaviors and cultural strengths should be promoted initially.75 For example, when delivering BMI information that includes recommendations for healthy eating, positive aspects of the traditional Latino diet such as the consumption of foods high in fiber should be reinforced. Similarly, the use of greens and other healthful vegetables in traditional black dishes should be emphasized.

The “existential” category refers to practices that are culturally based and have no harmful health consequences. For example, eating cooked rather than raw vegetables, not eating certain foods after sunset, or considering certain foods inappropriate at certain meals would have no effect on weight control. These are benign eating practices preferred by some black people.85 The negative category refers to perceptions, enablers, and nurturers that impede engaging in healthful behavior and lead individuals to engage in harmful behavior. However, although some behaviors are known to be harmful to health, they still need to be understood within a cultural context. For example, behaviors that are often consistent with weight gain include having meat as an integral part of a meal, drinking whole milk rather than low-fat milk, and eating chicken with the skin.85 BMI-notification programs that include recommendations for healthy eating choices need to address the cultural context in which some of these long-standing behaviors were developed and are maintained.85 Incorporation of the PEN-3 model in planning a BMI-notification program for minority parents could be conducted in 3 planning phases. In the first phase (cultural identity), school administrators should give thought to who should comprise the target audience. Should the program target the parent/child or the extended family, or should it be a neighborhood or community effort that requires “buy-in” from trusted sources of health information? In the second phase (relationships and expectations), school personnel should be aware and respectful of the attitudes and beliefs related to perceptions, enablers, and nurturers and how personal actions can be examined as a function of a broader social context. On the basis of this information, in the third phase (cultural empowerment), the attitudes and beliefs related to perceptions, enablers, and nurturers of the individual, extended family, or neighborhood can be
considered as culturally positive, existential, or negative.76 With this framework in mind, a potentially more effective BMI-notification program can be developed and delivered.

BMI NOTIFICATION AND BEHAVIOR CHANGE

There must be recognition and concern that any study of ethnic groups runs the risk of overgeneralization, because labels tend to focus on the similarities between sets of people while ignoring substantial variability within those sets. For example, the labels of black, Latino, and American Indian people highlight the differences in backgrounds and experience of groups of Americans but may also mask within-group distinctions such as socioeconomic status, educational achievement, acculturation, immigration status, household size, media exposure, neighborhood characteristics, geographic location, or urban versus rural lifestyles.100

With this caveat in mind, it is important to assess how parents will react and respond behaviorally to the notification of BMI results. To date, BMI-notification programs have met with some controversy and challenges. Many potential issues and questions have been raised: the limitations of BMI screening84; training of school personnel37; privacy concerns101; self-esteem concerns37; possible increases in body dissatisfaction37; where to refer children at high risk56; how to interpret results103; questions regarding schools as the appropriate screening site37; parental imposed food restrictions on children24,34,38; increased disordered eating behavior46; increased stigmatization of obese children57,59; and concerns about the availability of resources103,104 have been voiced. Despite these concerns and the need for further research on the long-term impact of the benefits and potential harms of school-based weight monitoring,105 the limited data available reflect support for the school-based screening and parent-notification programs.24,106,107 Developing BMI-notification programs that recognize and respond to the cultural values and concerns of families represents a substantial challenge. For example, obesity may be so common in some communities that it is normative and possibly not treated with high concern, which could mean that a BMI-notification program might be perceived as irrelevant.

There are currently no definitive data on the usefulness of school-based BMI-measurement programs in preventing or reversing the obesity epidemic, and controversy over the practice exists.37 Data gathered from clinical settings by the US Preventive Services Task Force revealed no evidence that routine BMI screening improves either behavioral or physiologic measures of health outcomes.35 In addition, the task force did not find sufficient evidence for or against the practice of school-based BMI screening but also did not find evidence that the practice of screening negatively affects self-esteem or promotes disordered eating.35 Nonetheless, some states, such as Arkansas, California, Michigan, Florida, and Illinois, are promoting guidance for families on healthy eating and activity or have initiated BMI-measurement programs for children and adolescents.106,110 Since these initiatives began, a number of studies have shown that parents either react positively to BMI-screening programs in their children’s schools24,106,111 or that negative responses are quelled after the programs are established and parental concerns are incorporated into the program.38,112,113 For example, a study that used focus-group data revealed that parents are receptive to school-based BMI screening if advanced notification is part of the process and if there is a private and sensitive plan devised for data collection.111 A follow-up pilot intervention based on these focus-group results showed that the majority of parents believed it was important to send home BMI results as part of an annual student health screening program.106 Importantly, recent data suggest that informing parents of their children’s BMI serves to improve the accuracy of parental perception of a child’s weight status.24 Although preliminary, this could serve as a very positive step in addressing weight-gain prevention and, ultimately, obesity.

Even if BMI-notification programs improve parents’ perception of their children’s weight status and make them aware of the benefits of a healthful lifestyle, actually changing diet and physical activity patterns will still present a challenge. This is a concern for some minority communities, which face environmental and other barriers to behavior change. Therefore, possible limitations in the ability to make healthful choices need to be understood in the appropriate context. Advocacy for environmental changes that support individual behavior change may be a critical complement to a school-based BMI-notification program.

SUMMARY AND CONCLUSIONS

The high prevalence of obesity among both adults and children in black, Latino, and American Indian populations in the United States influences the context for both obesity-prevention and BMI-notification programs in these communities. In designing programs, there should be an effort to make them congruent with the target audience, or they will fail to be effective. Ultimately, the role of culture, which includes the history, values, beliefs, language, and family and community systems of an individual, will affect overall behavior.
Environmental and policy changes are outside the scope of any BMI-notification program. However, they are part of the larger question of whether the problems associated with poor diet and physical inactivity are serious enough to warrant changing our environment, and the role of schools, more specifically. Values that transcend ethnicity, such as the value of childhood vaccinations, the importance of wearing seat belts, child labor laws, prohibiting purchases of alcohol and tobacco by minors, and car safety restraints for children, are now generally well-accepted aspects of our culture. Laws that govern some of these individual choices are now readily accepted. A compelling argument for sanctions against some individual choices would be that not providing them would fail to protect children. It seems that an analogous argument can be made for addressing childhood obesity. The notification of parents of the BMI status of their child within a culturally relevant context should be conceptualized as one small step in a comprehensive plan to reduce childhood obesity.

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The Role of Culture in the Context of School-Based BMI Screening
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