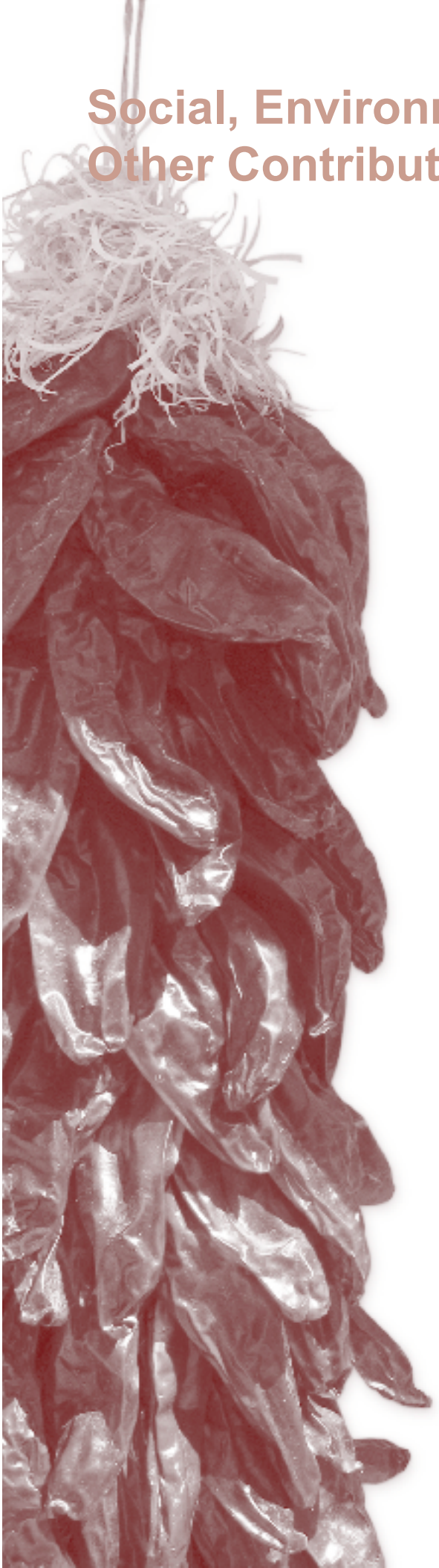
Social, Environmental, Behavioral, and Other Contributors to Obesity



"Focusing on the obese and overweight individual alone is not helping us address the broader social and economic issues that influence people's lives. [Environmental] strategies…remove us from a focus on …blaming the individual for their condition. It moves us toward conceptualizing and developing family, community, and governmental strategies that can involve the priority population in inclusive and respectful actions that can create healthy environments"
(Cohen, Perales and Steadman, 2005).

Obesigenic Environment

People live today in what is increasingly known as an "obesigenic environment." In other words, the surrounding social and physical environments are more conducive to sedentary lifestyles and unhealthy food and beverage choices than they are to healthier alternatives.

The influences of the physical or built environment and political, cultural and social environments on unhealthy weight are considerable. While it is difficult to sort out which factors actually influence the adoption of healthy choices, research has suggested that when environmental factors are modified to support healthy behaviors in individuals, more individuals engage in those behaviors (Frank, 2005; Giles-Corti et al., 2005; Hoehner et al., 2005).

Certain developments in U.S. culture and society in recent decades that have influenced this obesigenic trend include:

- Community designs centered on the automobile. This has discouraged walking and bicycling, made it more difficult for children to get together to play, and has increased the time adults spend driving.
- Increased concerns about safety that limit the time and areas children are allowed to play outside. Additionally, more children spend long hours in front of the television or computer screen, instead of spending time actively playing (Crespo, et al., 2001).
- Reduced amount of time students spend in physical education (PE) classes. The actual time spent in activity may be too short to be of sufficient benefit, and students may be required to take fewer PE classes overall.
- Communities without close-to-home physical activity facilities (e.g., parks, recreation centers), resulting in fewer convenient opportunities for neighborhood residents to be active.
- Food and beverage marketing practices, especially regarding children. Of the approximately $33 billion spent on food advertising annually, about 70% is for sweets and just 2% goes toward fruit and vegetable promotion (Nestle, 2002). The Institute of Medicine recently concluded that food and beverage marketing practices geared toward children and youth are

"sharply out of balance with recommended healthful diets" and put children's health at risk (McGinnis, Gootman and Kraak, eds., 2006).

