Stemming Racial and Ethnic Disparities in the Rising Tide of Obesity

Steven R. Hawks and Hala N. Madanat

ABSTRACT

At the national level, obesity and obesity-related illnesses are increasing dramatically. As with many other public health problems, some racial and ethnic populations are disproportionately affected. This article presents current information on the prevalence and consequences of obesity for racial and ethnic groups in the United States and evaluates race/culture-specific causes of obesity for these populations. After analysis of various interventions that attempt to address this problem, a full-spectrum, three-pronged model for eliminating racial and ethnic disparities in obesity is presented and discussed. It is argued that a comprehensive population model, with a balance between downstream, midstream, and upstream interventions is necessary. Examples of culturally appropriate interventions that address the behavioral, social, and environmental determinants of obesity at each of these levels are presented. Using the tools of sound theory, appropriate methods, and cultural sensitivity, health educators are in a unique position to provide leadership to this effort.

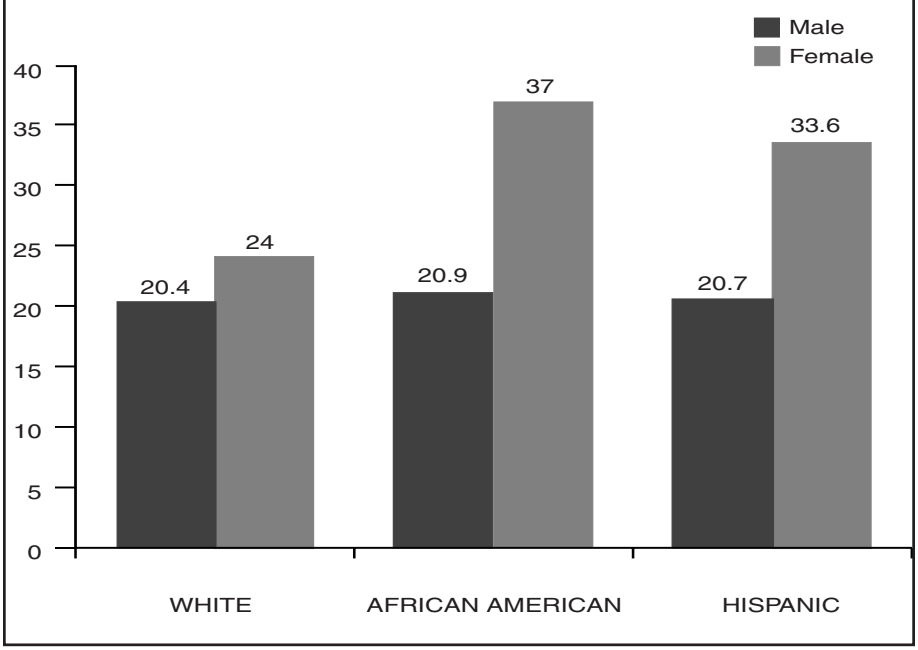
As with many other public health problems in the United States, some racial and ethnic groups bear a disproportionate burden in relation to obesity. This article summarizes racial and ethnic disparities in the area of obesity, analyzes current prevention efforts, and proposes a comprehensive model that may be useful in narrowing the gap. Based on available obesity data, it appears that unfavorable racial disparities in the United States are most evident for Native American, African American, and Hispanic populations as compared with Caucasians. Therefore, this article focuses primarily on these groups, and the phrase "racial and ethnic groups" refers to these populations.

Although the sharp rise in obesity between National Health and Nutrition Examination Survey (NHANES) II and III (1980–1994) was similar for all age, gender, and racial groups, the NHANES III breakdown by race and gender shows significant differences (Flegal, Carroll, Kuczmarski, & Johnson, 1998). Of particular interest in Figure 1 is the finding that racial and ethnic disparities within the adult population are primarily limited to females, with higher rates of obesity among African American and Hispanic females.

It is not surprising that given higher prevalence rates among several racial and ethnic populations, higher rates of obesity-related illness are also developing. One sample of 3,050 Mexican Americans revealed levels of obesity that were much higher than the general population, and the presence of obesity within the sample was associated with a higher risk of diabetes, arthritis, hypertension, and cancer (Ostir, Markides, Freeman, & Goodwin, 2000). Perceptions of personal health and self-report measures of health are also more negative among overweight ethnic youths than among normal weight youth. Among Native Americans, those youths who were overweight were twice as likely to

Steven R. Hawks, EdD, MBA, and Hala N. Madanat, MS, are with the Department of Health Science, College of Health and Human Performance, 229-L Richards Building, Brigham Young University, Provo, Utah 84602; E-mail: steve_hawks@byu.edu.

