



The Center for
Health and Health Care in Schools

Issue Brief

*The Role of School Health
Professionals in Preventing
Childhood Overweight*

Including the May 3, 2006, InFocus, Body Mass Index for Children

*Virginia Robinson
Julia Lear
Nancy Eichner*

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The Issue

For more than a decade, researchers, and increasingly the public, have focused on childhood overweight as a personal and public health problem. As the number of children who are overweight has continued to grow, consensus has emerged that schools, as the places where children spend much of their time, have a critical role to play in reversing this trend. But while some promising programs, policies, and practices have been identified, there has been little attention to what front-line, building-based health professionals, specifically school nurses and the staffs of school-based health centers, can contribute to school-based interventions.

The View from the Field

School nurses and the staffs of school-based health centers daily confront issues around children who are overweight. Most of these health professionals probably accept that childhood obesity will become a serious public health problem if the children grow up to be overweight adults, and they know that overweight predisposes both children and adults to diabetes as well as other chronic health problems. But attention to overweight is relatively new in the catalog of responsibilities schools have been asked to assume, and it may not be clear to many health professionals what they can do about it.

Asked to take on this new problem, a school nurse or health center practitioner may have a number of questions. How much time will it take, and where is the time to come from? Is there space in the school building for the weighing, measuring, and counseling that will be involved? Are there models for successful interventions, or is training available in concepts not previously given much attention during professional training or continuing education? What support can be expected, in a school, in the school district, or in the community, if he or she is asked to implement a weight-surveillance or weight-reduction program? And beyond treatment or management, what roles might school nurses and health center staffs be asked to assume in helping children *maintain* healthy weight?

Whatever the roles, school nurses and school-based health center staff generally will not assume new tasks and responsibilities on their own. Support from principals, school staff, school board members, and parents, among others, will be essential.

The Policy Environment

At the state level: Much of what happens in schools is determined by state legislatures, which set requirements such as the number of days in a school year or vaccinations as a condition for school entry. Legislatures may also require that specific subject matters be taught. In the area of health, all but six states require “health education” and 70 percent of them mandate that the curriculum include information on nutrition and physical activity. The *Journal of Health Education* noted in 2005, however, that health education teachers at all levels average only about five hours a year teaching about the former and four hours teaching about the latter—not nearly enough to affect children’s behavior.

As tracked by the National Conference of State Legislatures, many state legislatures have been busy over the past several years considering and sometimes approving legislation to establish nutrition standards, recommend or mandate nutrition education, require BMI screening, and/or expand opportunities for physical activity at school. Within these legislative guidelines, state school boards may create their own mandates or suggested health programs. Their national organization, the National Association of State Boards of Education (NASBE), conducts research, sponsors training sessions, and disseminates information about initiatives taken across the country.

The federal government also plays a direct role in child health through the National School Lunch Program, enacted following World War I to provide reimbursement to schools serving lunches, as a way of remedying the malnutrition that had been observed in many recruits for the military in that war, and through the 1966 Child Nutrition Act, which added school breakfasts and after-school snacks as eligible for federal reimbursement.

The most recent legislation, the Child Nutrition and WIC Reauthorization Act of 2004, requires all school districts that participate in the National School Lunch Program to establish a local wellness policy by July 1, 2006. The local wellness policy must establish goals for nutrition education, physical activity, and nutrition guidelines for schools. The law also requires involvement from parents, student, school board members, school administrators, food services and community members. This is an opportunity where school health professionals can participate in the development of guidelines, collaborate with others to promote healthy eating, and develop or nurture partnerships to promote and gain support for a school-based overweight intervention program.

That said, within the state and federal regulatory framework, local concerns and institutions retain a singular importance in determining what happens in schools. And as Jim Bogden of NASBE has noted, change in education tends to happen one school or one school district at a time. While school superintendents take the lead in broad academic and other school-focused efforts, school principals are responsible for what happens in their buildings and have considerable autonomy in deciding what activities are allowed. With teachers, they are responsible for selecting teaching materials and may implement initiatives to improve instruction in specific areas, such as health. They may also choose to postpone implementation of district or state-level initiatives if they perceive such efforts as contrary to other priorities. Thus, with the federal No Child Left Behind Act requiring that schools receiving federal funds meet test standards, principals may be more interested in increasing instruction time for reading and math rather than investing in health education, physical activity or other areas not included on the state exams.

