One out of every three children is overweight. Obesity is linked to increased risks of diseases such as type 2 diabetes, liver disease, hypertension, and heart disease. As the numbers of children with chronic disease goes up, so will the strain on the U.S. health care system, including the cost of health care. The Ecological Model of Childhood Overweight allows one to consider how an individual child's weight is influenced by characteristics ranging from the individual to the society. This article focuses on community characteristics that interact with children's weight status. It reviews community-based programs and whether they are successfully slowing the rate of childhood obesity, including demonstrations of recipe preparation, community gardens, and school-based curricula. It concludes with suggestions for intervention efforts and funding priorities focusing on high-risk populations of low-income overweight women of childbearing years. Interventions that occur during preconception may be true primary prevention of childhood obesity.

Keywords: community; childhood obesity; interventions

Childhood obesity continues to be a major and increasing public health problem. The rates of childhood obesity have tripled since the 1960s, with more than 33.3 percent of children now at risk for obesity, defined as having a body mass index (BMI) between the 85th and 95th percentiles. According to Ogden et al. (2006)

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17 percent of today's children already have BMIs higher than the 95th percentile. The resulting excess weight puts children at risk for complicating diseases such as type 2 diabetes (Fagot-Campagna 2000), hyperinsulinemia (Klein et al. 2004), hypertension (Gidding et al. 1995), dyslipidemia (Gidding et al. 1995), joint abnormalities (Taylor et al. 2006), polycystic ovarian syndrome (Gulekli et al. 1993), nonalcoholic fatty liver disease (Clark, Brancati, and Diehl 2002), and sleep disturbances (Mallory, Fiser, and Jackson 1989). These complications or comorbidities are likely to persist into adulthood (American Academy of Pediatrics 2003).

If a child is obese at the age of four, he or she will have a 20 percent likelihood of being overweight as an adult. By adolescence, the likelihood of remaining overweight as an adult reaches 80 percent (Guo and Chumlea 1999). Annual hospital costs related to childhood obesity totaled $127 million from 1997 to 1999 (in 2001 constant U.S. dollars), up from $35 million from 1979 to 1981 (Wang and Dietz 2002). As these overweight and obese children age, their health will continue to deteriorate and will further burden our health care system. Their ability to care for themselves and live independently will decrease, their chronic medical conditions will increase, and they will incur greater health care costs compared to their normal weight peers (Sturm, Ringel, and Andreyeva 2004).

These data should be disconcerting enough to spur a national movement to reverse the trend of the "obesity epidemic." While it may seem inequitable for the nation to incur the cost of prevention for what is largely considered an individual's problem, the taxpayers' current cost is astonishing.

These data should be disconcerting enough to spur a national movement to reverse the trend of the "obesity epidemic." While it may seem inequitable for the nation to incur the cost of prevention for what is largely considered an individual's problem, the taxpayers' current cost is astonishing. According to the U.S. Department of Health and Human Services (2001), the total costs of obesity in 2000 were $117 billion. Using current 2007 U.S. population data, this is an additional $387 per person per year (U.S. Census Bureau 2007). Unless Americans can reverse this epidemic, this figure will continue to increase.
According to an Institute of Medicine report, Preventing Childhood Obesity: Health in the Balance (2004), it is a national duty to take steps to reverse the obesity trend. A committee that included representatives from various disciplines (nutrition, physical activity, obesity prevention, pediatrics, family medicine, public health, public policy, health education, community development, and behavioral epidemiology) convened in response to the report to develop ways to address the increasing numbers of children who are overweight. This committee analyzed data from a survey of programs focused on childhood obesity during the years 2004 to 2006 from a national registry called Shaping America’s Youth. They also gathered information through three regional symposia and completed a comprehensive literature review. The Institute of Medicine compiled this information into a follow-up to the 2004 report, Progress in Preventing Childhood Obesity: How Do We Measure Up? (Institute of Medicine 2006).

