The Impact of Childhood Obesity, Poor Nutrition And Inactivity on Public School Systems

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1.0 Childhood Obesity, Poor Nutrition and Inactivity

Childhood obesity is a rising public health epidemic. The World Health Organization concludes that “childhood obesity is one of the most serious public health challenges of the 21st century” (World Health Organization, 2010a, p. 190). A public health crisis is created when a population faces a health threat that affects a large proportion of its citizens, leads to widespread health consequences and creates a large financial burden to its society. Childhood obesity meets all of these requirements. In the United States, one-third of all children, ages 2-19, are considered overweight or obese (Ogden, Carroll, Curtin, Lamb, & Flegal, 2010). Obesity in children can lead to several acute and chronic health conditions, including diabetes, high blood pressure and elevated lipid profiles as well as cancer, orthopedic and psychosocial problems (Kumanyika, et al., 2008).

Childhood obesity also has been shown to have important short and long-term psychosocial consequences, such as negative self-image, decreased self-esteem, eating disorders, and lower health-related quality of life (Thorpe, et al., 2004). In 2009, the Centers for Disease Control estimated that the annual cost of care for obese adults reached a staggering $147 billion. An additional $3 billion were spent to treat children who were obese (White House Task Force on Childhood Obesity, 2010). From a public health perspective, childhood obesity is linked to several health disparities and has several clearly defined root causes. In order to understand the public health epidemic of childhood obesity it is necessary to examine its historical development, identify the public health infrastructure, review current initiatives to address this disease and develop recommendations for its prevention and treatment.

To determine the impact of childhood obesity in the United States it is important to understand how this disease is defined and measured. For the majority of obese children, the
disease is a result of an energy imbalance, that is, a level of low energy expenditure and/or a level of high caloric intake. The CDC has identified several causes for the decline of physical activity and the rising levels of excessive calorie intake. These factors include genetics, metabolism, behavior, environment, culture, and socioeconomic status (Center for Disease Control and Prevention, 2009a). More importantly, a child who is overweight or obese has a greater risk for developing certain chronic diseases than a normal weight child. “Obesity in childhood causes hypertension, dyslipidemia, chronic inflammation, increased blood clotting tendency, endothelial dysfunction, and hyperinsulinemia” (Ebbeling, Pawlak, & Ludwig, 2002, p. 473). A disturbing trend seen in the pediatric community is the rising prevalence of type 2 diabetes. Once considered a disease that developed in obese adults, poorly controlled type 2 diabetes can lead to chronic vascular sequelae such as heart disease, stroke, limb amputation, kidney failure and blindness (Ebbeling, et al., 2002).

In the United States, current screening guidelines for childhood obesity are defined by the Centers for Disease Control and Prevention. Body mass index, or BMI, is the screening tool used for measuring obesity. BMI is calculated by measuring a child’s weight and height. The resulting value is calculated as an age- and sex-specific percentile. This percentile is used to determine his/her weight status. In 2000, the CDC updated the traditional pediatric growth chart for use by health care practitioners. Using these growth charts, a child’s height and weight are plotted and compared to standardized growth curves. A BMI of more than 85% and less than 95% in a child age 2-19 is considered overweight. With a BMI of 95% or greater a child is considered obese (Center for Disease Control and Prevention, 2009c). Although BMI values are not used in the diagnosis of childhood obesity it serves as a valuable screening tool for use by public health practitioners interested in measuring the prevalence of obesity in children and adolescents.
A comprehensive picture of the impact of childhood obesity can be drawn by looking at its historical trends. These trends can be examined statistically as well as by evaluating changes in population behavior. The CDC conducts the National Health and Nutrition Examination Survey (NHANES) to identify and monitor the prevalence of health and nutrition related conditions. NHANES collects data through a series of studies, using both surveys and physical examination (Center for Disease Control and Prevention, 2010b). This comprehensive data source shows the epidemiological trends of childhood obesity and overweight. Starting with NHANES’s predecessor, the National Health Examination Survey (NHES), cross-sectional data from 1960–62, when childhood obesity levels were low, and comparing it to most recent NHANES data from 2007–08, obesity has more than tripled among children and adolescents. Recent childhood obesity trends have stabilized after a significant rise in the 1970’s and 1980’s. Current NHANES data, however, indicates that 6 to 19 year old boys who have a BMI above the 97th percentile continue to trend toward higher BMI rates. Overall, the results of the 2007-08 NHANES surveys indicate “that the prevalence of high BMI in childhood has remained steady for 10 years and has not declined. Moreover, the heaviest boys may be getting even heavier” (Ogden, et al., 2010, pp. 248-249).
Additional epidemiological trends can be seen by examining health disparities within the childhood obesity epidemic. A health disparity occurs when one sector of a population, be it by race, gender or socioeconomic status, has a disproportionate amount of disease or a significantly poorer health outcome when compared to other groups. With regard to the prevalence of childhood obesity in the United States, this is true for race and gender groups. The 2007-08 NHANES surveys indicated that African American and Mexican American children aged 6-11 and adolescents aged 12-19 were more likely to be overweight, than their non-Hispanic white counterparts. For example, between 1988-1994 and 2007-2008 the prevalence of obesity in adolescents increased from 11.6% to 16.7% among non-Hispanic white boys, from 10.7% to 19.8% among non-Hispanic black boys and from 14.1% to 26.8% among Mexican American boys. During the same time period the prevalence of obesity in adolescent girls increased from 8.9% to 14.5% among non-Hispanic white girls, from 16.3% to 29.2% among non-Hispanic black girls and from 13.4% to 17.4% among Mexican American girls.

This disparity is also similar for both girls and boys from age 2-5 and 6-11 of African American and Hispanic origin in the United States, when compared to their non-Hispanic white counterparts (Ogden, et al., 2010). When considering the socioeconomic trends related to childhood obesity, the data is less clear. The Pediatric Nutrition Surveillance System (PedNSS) is a nationally compiled obesity surveillance dataset obtained at the state and local level for low-income, preschool-aged children participating in federally funded health and nutrition programs. 1998-2008 PedNSS findings “indicated that obesity prevalence among low-income, preschool-aged children increased steadily from 12.4% in 1998 to 14.5% in 2003, but subsequently remained essentially the same, with a14.6% prevalence in 2008” (Center for Disease Control and
Prevention, 2009b). See Appendix A for a comprehensive list of epidemiological surveys of childhood obesity, nutrition and inactivity.

The rising trends in childhood obesity over the past forty years can be understood by looking at certain social determinants. The World Health Organization defines social determinants as “the circumstances in which people are born, grow up, live, work and age, and the systems put in place to deal with illness” (World Health Organization, 2010b). In the context of childhood obesity, social determinants include recent changes to the built environment which led to physical inactivity and to changes in food availability which led to increased calorie intake. At the family level, examples of both determinants can be seen in changes to family structures, socioeconomic status, and perceptions and attitudes toward health and nutrition. Within the school setting, changes have been made to nutritional food policy and physical activity policy, to the availability of physical education equipment, and to junk food sales and soda drink sponsorships. At the community level, changes have been made in the walkability of neighborhoods as well changes that increase crime rates and traffic safety issues. Individual behavioral changes that contribute to childhood obesity can be traced to the invention of social networking which causes deprivation of meaningful social contact, to access to fast food or low quality foods, as well as to the lack of available recreational facilities. Finally, at the societal level, an increase in time spent indoors, increased time spent
watching television and playing video games and an increase in exposure to food advertisement have played a significant role in the imbalance between energy expenditure and caloric intake (Maziak, Ward, & Stockton, 2008).