School Health Professionals

The number of nurses and school-based health centers available to schools vary widely among school districts and states. With a total of perhaps 53,000 school nurses serving about 95,000 public schools, in even well-staffed districts, nurses may often serve more than one school, with other staff members trained and delegated to provide health services as needed in the nurse's absence. Some districts have no nurses at all, relying on 911 emergency assistance in health crises and the aid of parent volunteers to monitor required vaccinations, administer sight and

hearing tests, or measure students' height and weight. There are about 1,600 to 1,700 school-based health centers across the country and thus their staff are even less available than school nurses.

In schools where school nurses and school-based health centers do exist, training for these providers is needed to undertake BMI screening, surveillance, or intervention programs. Since it is likely that the training of school nurses and school health center professionals has not included specific instruction in childhood overweight prevention or management, will electronic or other classes be available to help them become expert in this new area? It's also likely that, given the community-wide nature of many of the sources of overweight, nurses and other school health professionals will have to take on leadership roles for which they may not be prepared.

School nurses play a variety of roles in schools such as managing students' medications, conducting health screening, adhering to mandates under IDEA, maintaining health records, and providing emergent care to students. The role of a school nurse is often not clearly defined and varies by individual school and school district. Unlike school-based health centers, the school nurse is often responsible for all health services provided for one school or school district. While there are many challenges faced by school nurses in taking on the role of conducting BMI screening or implementing other activities to promote healthy weight, three activities seem particularly consistent with current school nurse functions. They are 1) counseling and guiding individual students, 2) advocating for policy change within the school, and 3) tracking and monitoring BMI of students. Depending on the skill set, experience, and resources, a school nurse may take on one or several of these roles.

School-based health centers, like school nurses, may be well suited to take on the role of promoting healthy weight among children and identifying children that are overweight and implementing interventions to help overweight children. One of the many roles of providers in school-based health centers is to conduct physical exams. During the physical exam, a provider can ask about general eating and level of activity, conduct BMI screening, and conduct a series of lab tests to identify conditions resulting from children who are at-risk of being overweight or are overweight. Providers can also use the physical exam to provide anticipatory guidance to all children on nutrition and physical activity. Other services offered by these centers such as nutrition and mental health can be part of a school-based obesity programs.

Challenges on the Frontlines

The introduction of a new requirement for schools to address childhood overweight may create issues for school health professionals. From a personal health care perspective, while research has documented the increase in childhood overweight and the health threats this poses, there are few models for clinicians to follow for actively intervening in childhood overweight.

In addition, health officials point out that overweight and obesity in children are community-wide problems involving such factors as food advertising, the presence of fast-food outlets, absence of healthful alternatives, and easy access to high-calorie

substances such as sweetened soft drinks. Given these pervasive influences, it is unlikely that a school program aimed at helping children maintain a healthy weight will be effective unless the schools have support from a broad range of community organizations such as zoning boards, local businesses, advocacy groups and the public health service.

The support and cooperation of parents would seem essential to any school-based effort targeting childhood overweight. The Institute of Medicine endorses reporting of the BMI to parents as a way of raising family awareness about children's weight status and health risk, but cautions that parents may put their children on diets without consulting a physician, and that BMI reporting may increase risks of eating disorders. A first study of the effects of annual reporting of BMI status to parents, conducted with elementary school children and their parents in Cambridge, Massachusetts, indicated that parents of overweight children who received health reports were more likely to consider looking into medical help, dieting, and physical activities for their children than were parents who did not receive such notices.

In 2005, 13 state legislatures considered student body mass index legislation, with two states (West Virginia and Tennessee) enacting legislation. In 2002, Arkansas became the first state to legislate BMI screenings with results reported to parents. While a number of states require parental notification of BMI results, other states such as Illinois only require schools to report BMI to the department of health as part of the mandatory health exams for students. In a recent web-based survey conducted by the Center for Health and Health Care in Schools, with more than 600 individuals responding, 47 percent (300) indicated their school conducted BMI screenings, 27 percent (188) said BMI results were reported to parents, and nine percent (65) said that BMI results were reported to the child's physician.

The Centers for Disease Control and Prevention emphasizes that special factors are involved in measuring BMI for children and has prepared charts and other guidance materials emphasizing the developmental issues involved in assessing body mass in young persons. (See *InFocus, Body Mass Index for Children, April 2006.*)

Less clear is what a school health professional can do if the BMI calls for intervention. Surveys indicate that few pediatricians and primary care physicians currently undertake the time-consuming task of monitoring weight reduction regimens for individuals, in part because those services often are not coded as reimbursable by public or private insurers.