The conclusions of the report are as follows:

1. While the country has responded to the obesity epidemic, the current level of investment does not match the scale of the problem.
2. Various entities are implementing programs, policies, and interventions, but researchers need to produce evidence-based approaches that will guide national action.
3. Current evidence is not sufficient to complete a comprehensive assessment of the progress that the nation has made. Researchers should use best practices in the short term with the goal of developing a larger evidence base with which to develop initiatives that can be used in various settings.
4. Evaluation needs to occur at multiple levels and settings. This layered information will help guide improvements to childhood obesity efforts. Surveillance, monitoring, and research are all components of evaluation.
5. We need short term, intermediate, and long term evaluation in order to have a sustained improvement of the childhood obesity epidemic. (Institute of Medicine 2006, p. 8)

The overriding conclusion of the committee is that we have a greater chance of success in addressing the childhood obesity epidemic if public, private, and voluntary organizations would combine and share respective resources to create a coordinated and sustained effort. To this end, one recommendation is to have industry, communities, and schools build partnerships with government, academia, and foundations to strengthen the evaluation process and expedite creating a more comprehensive evidence base with which to develop better long-term practices.

Despite the government’s efforts to influence individual behaviors that lead to expression of childhood obesity, success has been limited. In 2001, a survey from the Centers for Disease Control and Prevention (CDC) demonstrated that the majority of adults (54.6 percent) did not engage in physical activity most days of the week (CDC 2003). More recently, a national public opinion poll showed that 99 percent of Americans believe exercise is vital to preserving health (International Health, Racquet and Sportsclub Association 2007), but less than half of all Americans get the recommended amount of physical activity each day.
Ecological Considerations in Childhood Obesity

The Ecological Systems Theory states that individual change cannot be completely explained without considering the ecological niche in which the individual exists (Bronfenbrenner 1986). The Ecological Model of Childhood Overweight, developed by University at Albany and Pennsylvania State University researchers Davison and Birch (2001), focuses specifically on characteristics that could affect an individual child's weight status in relation to the multiple environments in which that child is embedded (see Figure 1). This model is ideal for looking at the combined effects of society, family, and individual factors that would amplify or illuminate the causes of childhood obesity.

The first system is the individual child's genetic environment. Children have different rates of growth and energy requirements, which vary by sex and age. This variability reveals itself in many studies where results of weight change are difficult to interpret because the study groups contain children of large age ranges and/or do not account for gender (Epstein, Paluch, and Raynor 2001). Additionally, if a child has two overweight parents (hence genetic susceptibility), a slight increase in dietary intake of the genetically susceptible child may show a larger increase in weight gain compared to the child with no familial obesity (Francis et al. 2007).

The next system that influences a child's weight status is the family environment. The parents contribute both the genetic factors and behaviors that will influence the expression of obesity in their child. Parental overweight predicts
higher BMI in girls and risk for disinhibited eating (Francis et al. 2007). A study by Wrotniak et al. (2005) showed that parental modeling of healthy behaviors improves weight loss in overweight youth participating in a family-based program where both parents and children are actively trying to lose weight. These behaviors included parental prioritization of family activity, limiting the family’s amount of screen time (including television, computers, and video games), and limiting access to high-calorie, low-nutrient-value foods. Family systems require individuals to change their behaviors to affect the weight status of the child. So far, the home has been the focus for the majority of current programs and interventions. The Ecological Model forces us to take into account the larger community in which the child lives. Studies often cite barriers to adopting healthy behaviors, such as lack of accessibility of recreational opportunities, decreased access to healthy food options, and lack of time to implement physical activity (International Health, Racquet and Sportsclub Association 2007). A coordinated community approach to obesity intervention is often the missing component necessary to supporting lifestyle changes that influence childhood obesity. This article will first focus on the modifiable community characteristics of neighborhood and school environments and the promising programs that can address these characteristics. Then, it will lay the groundwork for further studies and research within the community context.

**Coordinated Community Efforts**

National legislation has been slow to react to the escalation of childhood obesity. While the majority of legislation efforts are at the level of the individual states, there have been some actions at the federal level. Congress and President George W. Bush enacted The Child Nutrition and WIC Reauthorization Act of 2004. The law requires every school district that participates in the National School Lunch Program to bring parents, teachers, and administrators together to adopt and oversee a school wellness policy that addresses healthy nutrition and physical activity (U.S. Congress 2004). The main push in state legislation change has focused on school physical activity requirements and updating nutritional standards. In 2006, at least thirty-one states introduced or amended bills to improve schools’ nutrition environment and physical activity. Eleven states adopted such legislation (Robert Wood Johnson Foundation 2006).