2.0 The Burden of Childhood Obesity on Public Schools

The burden of childhood obesity and its related conditions of inactivity and poor nutrition is felt by educational institutions in terms of absenteeism and poor academic achievement. The CDC broadly defines academic performance in three categories: Cognitive Skills and Attitudes (e.g., attention/concentration, memory, verbal ability); Academic Behaviors (e.g., conduct, attendance, time on task, homework completion); and Academic Achievement (e.g., standardized test scores, grades) (Centers for Disease Control and Prevention, 2010a).

Some general conclusions regarding academic achievement and poor health choices in adolescents can be made by looking at data from the 2009 National Youth Risk Behavior Survey System (YRBSS). A negative association can be seen between physical inactivity and unhealthy dietary behaviors and academic achievement after controlling for sex, race/ethnicity, and grade level.
In the 2009 YRBSS, students with higher grades were significantly less likely to have engaged in behaviors such as being physically active at least 60 minutes per day on fewer than 5 days; watching television 3 or more hours per day on an average school day; using computers 3 or more hours per day (played video or computer games or used a computer for something that was not school work on an average school day); drinking a can, bottle, or glass of soda or pop (not including diet soda or diet pop at least one time per day during the 7 days before the survey) and not eating for 24 or more hours to lose weight or to keep from gaining weight during the 30 days before the survey (Centers for Disease Control and Prevention, 2010b).

In 2010, the CDC published a report entitled *The Association Between School-Based Physical Activity, Including Physical Education, and Academic Performance* (Centers for Disease Control and Prevention, 2010a). This report was a meta-analysis of peer reviewed literature spanning 46 years. Four categories of research articles emerged: School-Based Physical Education Studies, Recess Studies, Classroom Physical Activity Studies and Extracurricular Physical Activity Studies. The results of this study showed there were a total of 251 associations between physical activity and academic performance, representing measures of academic achievement, academic behavior, and cognitive skills and attitudes. Measures of cognitive skills and attitudes were used most frequently (112 of the 251 associations tested). Of all the associations examined, slightly more than half (50.5%) were positive, 48% were not significant, and only 1.5% were negative (Centers for Disease Control and Prevention, 2010a). Implications for both individual school districts and state and national school policies inferred from this report can be found in Appendix B.

Overweight, obesity and poor nutrition have also been associated with poor academic achievement and absenteeism. Obese children have been shown to have a significantly higher rate of absenteeism in school than their normal weight constituents (Geier, 2007). In 2008,
researchers at Temple University found an inverse association between body mass and scholastic achievement, attendance, behavior and physical fitness among middle school students (Shore, 2008). For example, iron deficiency has been linked to shortened attention span, irritability, fatigue, and difficulty with concentration (Parker, 1989). Low protein intake has been associated with lower achievement scores (American School Food Service Association (ASFSA), 1989). Such evidence suggests that a child’s weight status plays a significant role in their academic success. Therefore, the development and implementation of childhood nutrition education and physical fitness programs by school districts is needed to address the rising overweight and obesity rates of its students and to alter the negative school effects related to their weight status.

3.0 School Nutrition Policies and the National School Lunch Act

The development of the current National School Lunch Act has its roots in the 1800’s when the United States, under pressure from the American people, began to model school lunch programs seen in European countries. Most funding and administration of these programs were undertaken by private societies and associations interested in child welfare and education. The Children's Aid Society of New York initiated one of the first programs in 1853, serving meals to students attending a vocational school.

The earliest Federal aid came from the Reconstruction Finance Corporation in 1932 and 1933 when it granted loans to several towns in southwestern Missouri to cover the cost of labor employed in preparing and serving school lunches. Such Federal assistance was expanded to other areas in 1933 and 1934 under the operations of the Civil Works Administration and the Federal Emergency Relief Administration, reaching into 39 States and covering the employment of 7,442 women. (United States Department of Agriculture, 2011c)
This year to year funding from the federal government continued for another 10 years without any formal legislative act recognizing the program or setting a policy agenda. This changed in 1946 with the passing of the National School Lunch Act by the 79th Congress. For the first time, the National School Lunch Act was authorized to allocate funds for school meals, administrative costs and the purchase of equipment. In addition, the Act could set policies for states that chose to participate in the program. Such policies included serving lunches that met minimum nutritional requirements. Serving meals at no or reduced cost to children who were determined by local school authorities to be unable to pay the full cost of the lunch, and not to segregate or discriminate against such children in anyway. School districts were mandated to operate the program on a non-profit basis and to use the commodities that were in abundance or had been donated to the federal government. Finally, districts were expected to maintain proper records of all receipts and expenditures and submit reports to the State agency as required (United States Department of Agriculture, 2011c).

In 1966, Congress passed the Child Nutrition Act which strengthened current school nutrition policy in several ways. This Act centralized all administrative offices under the authority of the United States Department of Agriculture and also started a pilot breakfast program with expanded funding for equipment purchases and administrative services at the state level. The Child Nutrition Act is ‘reauthorized’ every three years by Congress. In 2010, this Act was reauthorized as the Healthy, Hunger-Free Kids Act of 2010. The Act reauthorizes child nutrition programs for five years and includes $4.5 billion in new funding for these programs over 10 years (The White House Task Force on Childhood Obesity, 2010). This bill provides several program changes that aim to reduce childhood obesity and improve childhood nutrition.
The Healthy, Hunger-Free Kids Act of 2010 makes several improvements to school nutrition programs and policies as detailed in the following table.

<table>
<thead>
<tr>
<th>The Healthy, Hunger-Free Kids Act of 2010 Improves Nutrition and Focuses on Reducing Childhood Obesity</th>
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<tbody>
<tr>
<td>• <strong>Gives USDA the authority to set nutritional standards for all foods regularly sold in schools</strong> during the school day, including vending machines, the “a la carte” lunch lines, and school stores.</td>
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<tr>
<td>• <strong>Provides additional funding to schools that meet updated nutritional standards</strong> for federally-subsidized lunches. This is an historic investment, the first real reimbursement rate increase in over 30 years.</td>
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<tr>
<td>• <strong>Helps communities establish local farm to school networks</strong>, create school gardens, and ensures that more local foods are used in the school setting.</td>
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<tr>
<td>• <strong>Builds on USDA work to improve nutritional quality of commodity foods</strong> that schools receive from USDA and use in their breakfast and lunch programs.</td>
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<tr>
<td>• <strong>Expands access to drinking water in schools</strong>, particularly during meal times.</td>
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<tr>
<td>• <strong>Sets basic standards for school wellness policies</strong> including goals for nutrition promotion and education and physical activity, while still permitting local flexibility to tailor the policies to their particular needs.</td>
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**Increases Access**

- **Increases the number of eligible children enrolled in school meal programs by approximately 115,000 students** by using Medicaid data to directly certify children who meet income requirements.
- **Helps certify an average additional 4,500 students** per year to receive school meals by setting benchmarks for states to improve the certification process.
- **Allows more universal meal access for eligible students** in high poverty communities by eliminating paper applications and using census data to determine school-wide income eligibility.
- **Expands USDA authority to support meals** served to at-risk children in afterschool programs.