- High calorie foods and beverages which are easily available, cheap and tasty. In many low income communities there are no grocery stores, leaving people to rely on the higher calorie, less nutritious choices from convenience stores and fast food restaurants (Morland et al., 2002).
- Restaurant and processed food portion sizes have increased two to five times for many foods since the 1970s, partly in response to consumer demands for greater "value" (Nicklas, 2001). At the same time, more people are eating meals away from home. Food expenditures, including fast food and other restaurants, increased from $263 billion in 1992 to $415 billion in 2002 (Stewart, Blisard, Bhuyan et al., 2004).
- Recent studies suggest that adults tend to eat the portions they're served regardless of how large the size may be, suggesting that public expectations and understanding of healthy portions have changed, and that adults' ability to self-regulate is limited (Wansink, 2005).

These pervasive contributors to the obesigenic environment are projected to continue to negatively influence health in the absence of swift and decisive measures to counter them. The most recent research indicates that the majority of normal weight adults can expect to become overweight or obese if they do not take action to maintain a healthy weight (Vasan et al., 2005). Future generations will likely experience greater illness, reduced quality of life, and shorter life spans than their parents (Olshansky et al., 2005) due to the burden of increasing rates of overweight and obesity. Social and physical environments must support citizens to achieve and maintain a healthy weight over the long term.

Food Insecurity and Obesity

Economic constraints for some New Mexicans affect nutrition and create additional burdens related to obesity and overweight. Many low-income households lack food security, or access to enough food to fully meet basic needs at all times. Such households face the fear of running out of food, and the result is a reduction in the quality of diet and reduction in the quantity of food consumed.

Fourteen percent of New Mexicans are food insecure or hungry, and almost 20 percent of New Mexico's children regularly miss meals because of inadequate family income (Economic Research Service/ USDA, 2003).

Paradoxically, food insecurity and obesity are linked.

The Brandeis University Center on Hunger has identified the following key factors linking obesity and food insecurity:

- Low-income families may consume lower-cost foods with relatively higher levels of calories per dollar,
- Families sacrifice food quality for food quantity to stretch limited resources,
- Mothers in particular sacrifice their own nutrition to feed their children, yet may overeat when food is available again, and
- The body may store fat more efficiently to conserve energy when there are periods of food deprivation. (Brandeis University, 2003).

Behavioral Contributors

An important overarching concept in addressing unhealthy weight is energy balance, where both physical activity and nutrition are considered as part of the same equation.

After a systematic review of existing research studies and results from community-based programs, the Centers for Disease Control and Prevention and others have identified some specific areas of focus likely to be effective in reducing unhealthy weight, which are also to be viewed in terms of energy balance. Engaging in physical activity, reducing time spent in television viewing or other screen activities, and healthful nutrition including fruit and vegetable consumption and breastfeeding are areas of promise for activities to promote healthier weight.

Physical Activity

Regular physical activity is critical to overall physical and mental health, physical fitness, and to achieving and maintaining a healthy weight. It is essential to the development of strong bones, muscles, and cardiovascular health in children, and to maintaining that foundation in adults and older adults. Most importantly perhaps is the fact that healthy habits formed in youth are most likely to be maintained into adulthood.

Adult Physical Activity Recommendations:

To reduce the risk of chronic disease, engage in at least 30 minutes of *moderate* intensity physical activity, *above usual activity*, most days of the week.
To manage body weight and prevent weight gain, engage in about 60 minutes of moderate to vigorous activity most days of the week while not exceeding calorie intake requirements.
To sustain weight loss in adulthood, participate in 60-90 minutes of moderate intensity activity most days of the week, while not exceeding calorie intake requirements.
Generally, greater health and fitness benefits are obtained by more vigorous or longer duration activity.
Children and adolescents should participate in at least 60 minutes of moderate to vigorous intensity physical activity most days of the week, preferably daily.

–U.S. Department of Health and Human Services (US DHHS), 2005.

Physical activity helps control a variety of common health conditions including arthritis, blood lipid disorders, and diabetes. Elderly persons can reduce the risk of falls and related fractures in part by increasing lower body strength and improving balance through regular physical activity (Judge et al. 1993; Campbell 1999). Elevating the level of physical activity may also provide indirect nutritional benefits. A sedentary lifestyle limits the number of calories that can be consumed without gaining weight. The higher a person's physical activity level, the higher his or her energy requirement and the easier it is to plan food choices that meet nutrient needs within the recommended calorie range (US DHHS, 2005).

those in the at-risk of overweight category, 41% of females and 38% of males said they exercised (New Mexico Department of Health and New Mexico Public Education Department, 2004).