Community efforts outside of legislation are occurring at the grassroots and academic levels. The coordination of these endeavors can improve the benefits for all parties involved through sharing resources that otherwise may not be available to smaller groups, building relationships with groups already embedded in the community, and reducing redundancy of ineffective programs. One program that has been successful in taking an ecological approach to childhood obesity is the Consortium to Lower Obesity in Chicago Children (CLOCC). This consortium has been successful at bringing together hundreds of academic, government, and

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grassroots organizations to take on childhood obesity. The consortium has an ongoing public health campaign, provides technical assistance for communities, allocates seed money quarterly to help local organizations secure funds from outside funding entities, and has committed to six areas of Chicago by providing implementation grants.

The Ecological Model states that ethnicity, socioeconomic status, work demands, school lunch programs, school PE programs, neighborhood safety, accessibility to recreational facilities, and access to convenience foods and restaurants are factors that influence an individual child’s weight. Factors that are not modifiable include ethnicity, socioeconomic status, and work demands. These unmodifiable factors interact with more controllable characteristics, however, including neighborhood safety, access to convenience foods, school physical education, and curriculum. Modifiable characteristics can be grouped into two categories, neighborhood and school, and will be the focus of the remainder of the article.

**Neighborhood Environments**

*Safety*

The neighborhood as we know it today is very different from the traditional European model. Communities once sought to keep industrial areas separate from residential spaces to protect the property and health of residents. Indeed, today’s zoning requirements derive from a Supreme Court Case in 1926, *Ambler Realty v. Village of Euclid*, which nominally recognized the health basis of zoning business separate from residences (Schilling and Linton 2005). The current theory is that mixed use of land may help reduce obesity. Urban sprawl increases the probability of chronic disease, possibly by providing fewer opportunities for physical activity and appealing to less active people who are drawn to car-friendly areas (Sturm and Cohen 2004). However, the study of the built environment is a relatively new field and little research has focused on children (see Hillier 2008 [this volume]).

Neighborhood safety can influence the physical activity levels of children. Parents report concerns about neighborhood safety more frequently on behalf of girls (17.6 percent) than for boys (14.6 percent) and are reported more frequently by Hispanic parents (41.2 percent) than by non-Hispanic white (8.5 percent) and non-Hispanic black (13.3 percent) parents (Burdette and Whitaker 2005). Overall, parents with lower incomes and education levels report more barriers to allowing their children to play outside. Perceptions about neighborhood safety can also affect the amount of time children watch TV (Burdette and Whitaker 2005). Children whose mothers reported the least safe neighborhood conditions had the highest percentage of screen time (greater than two hours).

In 1969, about half of all students walked or bicycled to school (Federal Highway Administration 1972). In 2002, fewer than 15 percent of all school trips used active means of transportation (*Morbidity and Mortality Weekly Report* 2003). A 2004 survey of parents by the CDC explored the barriers to walking to
school for children aged five to eighteen. The top reasons were distance and safety (CDC 2005). Safe Routes to School (SR2S) is a national program started in 2005 that is making progress in changing those numbers. SR2S provides funding to communities to develop programs and projects related to bicycle/pedestrian safety to bring back walking to school. The city of Milwaukee, for example, began with this project in 2005 and had six pilot schools. Through Milwaukee’s Neighborhood School Initiative and SR2S, the city decided to build six new schools from the ground up, expand nineteen existing schools, and renovate fifteen other existing schools (Introduction to Safe Routes to School 2007). Returning to neighborhood schools increases the potential of children to walk to and from school and the possibility of parents walking their children to school. This small increase in physical activity has the potential to affect the increase in weight gain we have seen in our community.

Access to Healthy Food: Grocery and Convenience Stores

Neighborhoods without a grocery store are associated with reduced access to fresh fruits and vegetables (Baker et al. 2006; Zenk et al. 2005). Baker et al.’s (2006) cross-sectional study of an upper Midwest portion of the country showed that areas where there were neighborhoods with a varied racial distribution or high poverty among whites had fewer stores that offered fruits and vegetables, compared with higher income neighborhoods. This study also reported that, regardless of income, predominantly African American areas had less access to fruits and vegetables. The authors of this research acknowledge that it is difficult to argue in a correlational study that increasing access to fruits and vegetables translates into increased intake. Morland, Diez Roux, and Wing (2006) described a large-scale cross-sectional study of 10,763 adults that found that respondents from communities with access to supermarkets had lower prevalence of obesity, while those with greater access to convenience stores had increased prevalence of obesity.