**Increases Program Monitoring and Integrity**

- **Requires school districts to be audited every three years** to improve compliance with nutritional standards.
- **Requires schools to make information more readily available** to parents about the nutritional quality of meals.
- **Includes provisions to ensure the safety of school foods** like improving recall procedures and extending hazard analysis and food safety requirements for school meals throughout the campus.
- **Provides training and technical assistance** for school food service providers.

(The White House Task Force on Childhood Obesity, 2010)
4.0 Public Health Infrastructure and the National School Lunch Program

The epidemic of childhood obesity and its related conditions of poor nutrition and inactivity is complex and requires a large public health infrastructure for its prevention and treatment. Scutchfield and Keck (2009) define a public health system as the “constellation of governmental and non-governmental organizations that contribute to the performance of essential public health services for a defined community or population” (p. 792). Using the principles of disease prevention, the public health infrastructure can be identified as primary, secondary or tertiary preventions. Primary prevention involves the “preventing of a disease before it occurs…and is the most effective way to improve health and control costs” (Scutchfield & Keck, 2009, p. 791). Primary prevention is the most common type of prevention used by the federal government and provides the majority of the infrastructure. Programs at this level are primarily population-based.

Primary prevention can be achieved through federal surveillance activities, leadership by both governmental and non-governmental entities and population-based prevention programs. Examples of primary prevention include the White House Taskforce for Childhood Obesity’s Let’s Move initiative, the Activ8kids! program developed by the NYS Health Department to promote healthy behaviors as well as the use of policy statements by non-governmental groups, such as the American Academy of Pediatrics’ Prevention of Pediatric Overweight and Obesity, which help guide the healthcare industry. Secondary prevention refers to “treating or controlling a disease after it occurs” (Scutchfield & Keck, 2009, p. 793). “Secondary prevention is an important strategy because both duration and severity of childhood obesity are critical predictors of eventual adult obesity and related health problems” (Bendich & Deckelbaum, 2001, p. 190). Secondary prevention programs function primarily at the individual and small group level.
Example of secondary prevention of childhood obesity include BMI screening by primary health care providers, community programs that target overweight children and private sector organizations that target weight loss activities, such as summer camps. Tertiary prevention refers to “limiting a disability as a result of a disease or rehabilitating an individual with a disability” (Scutchfield & Keck, 2009, p. 796). Tertiary prevention of childhood obesity primarily involves programs in the private sector that focus on significant weight loss of individual children and treatment of illness due to the obesity. Examples of tertiary prevention include adolescent bariatric surgery, non-surgical bariatric weight loss clinics and clinical services that treat obesity related illnesses.

Federal and state governments provide the largest portion of infrastructure for combating childhood obesity. In the context of the public school system, the two federal agencies that primarily provide oversight and regulation for school health and nutrition are the Centers for Disease Control (CDC) and the United States Department of Agriculture (USDA). The CDC’s Division of Adolescent and School Health provides oversight in the form of surveillance of disease burdens in children and adolescents. Using data from surveillance programs such as the Youth Risk Behavior Surveillance System (YRBSS), the CDC can track school health-related issues at the population level. This information is then used to develop public policies and health promotion programs to combat school health-related issues (Center for Disease Control, 2010b). The CDC is also responsible for developing strategies to
improve the health of vulnerable populations, such as children and adolescents. The Coordinated School Health Program (CSHP) is one example of a CDC strategy. The Coordinated School Health Program is a method for improving students' health and learning in our nation’s schools. The CSHP centers around eight critical, interrelated components: Health Education, Physical Education, Health Services, Mental Health and Social Services, Nutrition Services, Healthy and Safe Environment, Family and Community Involvement and Staff Wellness. Individually, each of these components can contribute to students’ health and well-being. However, when all of the individual components work together to support the adoption of health-enhancing behaviors, students’ health and learning are improved (Center for Disease Control, 2010a). The CDC also provides numerous tools and surveillance systems that state and local agencies can use to assess health policies as well as health and physical activity curriculum within a school district. More information on CDC programs can be found in Appendix B.

The USDA’s division of Food and Nutrition Services offers several national programs that directly impact school nutrition. These programs include the National School Lunch, Afterschool Snacks, Fresh Fruit & Vegetable, Seamless Summer, School Breakfast and Special Milk programs. The National School Lunch Program (NSLP) is the primary school nutrition program from the USDA and serves public and private schools across the nation. The program was established under the National School Lunch Act and signed by President Harry Truman in 1946. If a school district chooses to participate in this program, they receive cash subsidies and donated commodities for their school breakfast and/or lunch program. In return, they must follow the minimal nutritional guidelines set by the USDA and offer free and reduced lunches to qualified students (United States Department of Agriculture, 2010a). “School lunches must meet the applicable recommendations of the Dietary Guidelines for Americans, which
recommend that no more than 30 percent of an individual's calories come from fat, and less than 10 percent from saturated fat. Regulations also establish a standard for school lunches to provide one-third of the Recommended Dietary Allowances of protein, Vitamin A, Vitamin C, iron, calcium, and calories. School lunches must meet Federal nutrition requirements, but decisions about what specific foods to serve and how they are prepared are made by local school food authorities” (United States Department of Agriculture Food and Nutrition Service, 2011). The NSLP has three subcomponent programs: Afterschool Snacks, Seamless Summer and Team Nutrition. These programs serve to supplement and support the primary mission of the NSLP, which is to provide low or no cost nutritious meals to school age children.

Another federally assisted school nutrition program is the School Breakfast Program (SBP). The SBP provides cash assistance to states to operate nonprofit breakfast programs in schools and residential childcare institutions. State education agencies administer the SBP at the state level, and local school food authorities operate it in schools (United States Department of Agriculture, 2010b). More detailed information on USDA programs can be found in Appendix C. In addition to food subsidy programs, the USDA promotes a healthy school culture through the HealthierUS School Challenge. The HealthierUS School Challenge (HUSSC) is a voluntary initiative established in 2004 to recognize those schools participating in the National School Lunch Program that have created healthier school environments through promotion of nutrition and physical activity (United States Department of Agriculture, 2011b). More information on USDA programs can be found in Appendix C.

Individual states play a significant role in the administration of all federal school food and nutrition programs. Each state is responsible for management and oversight of all federal child nutrition programs (United States Department of Agriculture, 2011a). In New York State,
school lunch and nutrition programs are administered by the Child Nutrition Program within the NYS Education Department. Using a website portal, called the Child Nutrition Knowledge Center, the New York State Education Department houses all necessary documents, forms, policies and databases that local school districts need to participate in the various national school lunch programs (New York State Department of Education, 2011).