New Mexico public school physical education requirements, like many other states', are limited. For all New Mexico students, there are content standards for physical education, but currently no requirements on the frequency or amount per day or week, and teachers don't need to be licensed in PE to teach PE in elementary schools. Middle school students must have one year of PE in either 7th or 8th grade, and in high school, just one year is required (Section 22-1-2 NMSA 1978).

A NM youth survey indicates that 43% of middle school students do not participate in any PE classes (NM YTS, 2004). Half of all New Mexico high school students did not participate in a physical education class the previous week (2003 NM YRRS). National recommendations for quality daily physical education include at least 150 minutes per week of physical education for elementary students from a licensed physical education teacher, and at least 225 minutes of PE a week for middle and high school students (National Association of Sports and Physical Education, 2004).

In spite of its importance, New Mexicans are not achieving the levels of physical activity recommended to ensure their health.

Only half of all New Mexico adults report getting the minimum recommended amount of physical activity (2003 NM BRFSS).

Physical Activity in Adults

Adult participation in the recommended amount of physical activity differs by education, income, gender, age, and race/ethnicity. Table 1 illustrates the differences between subgroups within these categories. To improve health and reduce risk of chronic disease, regular lifelong physical activity needs to become a reality for more New Mexicans of all ages and abilities. Those with the lowest levels of activity are currently

Table 1. NM Adults with 30+ minutes of moderate physical activity five or more days per week, or vigorous physical activity for 20+ minutes three or more days per week.

Recommended Physical Activity	
College graduate	59.2
High school graduate	48.9
Less than high school	33.7
>$50,000	59.1
<$15,000	44.6
Female	48.5
Male	54.3
18-24	60.4
35-44	50.7
65+	40.9
Non-Hispanic White	54.3
Hispanic	47.4

Increases with education

Increases with income

Decreases with age

Source: NM BRFSS 2003

at the highest risk, and this should be considered in efforts to improve opportunities for and access to physical activity.

Television and other Screen Media Time

The amount of time spent watching television is another influence on weight, and has been studied most extensively in young people. Children and adolescents who watch more than three hours a day are more likely to be overweight (Dietz, 1985). Several research studies support that each hour of additional television time corresponds to a two to six percent increase in a child's likelihood of being overweight (Dietz et al., 1985; Dennison et al., 2002; Proctor et al., 2003). Time spent passively engaged with other screen media such as video and computer games and DVDs has not been studied as extensively but is implicated in children's unhealthy weight as well (Stettler, 2004; Vandewater, 2004).

The American Academy of Pediatrics together with the TV-Turnoff Network, an organization that encourages children and adults to watch much less television in order to promote healthier lives and communities, recommends no screen time for children under two years of age and limiting older children's media and screen time to no more than two hours daily (American Academy of Pediatrics, 2001).

The Kaiser Family Foundation estimates that children view 20,000 - 40,000 television ads per year, and that at least 50 percent are for foods targeting children (The Role of Media in Childhood Obesity, 2004).

By the time the average American reaches age 65, he or she will have watched about nine entire years of television.

Research focusing on children suggests that the role of television and screen media in overweight and obesity stems from several areas:

1) Television time displaces time children could spend in more physically active pursuits;
2) The food advertisements children are exposed to on TV influence them to make unhealthy food choices (Taras et al., 1989; Borzekowski, 2001), and;
3) Children snack excessively while watching TV and using other screen media (Crespo et al., 2001).

Of New Mexico middle school students recently surveyed, 20% reported watching two hours of TV on an average school day, and 16% watch five or more hours per day (NMYTS, 2004). Half of all high school students watch from one to three hours of TV on an average day, while 20% watch four or more hours (New Mexico Department of Health and New Mexico Public Education Department, 2004).

For adults, decreasing the amount of time spent watching television also has the potential to positively effect attaining and maintaining a healthy weight. In the Nurse's Health Study, researchers found that regardless of exercise levels, TV watching (more so than other sedentary activities) was associated with significantly elevated risk of obesity and type 2 diabetes, whereas even light to moderate activity was associated with substantially lower risk. This study emphasizes the importance of reducing prolonged TV watching and other sedentary behaviors for preventing both obesity and diabetes (Hu et al., 2003).