While additional characteristics contribute to obesity in neighborhoods without grocery stores, the nutritional limitations of being dependent upon groceries from convenience stores deserve special attention. Efforts are under way at the government and grassroots level to make buying fruits and vegetables more convenient. Governor Ed Rendell of Pennsylvania launched a program to form public-private partnerships that improve access to healthy foods. The program encourages supermarket development in low-income areas by awarding grants and loans exceeding $2 billion to those willing to invest into these areas (Robert Wood Johnson Foundation 2006). In 2005, Nevada legislature passed Senate Bill 229 into law, which provided a temporary tax incentive for locating or expanding grocery stores in the southern part of the state (Robert Wood Johnson Foundation 2006).

Another dedicated effort trying to improve the availability of fruits and vegetables in urban settings is Growing Power, Inc. Growing Power is an urban farm located in Milwaukee, Wisconsin, that is developing community food systems throughout the nation. Their mission as a nonprofit organization and land trust is to support people from diverse backgrounds and the environment in which they
live by helping to provide equal access to healthy, high-quality, safe, and affordable food. They implement this mission by providing hands-on training, on-the-ground demonstration, outreach, and technical assistance through the development of Community Food Systems, which help people grow, process, market, and distribute food in a sustainable manner. They have multiple outreach programs that have helped to develop more than twenty-five urban gardens, partnered with schools to bring children back to the connection between land and food, and recultivated land that otherwise stood vacant. They have completed training workshops in California, Illinois, Minnesota, Massachusetts, Mississippi, and Blackfeet Nation in Montana as well as Toronto, Canada (Growing Power 2007).

Restaurants and Fast Food

American families are eating more outside their homes now than at any other period in history. Families spend almost 50 percent of total food dollars at restaurants and on fast food (Institute of Medicine 2004). Bowman and colleagues (2004) reported that 30.3 percent of children aged four to nineteen consumed at least one meal per day that was fast food. This study also established that children who ate fast food, compared to those who did not, consumed more total calories (187 kcal/day) (Bowman et al. 2004).

While the restaurant industry has begun to increase its healthy alternatives, many restaurants are resisting change. New York City and Seattle have passed regulations that require chain restaurants to label menus with calorie information for use at point of sale. The Subway chain has led the way in compliance, while a restaurant association representing multiple companies in New York is suing the city in federal court (Center for Science in the Public Interest 2007).

Breastfeeding

The American Academy of Pediatrics encourages breastfeeding a child through the first year of life (Gartner et al. 2005). The World Health Organization (2003) sets a goal for every child to be breastfed for the first two years of life. In addition to numerous other breastfeeding benefits for both the mother and the child, one of the most important benefits is the reduction of obesity risks in children. According to the Growing Up Today Study (GUTS), which studied children of the women who participated in the Nurses’ Health Study II, the length and exclusivity of breastfeeding is associated with reduced risk of childhood obesity (Mayer-Davis et al. 2006). The researchers found that breastfed children had a lower incidence of being overweight, even factoring in the mothers’ characteristics of being overweight and/or diabetic. The researchers found that siblings in the same home with the same genetics had different outcomes depending on the degree to which they were breastfed (Mayer-Davis et al. 2006). In another study published in Obesity, Li and his fellow researchers (2007) found that breastfeeding for at least four months decreased both early-onset (age two years) and late-onset (age twelve years) overweight.
Even with this knowledge, the breastfeeding rates in the United States are dismal. According to Li et al. (2005), in 2002 only 71.4 percent of babies were breastfed initially. Only 13.3 percent of babies were exclusively breastfed until the age of six months, and only 16.1 percent of babies were nursed until their first birthday. Breastfeeding rates remain low, despite all the evidence that breastfeeding can reduce obesity as well as other diseases. Women face a variety of barriers to breastfeeding, however. These barriers fall into two broad categories: work and social pressure.

