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English 301.04

18 April 2007

Nutrition and Physical Education as a Means to Prevent Childhood Obesity:

Raising Awareness in America's Twenty-first Century School Systems

During the 1970s, five percent of adolescents aged twelve to nineteen were considered to be clinically obese in the United States of America (Anderson 1). By the year 2000, nearly sixteen percent of adolescents and children were diagnosed as clinically obese (Childhood). Today, childhood obesity is the most prevalent disease in American children. At the rate that this preventable disease has increased and is continuing to increase in children and adolescents, obesity will soon reach epidemic proportions. According to the American Academy of Pediatrics, American has already reached this level: "Prevalence of overweight and its significant comorbidities in pediatric populations has rapidly increased and reached epidemic proportions." Unfortunately for medical professionals and patients alike, there is no immediate solution to the epidemic of childhood obesity. Unlike many diseases that are unpreventable, such as congenital heart conditions, obesity demands the support and attention from professionals in the medical community, government policymakers, educators and school administrators, parents of individual families and each and every child. The immediacy of childhood obesity in the United States has caused alarm in millions of citizens; America must respond to the issue of childhood obesity in positive ways in order to stem the epidemic.

Obesity is a disease that affects many people in various ways, thus it is defined in a differently depending on the context in which it is used. The Oxford English Dictionary

describes obesity as: “very fat or fleshy; extremely overweight.” Educators and parents may choose to use different standards. However, in modern medical communities, obesity is typically defined using Body Mass Index (BMI). BMI is found by using the equation:  $\text{weight(kilograms)} \div \text{height(meters)}^2$ . The resulting number is the BMI score of an individual patient. According to the United States Center for Disease Control and Prevention, healthy weight is defined as a person with a BMI in the range of 25-85 percentiles, up to a BMI score of 25. Overweight is defined as having a BMI of 25 or higher, which corresponds with the 85 percentile or higher; a person with a BMI of 30 or greater is placed at or above the 95 percentile and is diagnosed as clinically obese. A BMI of 97 percentile or higher is defined as severely obese (Sothorn 19-21).

Recently, people in the United States have begun to recognize the secondary health issues that surround obesity. The severity of the numerous secondary health issues and comorbidities associated with overweight and obese children affect a child’s mental and physical health, thus the overall life of a child. Immediate consequences of an unhealthy weight include cardiac hypertension (high blood pressure), high cholesterol, psychological and psychiatric stresses such as social stigmatization and low self esteem, negative self-image, depression, and withdrawal from peers, skin diseases such as heat rash and dermatitis, menstrual irregularity, and orthopedic problems such as stress fractures and stressing lower limb joints (Krebs 424-425). Long-term implications of obesity include chronic continuations of the aforementioned consequences as well as cardiovascular disease, endocrine issues such as type 2 diabetes and insulin or glucose resistance, osteoporosis and bowed legs, gastrointestinal difficulties, and pulmonary complications such as asthma; all of these medical issues were once considered to be adult matters but have now morphed into critical concerns in pediatric medicine (Childhood). It is

critical that these issues are addressed while a patient is still a child because many of these complications and comorbidities persist into adulthood (Krebs 425).

The two main causes of childhood obesity are poor nutrition and inadequate exercise. However, there are many other factors that put children at risk. According to the American Academy of Pediatrics' "Prevention of Pediatric Overweight and Obesity" policy statement, "environmental risk factors for overweight and obesity, including family and parental dynamics, are numerous and complicated." Because of the complex nature of the disease, one must look beyond basic nutrition and exercise to factors that may further contribute to childhood obesity. Some of these risk factors include: "interactions between genetic, biological, psychologic, sociocultural, and environmental factors clearly are evident in childhood obesity" (Krebs 425). Beyond diet and exercise patterns, family lifestyle, socioeconomic status, genetic and family history, education and awareness of the causes of overweight and obesity, schools' cafeterias and physical education curriculums, and a child's choice of leisure activities all contribute to the overall health of a child. Genetic conditions affect the likelihood of a child to become obese; parents who are overweight are more likely to have children predisposed to obesity. Environmental risk factors include parents' ability to provide nutritious food for their children due to financial security or insecurity, time constraints due to work schedules, inefficient or inadequate daycare facilities, and the absence of family meals at home (Krebs 425-426). In the twenty-first century, leisure activities have become increasingly sedentary; unlike children of previous decades, children in modern America have access to television, video games, computers, Internet, and other implements of sedentary entertainment. Also, the lack of everyday exercise once required of children has been replaced with what is now considered the norm: daily rides to school and other extracurricular activities, complex bus routes, and negation

of household chores. For many children, the availability of junk food and soda is rampant in elementary and secondary schools. Additionally, the prominence of advertising for these companies who support vending subtly convinces children of the supposed value of these high-calorie foods. Above all of these aforementioned risk factors, the greatest reason that affects the prevention childhood obesity is education. A lack of education and awareness on the topics of health and nutrition influences the overall diet and health of a child, while the lack of physical education classes and active leisure activity has similar results.