Healthful Eating

Good nutrition is essential for the proper growth of infants, children and adolescents and is vital for a healthier weight and chronic disease prevention for all ages. Healthful nutrition includes enjoying a variety of food and beverage choices that provide adequate nutrients within calorie needs. Since calorie needs are related to levels of physical activity, elevating the level of physical activity may also provide indirect nutritional benefits by making it easier to plan food choices that meet nutrient needs within the recommended calorie range (US DHHS, 2005). Portion size, fruit and vegetable consumption, sweetened beverage consumption and breastfeeding have been studied for their roles in obesity prevention.

Portion Size

Increased caloric intake (approximately 200 calories-per-day per capita increase since the 1970s) may account for much of the energy imbalance seen today, since reported levels of physical activity have not changed much in the past decade. Portion sizes began to grow in the 1970s, rose sharply in the 1980s, and have continued to parallel increasing body weights (Young and Nestle, 2002). Consumers are faced with conflicting information between federal standards and common marketplace food portions that typically exceed those federal standards (USDA, 2005).

Fruits and Vegetables

Ample data suggests that consuming the recommended five to nine or more servings a day of fruit and vegetables are likely to provide protection from cardiovascular disease and some cancers, as well as promoting overall good health (Produce for Better Health Foundation, 2002).

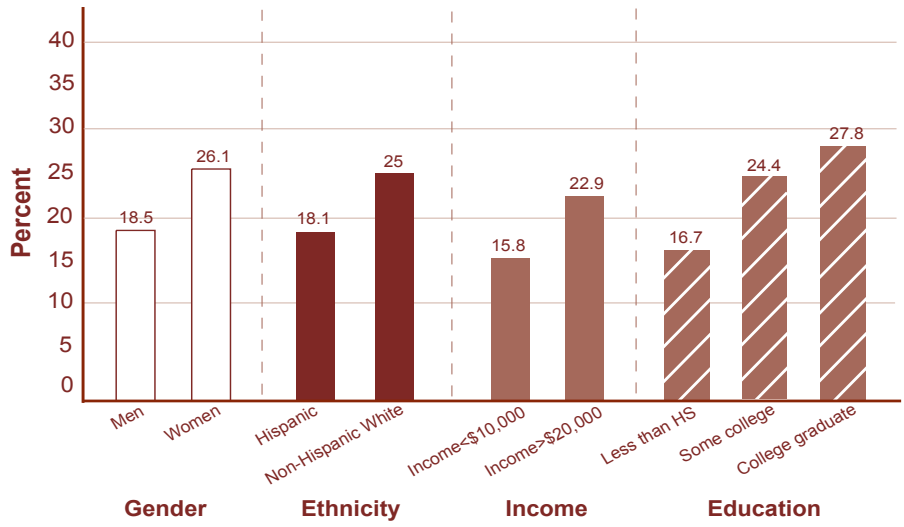
The water and fiber in these foods make them naturally low in calories, or energy density, but also make them satisfying to consume. A diet that includes five to nine or more servings of fruits and vegetables is also associated with lower rates of obesity and overweight (Lin and Morrison, 2002).

Currently, only 23% of New Mexico adults and 17% of New Mexico teens consume five or more servings of fruit and vegetables a day (NM BRFSS, 2003). Figure 8 illustrates differences in fruit and vegetable consumption among different groups in New Mexico.

Sweetened Beverages

As for sweetened beverages, U.S. per capita soft drink consumption has increased over 100% since the 1970s, and has tripled for adolescents. Americans are drinking sweetened beverages more often and in larger portions. Some studies suggest that liquid sugar does not send the brain fullness signals to the same extent as solids, and is one of the reasons sweetened beverages can be over consumed (Bray,

Figure 8. NM adults who eat five or more servings of fruits and vegetables a day by Gender, Ethnicity, Income and Education Level



2004). There is currently no New Mexico-specific data on sweetened beverage or soft drink consumption.

Breastfeeding

Breastfeeding with its many benefits for mothers and babies is also widely recognized for its potential to reduce childhood overweight. Exclusive breastfeeding for the first six months is associated with a 20% or better reduction in the risk of overweight in childhood or adolescence (Armstrong, 2002; Dietz, 2001; Grummer-Strawn and Mei, 2004). The U.S. Department of Health and Human Services and the American Academy of Pediatrics recommend that infants be exclusively breastfed at a minimum from birth to 6 months, and preferably through the first year of life (US DHHS, 2000). The National Healthy People 2010 goals for breastfeeding initiation and duration are: 75% initiation of breastfeeding, 50% continuation at 6 months, and 25% at one year (US DHHS, Office of Disease Prevention and Health Promotion).