To protect breastfeeding in the workplace, it is necessary to change overt policies and implicit attitudes working against it. Breastfeeding must be protected against discrimination on a federal level. Under Derungs v. Wal-Mart Stores (2004), breastfeeding is ruled as unprotected under the Pregnancy Discrimination Act (PDA). The PDA was enacted as an amendment to Title VII of the Civil Rights act of 1967 and was meant to broaden the meaning of sex discrimination in employment to protect pregnant women against discrimination. The Sixth Circuit specifically ruled in Derungs that breastfeeding was not contemplated in the PDA, and therefore denial of breastfeeding could not be considered discrimination based on sex (Derungs 2004; Whelen 2005).

Under the Breastfeeding Promotion Act, introduced to the 110th Congress (HR 2236) in the spring of 2007, U.S. Representative Carolyn Maloney (D-NY) proposed three things. The first is an amendment to the PDA to insert just two words, “including lactation,” and providing for its definition. This would make it illegal for an employer to discriminate against a breastfeeding woman. She also provides for a tax credit for employers who facilitate breastfeeding or expressing mothers. Finally, she provides that breast pumps can be classified as medical equipment and will have to meet government standards. The federal government can show that it is serious about encouraging breastfeeding by amending Title VII to protect the practice in employment and in public.

A much harder challenge is changing the implicit attitudes of discrimination against nursing mothers. As difficult as it is for a pumping and working mother to express milk at work in a cubicle (Mieszkowski 2007), it is that much harder for a mother to express milk while working at McDonald’s or Wal-Mart (Gebel 2007). Not only is privacy a complication, but also employers and coworkers may be intolerant. If we change the law, workplace tolerance may improve (Baldwin and Friedman 1999).

Another conflict of attitudes is in society’s support of breastfeeding. As Baldwin and Friedman pointed out in their 1999 article in Mothering, breastfeeding has skipped several generations and is now seen as a “lifestyle choice” rather than as the most appropriate way to feed a baby. This means that women are being asked to remove themselves from public spaces when they attempt to nurse their babies. This particular issue was the basis for the Derung case. Ms. Derung was one of three mother plaintiffs who were asked to leave Wal-Mart while feeding their babies. Ms. Derung was breastfeeding her son on a bench outside of the layaway department when a Wal-Mart employee told her that she could not feed her baby there, and that she would have to remove herself to the
restroom or outside to breastfeed the baby. The other two mothers (Gore and Baird) in the Derungs case were in other Ohio Wal-Mart stores when employees told them that they could not nurse their babies inside the store. Other notable recent cases occurred in Victoria’s Secret stores in Massachusetts and Wisconsin and aboard a Delta flight from Vermont (Mishra 2006). As long as society sees breastfeeding as an exception or a lifestyle choice, intolerance will continue. States need to pass laws that exempt breastfeeding from public indecency statutes and that affirmatively assert the right for mothers to breastfeed anywhere they need (Wagget and Wagget 1995).

School Environment

The school environment is an ideal location for education, intervention against inactivity and poor nutritional intake, and monitoring of BMI. The schools have a triple opportunity in the classroom, gymnasium, and cafeteria. Several randomized control trials have been able to show benefits in reducing childhood obesity through different curriculum interventions. Robinson, Gortmaker, and Dennison have each developed curriculum-based programs that have been successful in reducing sedentary behavior, improving nutritional intake, and decreasing BMI across the age spectrum of preschoolers (Dennison et al. 2004) to middle-school-aged children (Robinson 1999; Robinson et al. 2003; Gortmaker et al. 1999).

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Curriculum

Hip Hop to Health (Dennison et al. 2004) is a curriculum that aims to reduce television viewing time and increase fruit and vegetable intake in preschool-aged children. The intervention tried to involve parents in the practice of reduced television viewing by informing them of the potential risk screen time has on
children and asking the parents to support a no-TV week at home. This program measured a decrease in BMI of the preschoolers in the intervention group and an increase in the BMI of the control group, though the differences were statistically insignificant (Dennison et al. 2004). Sedentary behaviors in the intervention group, however, were reduced significantly.

Planet Health (Gortmaker et al. 1999) is an integrated interdisciplinary curriculum designed as an overweight prevention program first used in the Boston Public Schools. It was designed for children in sixth and seventh grade. Researchers tested this intervention in five schools, with five additional schools serving as controls, for a total participation of 1,295 students. After adjusting for age, ethnicity, intervention status, and baseline BMI measurements, children in intervention schools were less likely to be overweight than in control schools (odds ratio = .47, \( p = .03 \)). Teachers found this program easy to use; it benefited the teachers in unforeseen ways such as improved health behaviors and improved teaching due to exposure to new teaching methods. Challenges remained, however, such as the perception of a lack of curriculum reinforcement in school meals, vending machines, and the children’s homes (Wiecha et al. 2004).