Privacy concerns in schools may involve how to avoid stigmatizing students found to be overweight. Two major federal laws, the Health Insurance Portability and Accountability Act (HIPAA), which requires health care providers to keep personally identifiable health information private, and the Family Education Rights and Privacy Act (FERPA), which requires that schools protect the confidentiality of students' education records (including health information entered by school nurses or others), would seem to apply in such cases.

Even if these challenges can be overcome, if the school is awash in bake sales and high-calorie lunch offerings, with few opportunities for physical activity, the most diligent efforts by school health professionals to work with individual students may be insufficient.

And while children consume at least one, if not more, meals at school, the home food environment is critical. Can school health professionals engage parents in supporting healthy eating and vigorous activity as the desired lifestyle for their children?

Another point to be considered is whether, by concentrating on measuring body mass and counseling individual students, school health professionals may miss an approach to overweight prevention that they are the persons best qualified to use—what is sometimes called “the bully pulpit.” In most schools, the nurse and the school health staff are already credible with parents and students on health issues. Would it be most productive for the health professional to provide information to all students, currently overweight or not, with specific reference to the principles of calorie input and output and the implications of good weight management? And if this were to be done, would school health professionals need supportive help, possibly in the form of specific lesson plans, in conveying weight management information to students?

Thoughts for The Future

The most recent data from the Centers for Disease Control and Prevention indicate that there were “significant” increases in overweight among children and adolescents from 1999 to 2004. It is evident that the issue of childhood overweight is unlikely to go away any time soon, and proposals for correcting the problems that are causing it will persist into the foreseeable future.

As of now, we do not know what interventions work with individuals, and which do not, but it seems likely that school health professionals will be asked to play a role in whatever approaches are taken.

How much that will add to their current duties is unclear, but it is hard to imagine that it won’t make a difference, not only in the way nurses and other health professionals go about their daily work, but in how they are trained for the new responsibilities. It also seems that they will need additional resources, space, and support to take on the new function.

The challenges are considerable, but as the Director of the Division of Adolescent and School Health at CDC has commented, “Schools cannot solve the obesity epidemic on their own, but it is unlikely to be halted without strong school-based policies and programs.”

Appendix

InFocus: Body Mass Index for Children

In the mid-19th century, a Belgian mathematician famous for his statistical prowess developed a technique for measuring the amount of fat in the human body. The “Quetelet Index” created by Lambert Adolphe Jacques Quetelet became what we know as “body mass index,” a statistical correlation of the relationship between the height and weight of an individual arrived at by dividing body weight in kilograms by height in meters squared.

Used throughout the world in the centuries after Quetelet arrived at his formula, body mass index (BMI) as an indicator of health risk was not commonly practiced by clinicians in the United States until the late 1900s. It has now been widely publicized in this country. A computer search engine given the descriptor “body mass index” comes up with 145,000 entries, offering not only calculators that instantly convert height and weight in pounds and inches into the Quetelet index but also a host of commercial diet and weight control programs that promise to correct any unwelcome conditions the BMI reveals.

Recent converts to the BMI are schools in states with some type of student BMI reporting requirements currently in place (including, as of 2005, Arkansas, California, Florida, Illinois, Missouri, Pennsylvania, Tennessee, and West Virginia). An unknown number of school districts appear to have decided on their own to measure BMI as part of traditional height-and-weight assessments. All of this new interest means that a substantial percentage of children are now having body mass index percentiles added to their school health records.

Given that so much BMI assessment is taking place in schools, it is especially important to emphasize that “BMI is used differently for children than it is with adults,” according to the Centers for Disease Control and Prevention (CDC) in the United States Department of Health and Human Services. “Children’s body fatness changes over the years as they grow. Also, girls and boys differ in their body fatness as they mature,” the CDC points out.

This is why BMI for children is referred to as BMI-for-age and is plotted on gender-specific growth charts for measuring body fat in children, with each chart containing a series of curved lines indicating specific “percentiles.” Those percentiles simply mean that if a child is in a given percentile—say the 60th percentile, for example—60 percent of children of the same age and gender have a lower BMI.