Breastfeeding provides economic and social benefits to the family, the health care system, the employer, and the nation. Families can save several hundred dollars over the cost of feeding formula, even after accounting for the costs of breast pump equipment and additional food required by the nursing mother (Riordan, 1997; Montgomery, 1997). Breastfed infants typically require fewer sick care visits, prescriptions, and hospitalizations. Total medical care expenditures can be about 20% lower for fully breastfed infants than for those never breastfed (US DHHS, 2000).

Physiological benefits for the breastfeeding mother include quicker recovery from childbirth and return to pre-pregnancy weight, and the reduction in risk of premenopausal and possibly postmenopausal breast cancer. In addition, the risk of ovarian cancer may be lower among women who have breastfed their children (Newcomb, 1999; Brinton et al., 1995).

New Mexico Breastfeeding Data

Eighty-two percent of NM mothers initiated breastfeeding in 2002, surpassing the Healthy People 2010 goal of 75%. Among those women 70% continued for at least nine weeks. In 2001-2002, women with high school education or less had a considerably lower initiation rate than those with more than high school education (75% versus 91%). Only 78% of Hispanic mothers initiated breastfeeding compared with 84% of Native Americans or 85% of non-Hispanic whites. Similar disparities appeared for continuation (NM PRAMS 2000-2001). There is insufficient data at this time regarding African American mothers in New Mexico.

In the New Mexico Women, Infants and Children (WIC) program, the percentage of mothers who began breastfeeding was 69% in 2005. The element of social support boosted rates significantly; in WIC clinics with peer counselors, the average breastfeeding initiation rate was 74% (NM Women Infants and Children Nutrition Program, Breastfeeding Promotion Program).

Several studies demonstrate a relationship between maternal obesity and overweight in their children, supporting the common assertion that children are more likely to be overweight when one or both parents are overweight or obese. Additionally, these overweight and obese mothers were 50% less likely to breastfeed, perhaps because maternal adiposity prevents successful initiation or maintenance of breastfeeding (Gillman et al., 2001, Hediger et al., 2001). This suggests that a combined effect of maternal overweight with the absence of breastfeeding may result in an increased risk for children of becoming overweight in later years.

The mechanism by which breastfeeding may protect against later overweight and obesity is unclear. The rising number of overweight children, adolescents and adults, however, calls for employing all promising approaches to achieve healthier weight for New Mexicans of all ages.

Other Contributors to Obesity and Overweight

There is no doubt that obesity results from energy imbalance related to “calories in” from food and beverages consumed and “calories out” burned during physical activity. Understandably, the majority of initiatives to promote healthier weight focus on improving energy balance through individual behavior change and creating environments that support healthful behavior.

However, Bray and Champagne note that “it is what the energy balance concept does not tell us that is most important in dealing with obesity.” The concept of energy balance does not tell us anything about how genes are involved in metabolism, or why men and women deposit and store fat differently, or why some drugs affect weight loss or gain. They add that “understanding these mechanisms will allow us to tackle the epidemic of obesity” (2003).

It's important to recognize that complex factors exist whose effects on energy balance are not currently understood. These "other contributors"to overweight and obesity may include hereditary and biological factors, which can influence not only food intake but also how many calories an individual burns through generating body heat, digesting food, resting, and even "fidgeting."

Other contributors can also include an individual's medical or psychological conditions or treatment, which require identification and management in partnership with a knowledgeable health care professional. A personal history of physical, sexual or emotional trauma can also greatly affect weight status for individuals in complicated direct and indirect ways. These latter factors are included in what are sometimes known as Adverse Childhood Experiences (ACEs), and have been studied for their relationship to later risky behavior, poor health outcomes, and the development of numerous chronic conditions, including obesity (Felitti et al. 1998, Felitti 2002).

Finally, environmental factors such as pre-natal exposures, viruses, toxins, and even sleep-deprivation are all being investigated as potential contributors to the "obesity epidemic." Even evidence-based interventions focused on moving more and eating better alone will be predictably inadequate in addressing these complex and not fully understood factors. Professional and community education, increased resources for clinical assessment and treatment, and ongoing scientific research will be crucial to addressing these under-explored contributors to unhealthy weight.

Summary

There are genuine health concerns for the overweight youth and obese adults in New Mexico. Certainly many people are eating too much and engaging in too little physical activity, which are related to poor health outcomes and the development of chronic disease. Employing a multi-level approach that creates supportive environments to address these behavioral factors may be the most promising direction to take.