Figure 1. Percentage of Obese U.S. Adults by Race and Gender (NHANES III, 1988-1994)



report health concerns as nonoverweight youths (Neumark-Sztainer, Story, Resnick, & Blum, 1997).

In relation to socioeconomic consequences, it has been found that obesity is associated with lower wages, reduced occupational achievement, and lower probabilities of marriage for both African American and Caucasian women (Averett & Korenman, 1999). A multidimensional body image that is less focused on weight or size, however, may provide protection for some African American women against the loss of self-esteem that is often seen among overweight Caucasian women. Consequently, there may be less preoccupation with dieting and fewer cases of eating disorders among African American women (Flynn & Fitzgibbon, 1998).

CONTRIBUTING FACTORS TO OBESITY

Increasingly, it is the interface between human biology and the social environment that is being blamed for rising levels of obesity (Goran & Weinsier, 2000). Specifically, it has been hypothesized that repeated exposure to seasonal food shortages over multiple generations has naturally selected metabolic mechanisms that support high levels of fat deposition, low levels of energy expenditure, and a preference for energy dense foods (Neel, 1999). As modern social environments provide increasingly easy access to high fat/high sugar foods, with limited incentives for activity, the expected result is obesity.

Biology and Obesity

Different levels of exposure to seasonal food scarcity over many generations, and resulting metabolic adaptations, may help explain racial differences in propensity for weight gain when exposed to certain social environments (Krosnick, 2000). For example, this perspective may help explain why some ethnic groups, such as the Pima Indians of Northern Arizona, develop higher rates of obesity than other ethnic groups when placed in similar environments.

One literature review attempted to explain higher levels of obesity among African Americans by analyzing resting metabolic rate (RMR) and total daily energy expenditure (TDEE) differences between Caucasians and African Americans (Gannon, DiPietro, & Poehlman, 2000). The authors concluded that two-thirds of reviewed studies demonstrated lower RMR values, although one-third found lower TDEE values, among African American subjects. Such findings begin to build a case that genuine metabolic differences seem to exist among different racial groups, perhaps as influenced by generational exposure to food scarcity.

As a result of such biological adaptations, patterns of fat deposition may also differ among various racial populations. Body fat, especially abdominal fat, is the primary risk factor in relation to body size, and the usefulness of body mass index (BMI) as a health indicator depends in part on its relationship to levels of body fat. A recent meta-analysis of published data evaluated the relationship between percentage body fat and BMI values among different racial groups and concluded that equivalent body fat levels produced significantly different BMI values. In some populations (e.g., Indonesians, Thais, Ethiopians) the level of obesity in terms of percentage body fat was reached at a much lower BMI compared with recommended cut-off values. Likewise, it was concluded that cut-off levels higher than the current value of 30 kg/m^2 might be justified for African Americans and Polynesians (Deurenberg, Yap, & van Staveren, 1998).

These findings may help account for reported differences in ideal BMI for racially diverse groups. One study found that the BMI associated with minimum mortality was 27.1 for African American men, 26.8 for African American women, 24.8 for Caucasion men, and 24.3 for Caucasion women. The authors argue that for each of the four race/sex groups there is a wide range of BMIs consistent with low mortality with little evidence to suggest that the optimal BMI is at the lower end of the distribution for any subgroup (Durazo-Arvizu, McGee, Cooper, Liao, & Luke, 1998).

Culture, Beauty, and Obesity

In addition to biological predispositions

for obesity, powerful cultural influences have evolved that favor larger body sizes. In societies where food was scarce (the case for much of human history), obesity may have been socially preferred as an indication of wealth, social status, and good health (Brown, 2001). In support of this hypothesis, a recent study found that in 80% of developing countries (where food is less abundant), the social ideal for both male and female beauty was overweight (Treloar et al., 1999). It has been a relatively recent development, most often in cultures that have an abundance of food, that socioeconomic status and attractiveness have come to be associated with thinness (Brown, 2001).

For some minority women a large body size may not carry the same stigma that many Caucasian females associate with it. The cultural emphasis on thinness may be diminished or completely lacking for many ethnic groups who refute thinness as a norm limited to Caucasian women (Flynn & Fitzgibbon, 1998). As has been found in developing cultures, the deprivations of poverty that are experienced by many minority groups in the United States may also support a cultural preference for large bodies as a symbol of health and power (Flynn & Fitzgibbon, 1998).