Robinson developed interventions for both curricula during school and after-school programming (Robinson 1999; Robinson et al. 2003). In 1999, he randomly assigned one of two schools in San Jose, California, to receive an eighteen-lesson, six-month classroom curriculum for eight- to ten-year-olds aimed to reduce TV, videotape, and video game use. This curriculum change was successful at lowering the BMI by 0.45 points after adjusting for baseline BMI, age, and sex. Girls Health Enrichment Multisite Studies (GEMS) comprise a group of interdependent studies focusing on reducing obesity in African American girls as they progress through puberty. Stanford GEMS is an ongoing study that concluded in the fall of 2007. A twelve-week pilot study focused on increasing physical activity through after-school dance classes and reducing sedentary behavior via lessons on selective viewing of television and TV time managers. While the intervention group’s TV viewing significantly decreased compared to the control, no significant difference in BMI occurred between the two groups (Robinson et al. 2003).

Nutrition

The Milwaukee program, Youth Take Charge, is an after-school pilot program developed to increase fruit and vegetable intake among school-aged children. Evaluated via a descriptive process, it shows promise in changing knowledge and behavior regarding fruit and vegetable intake (Johansen and Greer 2006). Through collaboration of multiple partners including the Milwaukee Health Department and the Milwaukee County Nutrition Physical Activity Coalition, nutritionists have middle school children initially taste test several recipes with fruits and vegetables and rate them. In the pilot program of 2006, researchers trained twenty-one adolescent youths to present a mock demonstration to their peers. These twenty-one children rated six recipes with fruits or vegetables as the main ingredient. The six recipes were rated as the best-tasting 47 to 71 percent of the time and
worst-tasting 5 to 25 percent of the time. Several youths then completed a demonstration for preschool children at the Northside YMCA after-school program, farmers markets, the Wisconsin State Fair, and YMCA sports camps.

Children serving as peer role models addresses several factors that have been associated with decreased fruit and vegetable intake, self-efficacy, social normative behavior, and peer modeling surrounding fruit and vegetable intake. Granner and colleagues (2004) reported that as adolescents increased in age their self-efficacy for eating fruits and vegetables decreased and peers modeling of eating fruits and vegetables decreased. While this program was carried out as a pilot program, it has the potential to be replicated on a larger scale through the school system and to transform the normative beliefs of fruit and vegetable intake in the younger classes while increasing the self-efficacy of the older children who participate as the peer models (Johansen and Greer 2006).

Increasing fruits and vegetables in children’s diets is one way to displace energy-dense, low-nutrient foods that contribute to excess calorie intake and childhood obesity. The responsibility for this task can no longer be perceived as solely an individual choice. Parents, schools, and after-school settings need to work together to ensure that the environments in which each child operates are undergoing changes to reduce barriers to making healthy choices.

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Conclusion

National momentum to reverse childhood obesity is evident. Small victories are being realized across the country. Arkansas reduced the rate of increase in childhood obesity over a three-year period (Arkansas Center for Health Improvement 2006). The Coordinated Approach to Child Health (Coleman et al. 2005), a Texas-based program, is preventing an increase of overweight in low-income schools with predominantly Hispanic children. In addition, Shape Up Somerville (Economos et al. 2007) was the first community-based obesity prevention program to show a decrease in weight over one year for first-through third-graders.
Small victories aside, we still are living in a country that faces a future where this generation of children may not outlive their parents. Research has led us to conclude that early intervention and prevention are more effective and less costly than treatment of adolescent or adult obesity. The treatment of obesity for many people is not a covered benefit through their insurance companies. Increasing our national investment in research dollars, policy change, program funding, and health care benefits aimed at the prevention and early intervention of childhood obesity will change the environment to support individual behaviors that reduce the risk of obesity and improve the health of our country.