Body mass index decreases during the preschool years, then increases into adulthood, and the percentile curves show this pattern of growth. Useful for measuring body mass index from ages 2 to 20, BMI-for-age provides a reference for adolescents that can be used beyond puberty, the CDC points out.

The CDC advises healthcare professionals to use the following established percentile cutoff points to identify underweight and overweight in children:

- Underweight—BMI-for-age less than 5th percentile
- Normal—BMI-for-age 5th percentile to less than 85th percentile
- At risk of overweight—BMI-for-age 85th percentile to less than 95th percentile
- Overweight—BMI-for-age 95th percentile or more.

Those age-related BMI charts were developed by the National Center for Health Statistics (NSHS) in response to increasing use of body mass index as a way of assessing children's health. BMI gained momentum in 1994, when an expert committee recommended that body mass index be used routinely to screen for overweight in children 11 to 21 years of age. A second recommendation, in 1997, by a committee looking into assessment and treatment of childhood obesity, fueled further interest by concluding that BMI could be used to screen for overweight in children 2 years of age and older (2 years was chosen as the first age at which stature could reliably be measured).

The NCHS notes that pediatric growth charts in one form or another have been used by pediatricians, nurses, and parents to track the development of infants, children, and adolescents in the United States since 1977, when the first charts were developed by the NCHS and were adopted by the World Health Organization for international use.

It was assumed in 1977 that the growth charts might need to be revised periodically, to reflect changes in the growth patterns of Americans as reflected in data from the National Health and Nutrition Examination Survey (NHANES). Since the 1960s, the NHANES periodically has collected height, weight and other health information on the American population. When the charts were revised in 2000, new body-mass-index-for-age charts for boys and girls ages 2 to 20 years were added, and the NCHS explained they were to be used in place of the 1977 weight-for-stature charts.

Some Caveats

The increasing popularity of body mass as an indicator of health in children is leading to some cautions. The Centers for Disease Control and Prevention points out that growth charts, including the BMI Index-for-Age charts, "are not intended to be used as the sole diagnostic instrument." "Instead," the CDC says, "growth charts are tools that contribute to forming an overall clinical impression for the child being measured."

In a study published in the journal *Pediatrics* in March 2006, researchers asked whether changes in the body mass index percentile really reflect changes in the body composition of children and concluded that although high correlations have been reported between BMI and both total body fat and percentage of body fat during childhood, BMI is not a precise indicator of the underlying proportion of fat and lean tissue. "The extent to which BMI percentile changes may or may not reflect corresponding changes in body fatness (or leanness) in children is not known," the researchers noted.

Although it dealt only with U.S. adults, another study has found that the "lipid accumulation product" performs better than body mass index in predicting cardiovascular risk. The researchers noted that "obesity is commonly understood to imply excess fat," but what may be more significant is how fatty tissues are distributed in various parts of the body—at the waistline, for instance. In other words, at least in adults, having a "pot belly," regardless of body size, is believed to predispose to increased prevalence of obesity-related disease, while fat predominantly deposited around hips and buttocks does not seem to carry the same risk.

Questions have been raised as to whether schools are the appropriate site for body mass index screenings, and it remains unclear to what extent the BMI results are being used by parents or school health personnel to counsel or refer for treatment students found to be overweight. Also not known is whether emphasis on body mass is creating concerns among adolescents leading to eating disorders such as bulimia or anorexia.

A wide body of research since the mid-1990s does show that body mass index, for both children and adults, is now an accepted measure of the causes of and possible treatments for a broad range of disorders, including not only diseases such as diabetes and heart disease, but also seemingly less related conditions such as asthma. In a 2006 report on obesity in children, the journal *Future of Children* notes that taking measures such as height, weight, and body mass annually, and converting them to an age-and-gender-specific BMI percentile for each child “makes it possible to monitor individual children over time” and provides an opportunity for early intervention in obesity prevention.

The CDC has issued a number of tools for calculating BMI-for-age, including:

- *A web calculator and tables of calculated BMI values for selected heights and weights of children 2 to 20 years of age;*
- *A BMI web calculator for English and metric systems;*
- *A CDC table--Calculated Body Mass Index Values for Selected Heights and Weights for Ages 2 to 20.*
- *A 44-page booklet, The BMI Table for Children and Adolescents, is available in print from the CDC.*

Most of these documents are available in PDF (Acrobat Reader required) at the CDC website http://www.cdc.gov/nccdphp/dnpa/growthcharts/bmi_tools.htm.