The Culture of Food and Activity

It has been hypothesized by some that racial and ethnic women have higher BMIs simply because they have lower activity levels and higher consumption of energy dense foods (Flynn & Fitzgibbon, 1998). If true, this could merely be an artifact of poverty (limited opportunities for activity and healthy diets due to low income or unsafe environments). Yet studies so far have failed to demonstrate a clear relationship between socioeconomic status and obesity among minority groups (Dietz, 2000). An alternative hypothesis for explaining racial differences in activity level and diet composition might consider the various cultural roles that food and activity play within ethnic communities.

An ethnographic study of diet and activity practices among Australian Aborigines identified wider social meanings that made personal behavior change in these areas very difficult (Thompson, Gifford, & Thorpe, 2000). For example, fat and salt were seen as key ingredients for meals that fostered closeness with families and friends, whereas meals that met dietary guidelines were seen as cold and clinical. Different categories of physical activity were also identified, each with its own cultural meaning.

As argued by the authors of the study, it is difficult to change behaviors by appealing to health benefits without considering the larger social and cultural contexts in which the behaviors occur (Thompson et al., 2000). Diet composition and activity levels among racial and ethnic groups in the United States are also influenced by powerful social variables that have little to do with concerns for health. Differential eating habits are further influenced by place—such as residing in the inner city or on a reservation or in a developing country—which may determine access to and availability of healthful foods and opportunities for activity (Thompson et al., 2000).

INTERVENTION ANALYSIS

A Review of Obesity Prevention Approaches

To consider a broad range of potential obesity interventions, McKinlay's population-based model may be useful (McKinlay, 1995). Using this approach, public health interventions can be assigned to one of three categories. Those programs that emphasize the individual, as in many behavior change programs, are referred to as *downstream* interventions. Those interventions that have a community orientation, such as school and work site programs, are termed *midstream*. Finally, those that address health problems at the broadest population level (via public policy, national media, and broad economic measures) are considered *upstream*.

Using appropriate key words, a Medline search was conducted to find articles dealing with obesity management programs that focused on racial and ethnic populations between 1990 and the present. The tables of contents for the *American Journal of Clinical Nutrition*, the *International Journal of Obesity*, *Obesity Research*, and *Obesity Reviews* also were searched. Using McKinlay's model, selected studies were then categorized as downstream, midstream, or upstream. There were no upstream interventions found in the literature that were specific to racial or ethnic groups. Representative downstream and midstream studies are presented and discussed in following paragraphs.

Downstream

In relation to obesity prevention and management interventions that involve racial and ethnic groups, most were downstream in that they primarily promoted individual behavior change as the desired outcome. A representative example of this approach is the Bariatrics Clinic at Howard University Hospital, which was initiated to help low-income African American adults with low literacy skills (Kaul & Nidiry, 1999). Essential components of the intervention included nutrition education, exercise, and behavior modification in relation to food intake. The strength of the program included an individualized design that took into account such factors as literacy level, food preferences, family dynamics, lifestyle, and availability of resources. Although the study reported low dropout rates and significant weight loss (an average of 14 pounds over 7 weeks), the program included only 16 participants, and the duration of the intervention was limited. No follow-up data on long-term weight loss maintenance was provided.

Other weight loss studies reported in the literature included similar program components, but with different levels of emphasis on cultural sensitivity, nutrition education, physical activity, behavior modification, or adult learning strategies (Domel, Alford, Cattlett, & Gench, 1992; Kumanyika & Charleston, 1992; Pleas, 1988). Within the general population, downstream weight-loss programs that focus on personal behavior change in the areas of diet composition and activity levels demonstrate modest short-term success, but so far few have been

shown to exert substantial impact among large numbers of participants over the long term (Bronner & Boyington, 2002; Miller, 1999). Among the programs that included African Americans (and that collected follow-up data), there is evidence that over a 12-month period African American participants tend to regain weight more rapidly and experience less long-term weight loss than their Caucasian counterparts (Wing & Anglin, 1996). Given these findings, it is questionable whether downstream programs that emphasize individual behavior change, even if culturally sensitive, will by themselves produce long-term reductions in obesity at the population level.