To assist in the prevention of childhood obesity, it is imperative that nutritional awareness and the importance physical education and daily exercise are emphasized in elementary and secondary school systems. As a distinguished and respected leader in the medical community, the American Academy of Pediatrics (AAP) argues “advocacy is needed in the areas of physical activity and food policy for children.” Most immediate on the list of advocacy recommendations include proposals regarding physical education: for “the reinstatement of compulsory, quality, daily PE classes in all school (kindergarten through grade 12)” and for “a school curriculum that teaches children and you the health benefits of regular physical activity” (Overweight). Also, the AAP has concluded that “dietary practices should be fostered that encourage moderation rather than over consumption, emphasizing healthful choices rather than restrictive eating patterns” (Overweight). Similarly, the American Obesity Association concurs with the AAP: “Teaching healthy behaviors at a young age is important since change becomes more difficult with age. Behaviors involving physical activity and nutrition are the cornerstone of preventing obesity in children and providing the foundation for those behaviors” (Childhood). In order to prevent childhood obesity in the United States’ youth,

it is essential that elementary and secondary school systems to provide classes promoting nutritional education and awareness and facilitate physical education classes and activities.

With the proposal of introducing new classes into preexisting elementary and secondary school curriculums, opposition may arise. The first and most immediate response to the implementation of nutrition and physical education classes is the question of funding. Because the majority of both public and private schools operate on tight budgets, it is important to recognize the financial constraints of requiring additional classes for schoolchildren. Schools under financial pressure often turn to pouring rights contracts with soda and vending companies that offer financial subsidiaries for rampant advertising and vending of their products; included in these companies are commercial giants Coca-Cola and Pepsi Co. and companies associated under their expansive commercial umbrella (Anderson 16). Unfortunately, with the wide variety of junk food and soda, combined with unhealthy cafeteria food, the high-fat and high-sugar foods provided by schools are direct causes of childhood obesity:

“Advertising and promotion of energy-dense, nutrient-poor food products to children may need to be regulated or curtailed. The increase of carbonated beverage intake has been linked to obesity; therefore, the sale of such beverages should not be promoted at school. Pediatricians are encouraged to work with school administrators and others in the community on ways to decrease the availability of foods and beverages with little nutritional value and to decrease the dependence on vending machines, snack bars, and school stores for school revenue” (Krebs).

Politicians and school administrators must collaborate with the American public to grant sufficient funds to school systems through tax increases, bonds, or budget reorganization and eliminate vending and advertising in schools to solve the problems associated with tight budgets and funding deficiencies.

A second aspect of opposition is the ignorance of many parents and educators on topics of science. It is often assumed that childhood obesity as unpreventable—childhood overweight

and obesity is the unavoidable effect of genetics. Despite this assumption, “it has long been recognized that obesity ‘runs in families’—high birth weight, maternal diabetes, and obesity in family members all are factors—but there are likely to be multiple genes and a strong interaction between genetics and environment that influence the degree of adiposity” (Krebs 425). A genetic predisposition to obesity is not a valid excuse for unhealthy diet and inadequate physical activity.

Next, many families are unaware of their vital responsibility for the health of children. The role of parents and families is integral: parents must provide nutritional meals and snacks for children, as well as foster an atmosphere of active play and daily exercise. Parents must also live healthy lifestyles in order to be positive role models for their children. If a child is surrounded by a health-conscious environment, it is unlikely that the child will become overweight. On the contrary, a child living a sedentary life surrounded by food of no nutritional value, the child is liable to grow to be obese: “If both parents are of normal weight, the child has only a 7 percent chance of developing severe weight problems. If one parent is overweight, the risk of developing weight problems increases to 40 percent. If both parents are overweight, the child’s risk of becoming overweight doubles to 80 percent” (Sothorn 5). Thus, every parent has the duty to provide healthy foods as well as monitoring a child’s diet out of the house and his or her exercise during and after school.