5.0 School-Based Obesity Prevention Programs

Numerous school-based prevention programs are in place throughout the country that deal with childhood obesity. A review of literature on school-based programs revealed a significant number of programs that fall into one specific category or uses a combination of nutrition, physical activity and behavior change. This literature review, completed in PubMed, included the search terms of ‘nutrition education’, ‘health promotion’ and ‘school’ and was limited to clinical trials, meta-analysis, practice guidelines, all children, 0-18 years and 01/01/1971 to 7/5/2011. A total of 61 programs that further met the requirement of being in the English language and were peer-reviewed, evidence-based programs were then divided into several categories: School Nutrition Programs, Nutrition Education Programs, School Environment Programs, Fruit and Vegetable Programs and Physical Activity Programs. In 2005, the Task Force on Community Preventive Services completed a similar systematic review of all available studies (41) in research, practice and policy related to school-based nutrition programs. “The Task Force is an independent, nonfederal, volunteer body of public health and prevention experts, whose members are appointed by the Director of the CDC” (Task Force on Community Preventive Services, 2005). The studies they chose to focus on were multicomponent school-based nutrition interventions to increase fruit and vegetable intake and decrease fat and saturated fat intake among school-age children. Examples of the programs include the Coordinated
Approach to Child Health (CATCH), Gimme 5, Planet Health and Teens Eating for Energy and Nutrition at School (TEENS). The review found a wide variation in the number and types of components in a program. The length of the studies ranged from < 3 months to 60 months. The age range of students in the studies was K-12 with a median age of 9.3 with most students being in grades 3-5. Results from the studies were measured in terms of behavioral outcomes including changes in intake of fruit and vegetables, fat, and saturated fat. Because the study outcomes were measured by a behavior and were based on self-report of dietary intake, the studies were subject to reporting bias. In other words, there was a possibility that the students’ answers were influenced by what they thought was socially acceptable or what they thought others would want them to say. Ultimately, the Task Force determined that there was ‘insufficient evidence’ to determine if these programs were effective (Task Force on Community Preventive Services, 2005).

One of the largest school-based intervention programs began as the Child and Adolescent Trial for Cardiovascular Health (CATCH). Originally funded by the National Institute for Health, this initiative began as a multicenter trial that looked at the effectiveness of a cardiovascular health promotion program. Conducted by researchers from the University of Texas Health Science Center, CATCH measured improvements in cardiovascular health through vigorous physical activity during physical education classes and in changes to the school lunch program (Kaplan, Liverman, & Kraak, 2005). Originally a three year study, CATCH evolved into the Coordinated Approach to Child Health program which is supported by the Center for Disease Control and Prevention. CATCH is now a coordinated school health program designed to promote physical activity, healthy food
choices and prevent tobacco use in elementary school children. CATCH focuses on coordinating four components: the Eat Smart. Play Hard. school nutrition program, K-5 classroom curriculum, a physical education program as well as a family program. CATCH is successfully used by over 7000 schools in the United States. As a primary prevention program, CATCH uses several tools that make it an excellent public health initiative. CATCH has been extensively researched with publications in multiple peer-reviewed journals. The program targets several different areas of obesity prevention, including nutrition, physical activity, behavior modification, education and involvement of the school, family, and community groups. Research has shown that CATCH can be effectively used in communities with lower socioeconomic levels and greater levels of racial disparities (Center for Disease Control and Prevention, 2010a). Finally, the CATCH program is “proving to be sustainable and feasible in a wide variety of settings. The program provides hands-on training and is designed to minimize the burden on teachers” (Center for Disease Control and Prevention, 2010a).

A new and growing national model in school nutrition is the concept of Farm-to-School. Farm to School connects schools (K-12) and local farms with the objectives of serving healthy meals in school cafeterias, improving student nutrition, providing agriculture, health and nutrition education opportunities, and supporting local and regional farmers. “Farm to School is a comprehensive program that extends beyond farm fresh salad bars and local foods in the cafeteria to include waste management programs like composting, and experiential education opportunities such as planting school gardens, cooking demonstrations and farm tours. The program teaches students about the path from farm to fork, and instills healthy eating habits that can last a lifetime. At the same time, use of local produce in school meals and educational activities provides a new direct market for farmers in the area and mitigates environmental
impacts of transporting food long distances. The Farm to School approach helps children understand where their food comes from and how their food choices impact their bodies, the environment and their communities at large” (Farm to School Network, 2011). Many school districts across the nation are developing nutrition programs similar to the Farm to School model, such as growing school gardens and incorporating classroom instruction in the process. Federal and private grant funding is available to help schools incorporate salad and fruit bars into their school lunch programs. On a grander scale, several large school districts have hired chefs to develop healthier school lunches than are traditionally available through the commodity program in the National School Lunch Program.

The Baltimore City School District hired a well-known chef, Tony Geraci, as the director of food and nutrition in 2008. He quickly energized the district and community of Baltimore, MD by incorporating fresh, local produce into the school lunch program and at the same time cutting the cost of school meals. “He serves only Maryland-grown fresh fruits and vegetables, buys healthful fare from food suppliers and offers meatless Mondays with dishes such as black bean nachos, vegetarian lasagna and eggplant Parmesan” (Hellmich, 2010). Mr. Geraci identified a 33-acre parcel of school owned property that was planning to be sold and converted it into a year round greenhouse for growing fresh produce and at the same time creating a ‘farm’ school where students were able to make field trips to learn about farming and agriculture, all in an urban setting. Such innovative ideas can bring excitement, learning opportunities and a sense of ownership to a school community in which 88% of its students qualified for free or reduced lunches. In 2010, Michelle Obama and the Let’s Move campaign, started the Chefs Move to Schools initiative to encourage culinary experts to assist schools in addressing childhood obesity.
School Nutrition

by sharing their cooking skills with school districts. “The goal is for chefs to help support schools in preparing foods that are both tasty and nutritious for children” (Hellmich, 2010).

6.0 School-Family-Community Collaboration

Designing a comprehensive school-based obesity education program requires consideration of all the stakeholders. Traditional health and physical fitness curricula have focused on the student in the school setting. However, for children to effectively make lifestyle changes in the school setting, attention must be given to influences the child receives from outside the school setting. Rhee, De Lago, Arscott-Mills, Mehta, and Davis (2005) used the Transtheoretical Health Behavior Change Theory (Stages of Change Model) revised for weight reduction to identify parent perceptions of child health behaviors and parent readiness to make lifestyle changes for overweight children. Stages of change range from no interest in changing behavior to maintaining healthy changes as permanent lifestyle.

The authors suggest that if a parent of an overweight child is pre-contemplative, the parent may be unsupportive of overweight/obesity interventions (Rhee, De Lago, Arscott-Mills, Mehta, & Davis, 2005). Maximova et al. (2008) noted that helping a child accurately perceive one’s self as overweight or obese has been associated with motivation to change health behavior. Youth who are exposed to overweight parents and friends do not perceive themselves as overweight. Thus, readiness and motivation to change behavior are not achieved (Maximova, et al., 2008). Towns and D’Auria’s (2009) integrative review of parent perceptions of child overweight identified that parental perceptions of child overweight are influenced by child age, gender, and ethnicity. Further, they found that some parents do not find the BMI and growth charts applicable or meaningful. The authors underscored that parents need to recognize when their child is overweight and be concerned enough about negative health consequences to take
action to improve the situation (Towns & D'Auria, 2009). Researchers have found that use of qualitative methods gives voice to these stakeholders and allows partners an opportunity to express their own perspectives, values and opinions (Palinkas LA, 2009). Taking these factors into consideration it is imperative to consider the parent as a significant stakeholder in the success of district-wide school based obesity education and physical fitness program.