Specific policies that will help support individual behavior changes include the following:

1. Develop tax incentives for schools that implement Safe Routes to School Programs.
2. Improve accessibility to grocery stores and farmers markets by supporting incentives for vendors.
3. Introduce regulation by the Food and Drug Administration requiring that all chain restaurants place clear calorie information at point of sale.
4. Promote breastfeeding and adopt laws to protect a mother’s ability to pump or breastfeed at work, including an amendment to Title VII of the Civil Rights Act of 1964 to include workplace protection of breastfeeding. In addition, state legislatures need to change existing law to specifically exclude breastfeeding from indecency statutes.
5. Mandate incorporating physical activity into school curriculum for all students.

Future Research and Funding Focus

The federal government has stated that it is a national priority to reduce childhood obesity. While we need to see moneys directed at prevention efforts for all age ranges, high-priority populations are women of childbearing age who are of a lower socioeconomic status. Over the past decade, evolving research has shown that fetal malnutrition and maternal prepregnancy obesity are placing children at a lifelong risk of obesity (Oken and Gillman 2003). Excessive pregnancy weight gain also puts children at risk of obesity (Li et al. 2007). Therefore, we need to begin the prevention of childhood obesity at prenatal counseling. Following up in the postnatal time period will potentially help parents learn about appropriate portion size and food choice. Targeting lower-income and overweight mothers for weight-loss classes can improve the fat intake, portion size, and food choice of their young children, as was shown by Klohe-Lehman and colleagues (2007). While this study only showed a modest effect of weight loss for the mothers, it did show significant improvement in their children’s dietary intake while maintaining normal growth in height and weight. The subjects were recruited from Women Infants and Children (WIC) and public health clinics. These locations are potential areas for further intervention.

Historically, WIC has been a site for community health change. WIC was founded in 1974 to help prevent malnutrition and iron deficiency anemia. It has recently added produce vouchers for clients to improve nutritional intake and has multiple, funded grant projects aimed at reducing childhood obesity within high-risk populations. Loving Your Family Feeding Their Future, a Nutrition
Assistance Program, is a community level program that is trying to improve access to healthy food through individual education and subsidizing with food stamps (U.S. Department of Agriculture 2007).

Parent food choice, eating style, activity level, and screen time are all influences on how children will behave in relation to food intake and physical activity. Having children participate in healthy cooking classes at the school kitchen or neighborhood center would be an interesting community wide intervention. Ideally, parents would prepare the meal with their children, taste test the recipe, and then take away the additional portions to be eaten later in the week. This approach accomplishes multiple goals. Placing the activity in the school or community center offers the social support of peers for both parent and child. It is time saving because it allows the parents to come directly from work and prepare a healthy meal. Preparing the food together allows for modeling of preparation, and children are more likely to eat food that they have helped to prepare. Finally, taste testing in front of other peers influences children to try potentially novel foods.

Collaborating with community, government, and academia has changed public health outcomes in the past. Nationally, concerned individuals have influenced seat belt use, drunk driving, and the fight against smoking. Community members, as taxpayers and concerned stakeholders, have more immediate power to affect school lunch programs; school PE programs; neighborhood safety; and accessibility to recreational facilities, convenience foods, and restaurants. Many laypersons are already involved in activities that affect these environments, including the PTA and Neighborhood Watch. These organizations are already in place and can influence the community leaders and social networks to produce measurable outcomes and make sustainable changes that will reverse the current childhood obesity trend.

Notes

1. Body mass index (BMI) is a measure of weight in relation to height. The calculation of BMI is weight (kg) divided by height (m²).

2. Shaping America’s Youth (SAY) is a collaborative initiative that has established a clearinghouse of information on national programs that address the childhood obesity epidemic and is a platform that can unite the resources of all who may contribute to the fight on childhood obesity. SAY partners include the American Diabetes Association, the American Academy of Pediatrics, the American Obesity Association, and the Nutrition Department of the University of California–Davis, with sponsorship from Campbell Soup Company; Gerber Products Company; McNeil Nutritionals, LLC, a Johnson & Johnson company; and Nike, Inc.

References


Baker, Elizabeth A., Mario Schootman, Ellen Barnidge, and Cheryl Kelly. 2006. The role of race and poverty in access to foods that enable individuals to adhere to dietary guidelines. Preventing Chronic Disease 3 (3): A76.


Derungs v. Wal-Mart Stores, 374 F.3d 428, 430 (6th Cir. 2004).