When parents are held accountable, further reasons arise to justify and defend the actions of a family. Unfortunately for many children, families of lower socioeconomic status living in financial uncertainty are more likely to consume food of little nutritive value. If a parent is working more than one job and is unable to provide a healthy meal for his or her children, it is likely that the parent will choose frozen or prepared meals in the lieu of a home-cooked dinner.

“If you look on the sales circuits of grocery stores, they are always advertising sugary cereals, packaged dinners, sodas, candy.... People suffering financial burdens shop for what is cheap and available, and that’s not fruits and vegetables” (Schofield). Because of the hardship of financial insecurity, having a lack of time, or having the inability to provide healthy options for children, it is crucial that the community take action and assist families in need. The American Academy of Pediatrics insists that the American public “enlist policy makers from local, state, and national organizations and schools to support a healthful lifestyle for all children, including proper diet and adequate opportunity for regular physical activity.” With the demands of voters and citizens, government organizations will take action to aid through programs promoting child welfare.

In many elementary and secondary schools, the curriculums required of students include core classes such as math, science, English, and history. Most schools already have preexisting physical education classes and some include lessons on health, thus it may be argued that additional classes are unnecessary and extraneous. Despite this, many physical education classes are held once a week or on an elective basis with the number of students enrolled decreasing: “The percentage of high school students enrolled in daily [physical education] classes declined from 41.6 percent in 1991 to 28.4 percent in 2003” (Crawley1). It is debatable that students would lose core class time to the addition of new, mandated classes and therefore demeaning the purpose of elementary and secondary education. However, if a child is unable to attend class because of absences due to secondary health issues resultant of a preventable disease, that child will be missing class for sedentary, non-educational reasons. “When children and adults are stressed, their brains release different types of chemicals. Exercise manages these stress-inducing chemicals in the same way as mood-altering drugs. Exercise also releases dopamine,

endogenous opiates, and serotonin—the chemicals that give us the sensation of well-being” (Sothorn 59). Daily exercise in physical education classes would stimulate activity that would be physically and mentally healthy for students who would otherwise not be exercising. Also, it may encourage athletics or recreational activities, resulting in a perpetuation of healthy lifestyle and better general health.

Outside the general community of children but still fundamental in physical education, it is argued in communities of elite athletes that Body Mass Index (BMI) is an inappropriate indicator of overweight and obesity. Because of the prominence of muscle-dense athletes in sports such as football, track and field, basketball, and weightlifting, the BMI score of these individuals may surpass 30, thus denoting them as obese. Conversely, athletes in sports such as cross-country running, gymnastics, and dance have BMI scores that are below the twenty-fifth percentile, thus indicating underweight. On account of these discrepancies to the traditional BMI scores, elite athletes have alternate means of determining overweight and underweight body mass; these alternative systems include body fat percentage measurements and body weight to height ratios (Schofield). Using miscalculated or misinterpreted BMI measurements does not denote a failure on part of neither diagnosis nor treatment for childhood obesity.

It is unreasonable for the American public to not support an education system that will ultimately reverse a negative trend—the rampant prevalence of childhood obesity in the United States. “All children and adolescents should have access to adequate food and nutrition programs regardless of economic status, special needs, and cultural diversity. In other words, every child is important” (U.S. 91). Childhood obesity is an issue today because it is prevalent and growing not only in America but also in much of the world—every single child is susceptible to this disease. As stated by the American Academy of Pediatrics it is important for health

professionals “recognize and monitor changes in obesity-associated risk factors for adult chronic disease, such as hypertension....” Despite this basic advice, childhood obesity in America has become more than an issue of health; it has become an issue of politics, finances, socioeconomic status and family life, genetics, nutrition, exercise, and education.

To institute mandatory classes in public and private elementary and secondary schools, politicians and school administrators must collaborate with United States voters in order to create the necessary support for a curriculum emphasizing healthy nutrition and physical education. If neither politicians nor the people in America mandate nor allow for classes, the epidemic of childhood obesity will continue to negatively affect children.

Issues regarding finances also apply to education; many public schools do not have enough money to provide books and resources let alone supplementary nutritional and physical education classes. To provide mandatory education to children, additional finances must be funneled into schools through budget increases, tax increases, and better spending of tax dollars by the government. To support education in schools the American Obesity Association declares “adequate funds will be provided by local, state and federal sources to ensure that the total school environment supports the development of healthy eating patterns” (Childhood). With the support of politicians and administrators, funds may be channeled to schools in order to provide proper education for students.