School-Community collaboration is a growing phenomenon in this country. Fueled by changes in funding patterns, loss of funding, school reform and government-led initiatives, the need to join forces is becoming essential for today’s school districts. Other reasons for collaboration include efforts to reform community health and social service agencies and from community development initiatives (Adelman, 2008). Collaboration is defined as a formal working partnership between schools, families, and various local organizations and community representatives. “An optimal approach involves formally blending together resources of at least one school—and sometimes a group of schools or an entire school district—with local family and community resources” (Adelman, 2007). The main goal of collaboration is to sustain connections over time. Community groups and agencies that may be included in a collaborative partnership include individuals, businesses, community-based organizations, postsecondary institutions, religious and civic groups, programs at parks and libraries and any other facilities that can be used for recreation, learning, enrichment, and support. “Strong family-school-community connections are critical in impoverished communities where schools often are the largest pieces of public real estate and also may be the single largest employer” (Adelman, 2007). One of the hallmarks of authentic collaboration “is a formal agreement among participants to establish mechanisms and processes to accomplish mutually desired results—
usually outcomes that would be difficult to achieve by any of the stakeholders alone” (Adelman, 2007). The focus of such ‘outcomes’ usually has one or more of the following (Adelman, 2008):

- **Direct delivery of services and programs** (e.g., improving specific services and programs; improving interventions to promote healthy development, prevent and correct problems, meet client/consumer needs; improving processes for referral, triage, assessment, case management) and/or
- **Resource use** (e.g., improving resource deployment and accessing additional resources) and/or
- **Systemic approaches** (e.g., moving from fragmented to cohesive approaches; developing a comprehensive, multifaceted continuum of integrated interventions; replicating innovations; scaling-up)

Collaboration involves establishing an infrastructure for working together to accomplish specific **functions** related to the development and enhancement of interventions and systems. Adelman (2007) identified examples of collaborative functions as:

- **Facilitating** communication, cooperation, coordination, and integration
- **Operationalizing the vision** of stakeholders into desired functions and tasks
- **Enhancing support for and developing a policy commitment** to ensure necessary resources are dispensed for accomplishing desired functions
- **Advocacy, analysis, priority setting, governance, planning, implementation, and evaluation** related to desired functions
- **Aggregating data** from schools and neighborhood to analyze system needs
- **Mapping, analyzing, managing, redeploying, and braiding** available resources to enable accomplishment of desired functions
- **Establishing leadership** and institutional and operational mechanisms (e.g., infrastructure) for guiding and managing accomplishment of desired functions
- **Defining and incorporating new roles** and functions into job descriptions
- **Building capacity** for planning, implementing, and evaluating desired functions, including ongoing stakeholder development for continuous learning and renewal and for bringing new arrivals up to speed
- **Defining standards** and ensuring accountability
- **Social marketing**

In addition to identifying the function and focus of a school-family-community collaboration, it is necessary to identify the *mechanisms and structures* for a successful collaborative effort. The Center for Mental Health in Schools at UCLA has identified the following mechanisms and structures as essential (Adelman, 2008):

- A steering group
- Advisory bodies and councils
- A collaborative body and its staff
- Ad hoc or standing work groups
- Resource-oriented teams
- Case-oriented teams
- Committees

The Rutgers Safe and Drug-Free Schools and Communities Project identified three factors that must be in place for effective collaborations: adequate time, respect and control that is shared or can be relinquished. The following implications are taken from *Strategies for Effective Collaboration with Parents, Schools and Community Members* (Rutgers Safe and Drug-Free Schools and Communities Project, 2009).

**Collaboration takes time...**
- To build trust
- To understand roles and responsibilities
- To invite and answer questions
- To present information necessary for decision making

**Collaboration has to be based on respect that is demonstrated...**
- By holding meetings at mutually convenient times and places
- By insuring that everyone has the same information
- By incorporating differing viewpoints
- By giving validity to differing viewpoints
Collaboration means that control must be shared or relinquished...

- No one has all the answers all the time
- Balance and give-and-take are key
- What do we need to know to set up an inclusive initiative?

“When families, schools, community agencies and institutions collaboratively agree upon their goals and work together to reach them, everyone benefits. Schools enjoy the informed support of families and community members, families experience many opportunities to contribute to their children's education, and communities look forward to an educated, responsible workforce. The benefits to the staff of schools and community agencies are abundant: they can observe increased morale, heightened engagement in their work, and a feeling that their work will net results” (New Leaders for Tomorrow's Schools, 2000).

7.0 Recommendations

The development of a school-based program to address complex issues such as childhood obesity requires best-practice guidelines and evidence-based interventions. In light of the fact that little positive supporting evidence can be found in the literature for school-based interventions, it becomes necessary to look at national guidelines and recommendations for intervention based programming. Healthy People 2020 is an evidence-based set of 10-year health benchmarks designed by the United States Department of Health and Human Services to provide guidelines for program development and evaluation. These benchmarks are intended to encourage collaborations across sectors, guide individuals toward making informed health decisions and measure the impact of prevention activities (United States Department of Health and Human Services, 2011). Healthy People 2020 has a total of 42 health topics, each of which has numerous objectives. In their report, School Health Guidelines to Promote Healthy Eating
and Physical Activity, the CDC identified several Healthy People 2020 objectives for healthy eating and physical activity among children and adolescents (Center for Disease Control and Prevention, 2011). The topics of Nutrition and Weight Status, Physical Activity, Early and Middle Childhood and Educational and Community-Based Programs and their respective objectives have been outlined by the CDC in Appendix E. These objectives can serve as guidelines for the development of individual interventions. The CDC’s School Health Guidelines to Promote Healthy Eating and Physical Activity also provides recommendations for school-based programs that are aimed at improving various school health dynamics. The report provides 9 detailed guidelines for enhancing existing programs, implementing new programs and strengthening the administrative structure in a school system to provide a more collaborative arena to address school health issues (Center for Disease Control and Prevention, 2011). These guidelines can be found in Appendix F.

Following the current practice of program assessment, development, implementation and evaluation is vital to adequately identifying the current health issues important to the school district. Once identified, designing interventions that address the issues must have a strong evaluation process to determine if the program outcomes are met and the intervention does what it was designed to do. Finally, any consideration for implementing a new program or restructuring an existing school health program must be initiated as a collaborative effort between the school district, district families and the community at large. Only by assessing the needs of the stakeholders and combining the strengths, desires and expertise of all agents involved will a school district move forward in developing and implementing a successive school-based program to address the specific needs of its students.
References Cited


Appendix A

Examples of Epidemiological Surveys of Childhood Obesity Data

<table>
<thead>
<tr>
<th>Survey</th>
<th>Sponsor</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Health and Nutrition Examination Survey (NHANES)</td>
<td>CDC</td>
<td>Cross-sectional survey</td>
</tr>
<tr>
<td>National Health Interview Survey (NHIS)</td>
<td>CDC</td>
<td>Cross-sectional survey</td>
</tr>
<tr>
<td>Pediatric Nutrition Surveillance System (PedNSS)</td>
<td>CDC</td>
<td>Cross-sectional survey</td>
</tr>
<tr>
<td>School Nutrition Dietary Assessment Study (SNDA)</td>
<td>USDA</td>
<td>Cross-sectional survey</td>
</tr>
<tr>
<td>School Health Policies Programs Study (SHPPS)</td>
<td>CDC</td>
<td>Cross-sectional survey</td>
</tr>
<tr>
<td>School Health Profiles (SHP)</td>
<td>CDC</td>
<td>Cross-sectional survey</td>
</tr>
<tr>
<td>Youth Media Campaign Longitudinal Survey (YMCLS)</td>
<td>CDC</td>
<td>Cross-sectional survey</td>
</tr>
<tr>
<td>Youth Risk Factor Behavior Surveillance System (YRBSS)</td>
<td>CDC</td>
<td>Cross-sectional survey</td>
</tr>
<tr>
<td>National Survey of Children’s Health (NSCH)</td>
<td>CDC</td>
<td>Longitudinal survey</td>
</tr>
<tr>
<td>National Survey of Early Childhood Health (NSECH)</td>
<td>CDC</td>
<td>Longitudinal survey</td>
</tr>
<tr>
<td>National Longitudinal Survey of Youth (NLSY)</td>
<td>US Department of Labor</td>
<td>Longitudinal survey</td>
</tr>
</tbody>
</table>