Midstream

Several midstream interventions reported in the literature dealt with obesity prevention among Native Americans in the school setting. An ongoing intervention that builds on earlier successes is the Pathways program developed through a collaboration of universities, Native American nations, schools, and families (Davis et al., 1999). Designed for third-, fourth-, and fifth-grade Native American students, the program focuses on individual, behavioral, and environmental factors that correlate with obesity by merging constructs from social learning theory with Native American customs and practices. The multifaceted program includes four components: physical activity, food services, classroom curriculum, and family involvement. Needs assessment research used qualitative and quantitative data to identify and rank behavioral risk factors to be targeted by the intervention. Pathways is currently being evaluated as part of a multisite, 3-year randomized trial to determine the impact on activity level, diet composition, levels of obesity, and obesity-related illness.

Midstream interventions geared toward adults, such as work site wellness programs, seldom focus on racial or ethnic groups. One exception is the report of a weight-loss competition among adult members of a Zuni community that resulted in positive metabolic changes in the short term, but follow-up data were not provided (Heath, Wilson, Smith, & Leonard, 1991).

Upstream

National promotion of the food guide pyramid and improvements in food labeling have been the primary upstream measures aimed at dietary improvements. Some research suggests that females, those with higher education, and individuals who are concerned about their personal health are more likely to use food labels, but there is no evidence that food labels have significantly improved the nutrition of large numbers of people (Kreuter, Brennan, Scharff, & Lukwango, 1997). There have been no reports of upstream interventions or programs intended to reduce obesity-related disparities among racial and ethnic groups.

PRINCIPLES OF INTERVENTION

The foregoing discussion suggests certain principles that may be useful in guiding obesity prevention efforts among racial and ethnic groups. First, the goal of intervention outcomes for racial and ethnic groups should relate to diet composition and activity levels, rather than BMI, weight-loss, or other measures of body size. This is because (a) adult body size is difficult to change once obesity develops; (b) attempts to alter adult body size may do more harm than good; and (c) ideal body size (as represented by lowest mortality BMI) is a moving target that depends on age, gender, and race. At the same time, it may be possible to significantly alter body fat levels and improve health status without corresponding weight loss (Sullivan & Carter, 1985).

Second, because the prevention of obesity is more cost-effective than attempts at reversal, and because childhood obesity rates among racial and ethnic children are growing rapidly, the primary focus of immediate efforts should be on mid- and upstream strategies that can prevent obesity among minority children (Goran & Weinsier, 2000).

Third, successful interventions must take into account the culture-specific context of food and activity (Thompson et al., 2000). Programs can then approach dietary and activity changes in ways that complement cultural values and build on existing traditions.

Fourth, racial and ethnic differences in the genetic, environmental, and cultural causes of obesity should be evaluated and understood before national dietary recommendations or body size standards are established. BMI standards, for example, seem to be questionable as they fail to correspond with lowest mortality rates for different ethnic groups (Deurenberg et al., 1998). Additionally, conflicting data fail to support the appropriateness of some dietary fat recommendations among different cultures and populations (Seidell, 1998).

Fifth, obesity prevention and management programs must be offered in ways that are sensitive to different cultural ideals for body size, while at the same time avoiding complicity with the fashion industry. Racial and ethnic disparities in adult obesity are limited primarily to females (see Figure 1). One positive disparity may be the reduced impact of being overweight on self-esteem found among many minority women (Flynn & Fitzgibbon, 1998). It would be unfortunate if obesity control efforts merely reinforced the media message that personal worth and thinness are synonymous, and thereby undermined the self-confidence of overweight minority women while doing little to improve their health status.

A POPULATION MODEL

The population model proposed in this article calls for a balance between downstream, midstream, and upstream interventions that have well-defined objectives, clear theoretical foundations, and culturally appropriate methodologies. (Theories listed in Table 1 are not meant to be exhaustive, but merely represent the diversity of theories available to health educators.)

Downstream Interventions

It is ironic that although the primary determinants of obesity seem to be biological and environmental, the bulk of prevention and management efforts have focused on the individual. This approach may provide useful information and skills to motivated individuals, but an

Table 1. Population Model for Reducing Racial and Ethnic Disparities in Obesity

Targets	Objectives	Theory	Methods
Downstream Individuals Families Self-help groups	Provide individuals with knowledge and skills to maintain a healthy weight.	Stages of change; health beliefs; planned behavior; reasoned action	*Culturally sensitive...* Nutrition education; physical education, personal counseling
Midstream Schools Work site Communities	Use organizational channels and natural environments to mediate diet/activity.	Social cognitive theory meshed with racial/ethnic customs and practices	Multicomponent, collaborative interventions in community settings
Upstream Public media Economic base National policy	Use macro policy and environmental interventions to help change social norms.	Diffusion theory	Coalition building; advocacy; social marketing; communications

overemphasis on personal behavior change may also contribute to victim blaming and negative stereotypes in relation to obesity (Hawks & Gast, 1998).