If a child belongs to a lower income family or a family that is unable to provide a diet of healthy foods and beverages because of monetary and time limitations, that child is more likely to become obese than one who has adequate financial resources. “Experts agree that excess pounds appear when susceptible individuals are placed in adverse environments. So, even if your child is genetically at risk for being overweight, his environment can be adjusted to combat

the predisposition. He may become chubby even with adjustments, but he needn't be doomed to a life of significant obesity and chronic health problems. Weight management through smart dietary choices, and active lifestyle, and behavior modification is the key" (Sothorn 7). To help support families in need of financial assistance, the American Academy of Pediatrics encourages "improved insurance coverage and third-party reimbursement for obesity care" (Overweight). With the help of public education and government aid, families of poor socioeconomic status may be able to affectively combat childhood obesity

The unavoidable presence of genetics plays a large role in a child's predisposition to obesity. According to Sothorn "scientists have discovered something called a 'thrifty gene.' People who have this genetic profile are likely to develop obesity—and, even worse, type II diabetes—if they live in an environment that promotes a sedentary lifestyle combined with an overabundance of food" (42). People of African, Hispanic, and Native American descent are all more susceptible to obesity than Caucasians; however, a child's predisposition to obesity may be effectively battled by excellent nutrition and daily exercise.

As maintained by Sothorn, it is important for children to know "which foods to buy and how to read food labels, how to prepare nutritious low-fat meals, ways to encourage family members to try new foods while maintaining fun at the dinner table, what it means to eat for optimum health and weight-management success" (12). Both public and private schools must support this ideal. Schofield mentions "currently, classes on nutritional education are limited to individual teachers and individual classes." Unless all teachers in all classes provide lessons on nutrition, elementary and secondary school students may never be exposed to education regarding healthy eating. Because of the necessity of this subject, "nutrition education needs to be integrated. Activities and strategies must be integrated with the meal service and across the

curriculum in every subject. Nutrition can be taught in every subject and integrated within the home and the community environments” (U.S. 93). Nutrition awareness is central to a child’s understanding of the enormity of restaurant portion sizes, the deceptive nature of packaged foods, and the dangers of fast food as well as encourage children to choose whole grains, fruits, vegetables, milk, and lean meats when eating.

In modern America, people perform less physical labor in order to survive than in past centuries. Because grocery stores and office or class work is central to a average person’s day, the introduction of contemporary technology has led to the pervasiveness of television, computer games, surfing the Internet, and video games as leisure activities. By burning fewer calories in daily activities, it is essential that physical exercise be integrated into a child’s daily routine: “Regarding physical activity, advocacy is sorely needed for physical education programs that emphasize and model learning of daily activities for personal fitness” (Krebs 427). By promoting fun activities in physical education classes, children are likely to burn calories and strengthen both bodies and minds by exercising on a daily basis.

Since the greater part of American children attend school on a daily basis, the education environment must support healthy eating through nutrition awareness and exercise through physical education. “Outside the home, children and adolescents spend the majority of their time in school. So, it makes sense that schools provide an environment that promotes healthy nutrition and physical activity habits” (Childhood). Given that physically fit children are absent from school less often and perform better academically than children who are sedentary (Sothorn 13), Krebs argues “change is desperately needed in opportunities for physical activity in child care centers, schools, after-school programs, and other community settings” (Krebs 426). When it comes to education in elementary and secondary school systems, there is not enough to support

the awareness necessary to instruct students on nutrition, physical education, and the benefits of both.

In conclusion, it is necessary for elementary and secondary school systems to provide classes that promote nutritional education and awareness and facilitate physical education classes and activities. The American Academy of Pediatrics promotes “the development of active school communities by advocating for policy changes at the community, state, and national levels that support healthy nutrition, reducing sedentary time, and increasing physical activity levels while providing education and health supervision about regular physical activity and reduced sedentary time to families” (Overweight). This organization also encourages healthy eating habits taught by nutritional awareness programs and education. The epidemic of obesity must be addressed. According to the Institute of Medicine “the obesity epidemic may reduce overall adult life expectancy...thereby potentially reversing the positive trend achieved with the reduction of infectious disease over the past century” (23). If childhood obesity may be prevented by way of education, it is imperative that all necessary steps must be taken to support the institution of nutrition awareness and physical education classes in American elementary and secondary school systems.

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