### Physical Activity and Academic Achievement

**The Association Between School-Based Physical Activity, Including Physical Education, and Academic Performance**

(centers for Disease Control and Prevention, 2010a)

**Policy Implications**
- There is substantial evidence that physical activity can help improve academic achievement, including grades and standardized test scores.
- The articles in this review suggest that physical activity can have an impact on cognitive skills and attitudes and academic behavior, all of which are important components of improved academic performance. These include enhanced concentration and attention as well as improved classroom behavior.
- Increasing or maintaining time dedicated to physical education may help, and does not appear to adversely impact, academic performance.

<table>
<thead>
<tr>
<th>Implications for Schools</th>
<th>School-based physical education</th>
<th>Recess</th>
<th>Classroom-based physical activity</th>
<th>Extracurricular physical activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schools and physical education teachers can consider increasing the amount of time students spend in physical education or adding components to increase the quality of physical education class. Articles in the review examined increased physical education time (achieved by increasing the number of days physical education was provided each week or lengthening class time) and/or improved quality of physical education (achieved through strategies such as using trained instructors and increasing the amount of active time during physical education class).</td>
<td>School boards, superintendents, principals, and teachers can feel confident that providing recess to students on a regular basis may benefit academic behaviors, while also facilitating social development and contributing to overall physical activity and its associated health benefits. There was no evidence that time spent in recess had a negative association with cognitive skills, attitudes, or academic behavior.</td>
<td>Classroom teachers can incorporate movement activities and physical activity breaks into the classroom setting that may improve student performance and the classroom environment. Most interventions reviewed here used short breaks (5–20 minutes) that required little or no teacher preparation, special equipment, or resources.</td>
<td>The evidence suggests that superintendents, principals, and athletic directors can develop or continue school-based sports programs without concern that these activities have a detrimental impact on students’ academic performance. School administrators and teachers also can encourage after-school organizations, clubs, student groups, and parent groups to incorporate physical activities into their programs and events.</td>
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### Appendix C

**CDC – Department of Adolescent and School Health (DASH) Website**

The CDC's Division of Adolescent and School Health (DASH) promotes the health and well-being of children and adolescents to enable them to become healthy and productive adults.

<table>
<thead>
<tr>
<th>CDC School Health Programs/Studies</th>
<th>Services Provided</th>
<th>Website Link</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Student Health and Academic Achievement</strong></td>
<td>The CDC provides several important papers on the relationship between poor dietary habits, physical activity and academic achievement. This site also provides explanations for how various surveillance systems and recent epidemiological studies have documented the parallel relationship between poor academic performance and poor health outcomes.</td>
<td>Student Health and Academic Achievement</td>
</tr>
<tr>
<td><strong>Youth Risk Behavior Surveillance System (YRBSS)</strong></td>
<td>The YRBSS monitors behaviors that contribute markedly to the leading causes of death, disability, and social problems among youth and adults in the United States. Through the national Youth Risk Behavior Survey (YRBSS), the CDC monitors student health-risk behaviors and the extent to which these behaviors are associated with academic achievement.</td>
<td>Youth Risk Behavior Surveillance System (YRBSS)</td>
</tr>
</tbody>
</table>
| **National Youth Physical Activity and Nutrition Study (NYPANS)**     | The NYPANS was conducted in 2010 with three main purposes:  
  - To provide nationally representative data on behaviors and behavioral determinants related to nutrition and physical activity among high school students.  
  - To provide data to help improve the clarity and strengthen the validity of questions on the Youth Risk Behavior Survey (YRBS)  
  - To understand the associations among behaviors and behavioral determinants related to physical activity and nutrition and their association with body mass index.                                                                                                                                                        | National Youth Physical Activity and Nutrition Study (NYPANS) |
| **School Health Policies and Practices Study (SHPPS)**                | The SHPPS is a national survey periodically conducted to assess school health policies and practices at the state, district, school, and classroom levels. SHPPS was most recently conducted in 2006. SHPPS                                                                                                                                                                                                                                                                                                      | School Health Policies and Practices Study (SHPPS) |
also was conducted in 2000 and 1994; the next SHPPS is planned for 2012. Comprehensive results may be found here: Journal of School Health. SHPPS questionnaires may be found here: Questionnaires.

**School Health Profiles**

The School Health Profiles (Profiles) is a system of surveys assessing school health policies and practices in states, large urban school districts, territories, and tribal governments. Profiles are conducted biennially by education and health agencies among middle and high school principals and lead health education teachers.

**Healthy Passages**

Healthy Passages is a longitudinal study designed to help families, health care providers, schools, and communities develop effective policies and programs to keep children and adolescents healthy. Healthy Passages is designed to assess a cohort of fifth-grade children and one of their parents biennially through age 20 years. Biennial assessments identify the family, peer, school, and community influences on health behaviors, health outcomes, and educational and social outcomes across diverse racial and ethnic populations in three geographic areas (Birmingham, Alabama; Houston, Texas; and Los Angeles, California.) In addition, as the children are in fifth grade at the start of data collection, this study will assess the effects of major transitional periods (e.g., elementary school to middle school, puberty, high school to college or work) on health and educational outcomes. The study has completed enrollment and assessment of the baseline cohort of fifth-grade children. A total of 5,148 fifth-grade children and their parents were assessed between fall 2004 and summer 2006. The same children and their parents will be interviewed every two years. Wave II data collection began fall 2006 with the cohort in seventh grade and will be completed by summer 2008.