As mentioned above, the social meaning of food and activity needs to be considered in the design and implementation of downstream interventions that target racial and ethnic populations (Thompson et al., 2000). Modifications that incorporate regular food intake may be preferable to restrictive diets that largely eliminate traditional foods (Bronner & Boyington, 2002). Retention and positive long-term outcomes for programs might be improved by including community partners such as churches or other trusted social organizations that can motivate and facilitate long-term participation in educational programs (Kumanyika & Charleston, 1992; Tuggle, 2000). The use of lay facilitators and peer educators may further enhance cultural sensitivity and cost-effectiveness (Williams, Belle, Houston, Haire-Joshu, & Auslander, 2001). Incorporating group support, family interaction, individual skill development, and adult learning principles may further enhance the success of downstream programs that work with ethnic groups (Bronner & Boyington, 2002).

Health education is well positioned to design and implement theoretically driven behavior change programs that are culturally sensitive (Bartholomew, Parcel, & Kok, 1998). Such programs, many of which are beginning to develop, will provide one component of a balanced, three-pronged effort to reduce racial and ethnic disparities in obesity.

Midstream

The second prong of the model calls for substantial strengthening of midstream programs that can take advantage of institutional and organizational structures to positively change community environments that influence diet and activity. One positive example is the Native American Pathways program described previously (Davis et al., 1999). At the same time that students receive instruction in relation to diet and activity, the school environment is changed to include increased levels of physical activity and better food choices through school food services. As parents and families are also brought into the program, the student is provided with the overall educational, environmental, and social support necessary to prevent obesity. As a nation we are unfortunately moving in the opposite direction; only 25% of American high schools offered daily physical education classes in the United States in 1995, down from 42% in 1991 (President's Council on Physical Fitness and Sports, 1996).

On the other hand, one notable improvement is a substantial increase in work sites that have wellness programs, from 22% in 1985 to 42% in 1992 (U.S. Department of Health and Human Services, 1993). Work site food service programs that offer a greater diversity of fruits and vegetables at a reduced cost can increase consumption of healthful foods (Jefferey, French & Raether, 1994). In other community settings there is evidence that physician counseling at health care sites and educational programs at point-of-purchase settings can significantly increase knowledge and change nutrition behaviors (Marcus & Forsyth, 1999). A missing component of current community efforts is the large-scale implementation of culturally sensitive methods and theories in work site, school site, health care, and community settings that serve substantial racial and ethnic minority populations.

Upstream

In general, the role of upstream interventions is to use mass media, economic incentives, and national policy to alter social norms and physical environments that contribute to obesity. Even though there will be many barriers to the development of such upstream interventions, other developed countries are beginning to pursue upstream measures with success

(Milio, 1998). In the United States there is growing support for greater public health involvement in the development of national, state, and local policies as they relate to the "toxic food environment" (Nestle & Jacobson, 2000).

As informed by future research, upstream interventions may include more aggressive public education and point-of-purchase campaigns that promote healthful dietary and activity practices, while at the same time debunking dietary myths and exposing the predatory practices of the food industry. Regulatory strategies could include better nutritional labeling with appropriate warnings, limits on junk food advertising (especially to children), better regulation of food services in schools and work sites, limits on the number of fast food establishments, and tighter regulation of food-related health claims. Economic incentives could include reimbursements for nutritional counseling, price supports for healthful foods, taxation for nutritionally poor foods, food supplement programs that reward the choice of nutritionally desirable foods, and greater liability for harm associated with food products. Environmental supports might include guidelines and policies for the establishment of walking/bicycle paths, parks, centrally located stairways, and other community infrastructures that promote higher levels of activity (Jacobson & Brownell, 2000; Koplan & Dietz, 1999; Nestle & Jacobson, 2000).

CONCLUSION

Without a comprehensive three-pronged approach, such as the one described in this article, it is unlikely that the population at large will experience a halt in the increasing rise of obesity—much less those who are members of racial and ethnic groups (Blocker & Freudenberg, 2001). Health educators are in a position to engage in a variety of efforts that can begin to move these strategies to the forefront of the war on obesity. It is unlikely that current efforts will be successful in reducing racial and ethnic disparities in the absence of national initiatives and wide-ranging tactics that are able to address obesogenic social environments at numerous levels.

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