**School Health Index**

The SHI is a self-assessment and
| Planning tool that schools can use to improve their health and safety policies and programs. It's easy to use and completely confidential.
| The SHI has two activities that are to be completed by a school district: the eight self-assessment modules and a planning for improvement process.
| The self-assessment process involves members of a school community coming together to discuss what a school is already doing to promote good health and to identify their strengths and weaknesses. The SHI allows a district to assess the extent to which it implements the types of policies and practices recommended by the CDC in its research-based guidelines for school health and safety policies and programs.
| After a district completes the self-assessment process, it will be asked to identify recommended actions the school district can take to improve its performance in areas that received low scores. They will then be guided through a simple process for prioritizing the various recommendations.

| **Health Education Curriculum Analysis Tool (HECAT)** | The Health Education Curriculum Analysis Tool (HECAT) can help school districts, schools, and others conduct a clear, complete, and consistent analysis of health education curricula based on the National Health Education Standards and CDC’s Characteristics of Effective Health Education Curricula. The HECAT results can help schools select or develop appropriate and effective health education curricula and improve the delivery of health education. The HECAT can be customized to meet local community needs and conform to the curriculum requirements of the state or school district. |
| **Physical Education Curriculum Analysis Tool (PECAT)** | The Physical Education Curriculum Analysis Tool (PECAT) will help school districts conduct a clear, complete, and consistent analysis of written physical education curricula, based upon national physical education guidelines. |
education standards. The PECAT is customizable to include local standards. The results from the analysis can help school districts enhance existing curricula, develop their own curricula, or select a published curriculum, for the delivery of quality physical education in schools.

| Coordinated School Health Program | The Coordinated school health (CSHP) is recommended by the CDC as a strategy for improving students' health and learning in our nation’s schools. The CHCP centers around eight critical, interrelated components:  
1. Health Education  
2. Physical Education  
3. Health Services  
4. Mental Health and Social Services  
5. Nutrition Services  
6. Healthy and Safe Environment  
7. Family and Community Involvement  
8. Staff Wellness  
Individually, each of these components can contribute to students’ health and well-being. However, when all of the individual components work together to support the adoption of health-enhancing behaviors, students’ health and learning are improved. |
|---------------------------------|--------------------------------------------------------------------------------------------------|

Coordinated School Health Program
Appendix D

**USDA – Food and Nutrition Website**

<table>
<thead>
<tr>
<th>USDA Program</th>
<th>Services Provided</th>
<th>Website Link</th>
</tr>
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<tbody>
<tr>
<td><strong>National School Lunch Program</strong></td>
<td>The National School Lunch Program (NSLP) is a federally assisted meal program operating in public and nonprofit private schools and residential child care institutions. It provides nutritionally balanced, low-cost or free lunches to children each school day.</td>
<td>National School Lunch Program</td>
</tr>
<tr>
<td><strong>-Afterschool Snacks</strong></td>
<td>The NSLP offers cash reimbursement to help schools serve snacks to children in afterschool activities aimed at promoting the health and well-being of children and youth in our communities. A school must provide children with regularly scheduled activities in an organized, structured and supervised environment; including educational or enrichment activities.</td>
<td>Afterschool Snacks</td>
</tr>
<tr>
<td><strong>-Seamless Summer</strong></td>
<td>School districts participating in the NSLP or SBP are eligible to apply for the Seamless Summer Option. Once approved through their governing state agency, school districts serve meals free of charge to children, 18 years and under, from low-income areas.</td>
<td>Seamless Summer</td>
</tr>
<tr>
<td><strong>-Team Nutrition</strong></td>
<td>Team Nutrition is an initiative of the USDA Food and Nutrition Service to support the Child Nutrition Programs through training and technical assistance for foodservice, nutrition education for children and their caregivers, and school and community support for healthy eating and physical activity.</td>
<td>Team Nutrition</td>
</tr>
<tr>
<td><strong>Fresh Fruit and Vegetable Program</strong></td>
<td>The Fresh Fruit and Vegetable Program (FFVP) provides all students in selected elementary schools with high free and reduced price enrollment with a wide variety of healthy fresh fruits and vegetables. The FFVP can be an important catalyst for change in the efforts to combat childhood obesity.</td>
<td>Fresh Fruit and Vegetable Program</td>
</tr>
<tr>
<td>Program</td>
<td>Description</td>
<td></td>
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<td>----------------------------------------------</td>
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<tr>
<td><strong>School Breakfast Program</strong></td>
<td>The School Breakfast Program (SBP) provides cash assistance to States to operate nonprofit breakfast programs in schools and residential childcare institutions. The program is administered at the Federal level by FNS. State education agencies administer the SBP at the State level, and local school food authorities operate it in schools.</td>
<td></td>
</tr>
<tr>
<td><strong>Special Milk Program</strong></td>
<td>The Special Milk Program provides milk to children in schools and childcare institutions who do not participate in other Federal meal service programs. The program reimburses schools for the milk they serve. Schools in the National School Lunch or School Breakfast Programs may also participate in the Special Milk Program to provide milk to children in half-day pre-kindergarten and kindergarten programs where children do not have access to the school meal programs.</td>
<td></td>
</tr>
<tr>
<td><strong>HealthierUS School Challenge</strong></td>
<td>The HealthierUS School Challenge (HUSSC) is a voluntary initiative established in 2004 to recognize those schools participating in the National School Lunch Program that have created healthier school environments through promotion of nutrition and physical activity.</td>
<td></td>
</tr>
<tr>
<td><strong>Choose My Plate</strong></td>
<td>Choose My Plate provides practical information to individuals, health professionals, nutrition educators, and the food industry to help consumers build healthier diets with resources and tools for dietary assessment, nutrition education, and</td>
<td></td>
</tr>
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</table>
other user-friendly nutrition information.

<table>
<thead>
<tr>
<th>Let’s Move!</th>
<th>Let’s Move! is a comprehensive initiative, launched by First Lady, Michelle Obama, dedicated to solving the problem of obesity within a generation, so that children born today will grow up healthier and able to pursue their dreams. Combining comprehensive strategies with common sense, Let’s Move! is about putting children on the path to a healthy future during their earliest months and years. Giving parents helpful information and fostering environments that support healthy choices. Providing healthier foods in our schools. Ensuring that every family has access to healthy, affordable food. And, helping children become more physically active.</th>
<th>Let’s Move!</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eat Smart. Play Hard.</td>
<td>The Eat Smart. Play Hard. Campaign was launched by USDA’s Food and Nutrition Service (FNS) to encourage and teach children, parents, and caregivers to eat healthy and be physically active every day. Eat Smart. Play Hard. offers resources and tools to convey and reinforce healthy eating and lifestyle behaviors that are consistent with the Dietary Guidelines for Americans.</td>
<td>Eat Smart. Play Hard.</td>
</tr>
</tbody>
</table>
Appendix E

*Healthy People 2020 Objectives for Healthy Eating and Physical Activity Among Children and Adolescents*
*(Center for Disease Control and Prevention, 2011)*

**Nutrition and Weight Status (NWS) Objectives**

NWS 2: Increase the proportion of schools that offer nutritious foods and beverages outside of school meals.

NWS 2.1: Increase the proportion of schools that do not sell or offer calorically sweetened beverages to students.

NWS 2.2: Increase the proportion of school districts that require schools to make fruits or vegetables available whenever other food is offered or sold.

NWS 10: Reduce the proportion of children and adolescents who are considered obese.

NWS 11: (Developmental) Prevent inappropriate weight gain in youths and adults.

NWS 14: Increase the contribution of fruits to the diets of the population aged ≥2 years.

NWS 15: Increase the variety and contribution of vegetables to the diets of the population aged ≥2 years.

NWS 15.2: Increase the contribution of dark green vegetables, orange vegetables, and legumes to the diets of the population aged ≥2 years.

NWS 16: Increase the contribution of whole grains to the diets of the population aged ≥2 years.

NWS 17: Reduce consumption of calories from solid fats and added sugars in the population ≥2 years.

NWS 18: Reduce consumption of saturated fat in the population aged ≥2 years.

NWS 19: Reduce consumption of sodium in the population aged ≥2 years.

NWS 20: Increase consumption of calcium in the population aged ≥2 years.

NWS 21: Reduce iron deficiency among young children and females of childbearing age.

**Physical Activity (PA) Objectives**

PA 3: Increase the proportion of adolescents who meet current federal physical activity guidelines for aerobic physical activity and for muscle-strengthening activity.

PA 4: Increase the proportion of the nation’s public and private schools that require daily physical education for all students.

PA 5: Increase the proportion of adolescents who participate in daily school physical education.

PA 6: Increase regularly scheduled elementary school recess in the United States.

PA 6.1: Increase the number of states that require regularly scheduled elementary school recess.

PA 6.2: Increase the proportion of school districts that require regularly scheduled elementary school recess.

PA 7: Increase the proportion of school districts that require or recommend elementary school recess for an appropriate period of time.

PA 8: Increase the proportion of children and adolescents who do not exceed recommended limits for screen time.

PA 8.2: Increase the proportion of children and adolescents aged 2 years through 12th grade who view television, videos, or play video games for no more than 2 hours a day.
PA 10: Increase the proportion of the nation’s public and private schools that provide access to their physical activity spaces and facilities for all persons outside of normal school hours (e.g., before and after the school day, on weekends, and during summer and other vacations).

PA 13: Increase the proportion of trips made by walking.

PA 13.2: Children and adolescents aged 5–15 years, trips to school of \( \leq 1 \) mile.

PA 14: Increase the proportion of trips made by bicycling.

PA 14.2: Children and adolescents aged 5–15 years, trips to school of \( \leq 2 \) miles.

**Early and Middle Childhood (EMC) Objectives**

EMC 4: Increase the proportion of elementary, middle, and senior high schools that require school health education.

EMC 4.1: Increase the proportion of schools that require newly hired staff who teach required health education to have undergraduate or graduate training in health education.

EMC 4.2: Increase the proportion of schools that require newly hired staff who teach required health instruction to be certified, licensed, or endorsed by the state in health education.

EMC 4.4: Increase the proportion of required health education classes or courses with a teacher who has had professional development related to teaching personal and social skills for behavior change within the past 2 years.

**Educational and Community-Based Programs (ECBP) Objectives**

ECBP 2: Increase the proportion of elementary, middle, and senior high schools that provide comprehensive school health education to prevent health problems in:

ECBP 2.8: Unhealthy dietary patterns.

ECBP 2.9: Inadequate physical activity.

ECBP 3: Increase the proportion of elementary, middle, and senior high schools that have health education goals or objectives that address the knowledge and skills articulated in the National Health Education Standards (high school, middle, and elementary).

ECBP 4: Increase the proportion of elementary, middle, and senior high schools that provide school health education to promote personal health and wellness in the following areas:

ECBP 4.3: Growth and development.

ECBP 5: Increase the proportion of the nation’s elementary, middle, and senior high schools that have a full-time registered school nurse-student ratio of at least 1:750.

ECBP 8: (Developmental) Increase the proportion of worksites that offer an employee health promotion program to their employees.
Appendix F

Summary of School Health Guidelines to
Promote Healthy Eating and Physical Activity
(Center for Disease Control and Prevention, 2011)

Guideline 1: Use a coordinated approach to develop, implement, and evaluate healthy eating and physical activity policies and practices

- Coordinate healthy eating and physical activity policies and practices through a school health council and school health coordinator.
- Assess healthy eating and physical activity policies and practices.
- Use a systematic approach to develop, implement, and monitor healthy eating and physical activity policies.
- Evaluate healthy eating and physical activity policies and practices.

Guideline 2: Establish school environments that support healthy eating and physical activity

- Provide access to healthy foods and physical activity opportunities and to safe spaces, facilities, and equipment for healthy eating and physical activity.
- Establish a climate that encourages and does not stigmatize healthy eating and physical activity.
- Create a school environment that encourages a healthy body image, shape, and size among all students and staff members, is accepting of diverse abilities, and does not tolerate weight-based teasing.

Guideline 3: Provide a quality school meal program and ensure that students have only appealing, healthy food and beverage choices offered outside of the school meal program

- Promote access to and participation in school meals.
- Provide nutritious and appealing school meals that comply with the Dietary Guidelines for Americans.
- Ensure that all foods and beverages sold or served outside of school meal programs are nutritious and appealing.

Guideline 4: Implement a comprehensive physical activity program with quality physical education as the cornerstone

- Require students in grades K–12 to participate in daily physical education that uses a planned and sequential curriculum and instructional practices that are consistent with national or state standards for physical education.
- Provide a substantial percentage of each student’s recommended daily amount of physical activity in physical education class.
• Use instructional strategies in physical education that enhance students’ behavioral skills, confidence in their abilities, and desire to adopt and maintain a physically active lifestyle.
• Provide ample opportunities for all students to engage in physical activity outside of physical education class.
• Ensure that physical education and other physical activity programs meet the needs and interests of all students.

Guideline 5: Implement health education that provides students with the knowledge, attitudes, skills, and experiences needed for lifelong healthy eating and physical activity

• Require health education from prekindergarten through grade 12.
• Implement a planned and sequential health education curriculum that is culturally and developmentally appropriate, addresses a clear set of behavioral outcomes that promote healthy eating and physical activity, and is based on national standards.
• Use curricula that are consistent with scientific evidence of effectiveness in helping students improve healthy eating and physical activity behaviors.
• Use classroom instructional methods and strategies that are interactive, engage all students, and are relevant to their daily lives and experiences. Recommendations and Reports MMWR / September 16, 2011 / Vol. 60 / No. 5 73

Guideline 6: Provide students with health, mental health, and social services to address healthy eating, physical activity, and related chronic disease prevention

• Assess student needs related to physical activity, nutrition, and obesity, and provide counseling and other services to meet those needs.
• Ensure students have access to needed health, mental health, and social services.
• Provide leadership in advocacy and coordination of effective school physical activity and nutrition policies and practices.

Guideline 7: Partner with families and community members in the development and implementation of healthy eating and physical activity policies, practices, and programs

• Encourage communication among schools, families and community members to promote adoption of healthy eating and physical activity behaviors among students.
• Involve families and community members on the school health council.
• Develop and implement strategies for motivating families to participate in school-based programs and activities that promote healthy eating and physical activity.
• Access community resources to help provide healthy eating and physical activity opportunities for students.
• Demonstrate cultural awareness in healthy eating and physical activity practices throughout the school.
Guideline 8: Provide a school employee wellness program that includes healthy eating and physical activity services for all school staff members

- Gather data and information to determine the nutrition and physical activity needs of school staff members and assess the availability of existing school employee wellness activities and resources.
- Encourage administrative support for and staff involvement in school employee wellness.
- Develop, implement, and evaluate healthy eating and physical activity programs for all school employees.

Guideline 9: Employ qualified persons, and provide professional development opportunities for physical education, health education, nutrition services, and health, mental health, and social services staff members, as well as staff members who supervise recess, cafeteria time, and out-of-school–time programs

- Require the hiring of physical education teachers, health education teachers, and nutrition services staff members who are certified and appropriately prepared to deliver quality instruction, programs, and practices.
- Provide school staff members with annual professional development opportunities to deliver quality physical education, health education, and nutrition services.
- Provide annual professional development opportunities for school health, mental health, and social services staff members and staff members who lead or supervise out-of-school–time programs, recess, and cafeteria time.