

About Obesity and Schools

Overweight and obesity are defined as
"abnormal or excessive fat accumulation that may impair health"

World Health Organization

Both physical and mental health problems have been widely associated with body status and image. As one result, obesity has emerged as a prominent public health concern.

With increasing professional, political, and general public attention, research has deepened understanding of the complex nature of weight gain. For example, a recent report from the Institute for Clinical and Economic Review summarizes the drivers of increases in weight as follows: "Urbanization; change in diet to more refined foods with high added sugars; differing gut microbiomes, influenced by factors as diverse as breast feeding practices, antibiotic exposure, and dietary fiber; genetics; and our sedentary lifestyle all play a role." Another example is Davidson and Birch's use of a general ecological systems model of weight gain which emphasizes development as reciprocally determined by personal factors (e.g., age, gender, genetics) transacting with contextual/environment factors (e.g., family, school, cultural, and societal factors).

There are, of course, continuing controversies related to how obesity is discussed. Concern is growing that campaigns against obesity have unintended negative effects. These include amplifying people's self-consciousness and embarrassment about their body size, possible increased harassment, heightened pressures to reach an "ideal" weight despite genetic predispositions, and eating disorders. For example, a "fat acceptance" movement (dating back to the 1960s) stresses that campaigns against obesity and high visibility diet promotion stigmatizes a subgroup of individuals and increases mental health problems. The movement also views modern culture's focus on weight loss as another example of society's efforts to pathologize and then prescribe treatment for cultural and aesthetic prejudices. Those expressing concerns suggest there is an alternative to stigmatizing campaigns. Depending on one's agenda, general recommendations about addressing obesity encompass advocacy for acceptance, greater attention to promoting healthy lifestyle and physical fitness, dieting, and a variety of treatment approaches (medication, psychological treatment, surgery).

Our agenda here is to highlight the role of schools. We briefly (1) underscore findings related to childhood obesity, (2) highlight school-based health education as a venue for promoting healthy lifestyles and combating obesity, (3) note other school programs of relevance to obesity concerns, and (4) stress addressing obesity at school as part of a unified, comprehensive, and equitable system of student and learning supports.

Childhood Obesity

Children from K-12 make up roughly one fifth the population. According to the World Health Organization (WHO), individuals with a body mass index (BMI) between 25 and 29.9 are considered overweight. Individuals with a BMI of 30 or higher are considered obese. In the United States, data from 2011 - 2014 indicate that 8.9% of children ages 2-5 are obese, 17.5% of children ages 6-11, and 20.5% of adolescents ages 12-19 fit that criteria. (For adults, the figure is 36.5% – approximately 60 million.)

*The material in this document reflects work done by Jacqueline Nguyen as part of her involvement with the national Center for Mental Health in Schools at UCLA.

The center is co-directed by Howard Adelman and Linda Taylor in the Dept. of Psychology, UCLA, Website: <http://smhp.psych.ucla.edu> Send comments to ltaylor@ucla.edu

Correlation with adult obesity. Various studies have reported a correlation between childhood obesity and the development of adult obesity. For example, Guo and colleagues gathered data from four different longitudinal studies and found that if a child's BMI is in the 75th, 85th, or 95th percentile, he or she will have increased chances of being overweight or obese at age 35. Additionally, they found that predictiveness of an individual's BMI at age 35, based on adolescent BMI values, increases with adolescent age (i.e., an 18 year old's BMI value serves as a much better predictor than a BMI from the same child measured at 8 years old).

Comorbidity. A Harvard Growth Study 55 year follow up reported by Must and colleagues suggests that, even when obesity doesn't persist into adulthood, childhood obesity increased the risk of developing several adverse chronic conditions. In general, childhood obesity is widely cited as a likely factor for metabolic syndrome. Symptoms such as insulin resistance and inflammatory cytokines are strongly associated with developing cardiovascular disease, Type 2 diabetes, and several cancers – all of which are leading causes of mortality in the United States. For example, Freedman and colleague's report on the Bogalusa Heart study indicates a correlation between overweight children and the development of cardiovascular risk factors, underscoring that cardiovascular disease risk factors begin as early as childhood. The data revealed that overweight children with a BMI above the 85th percentile had increased prevalence in risk factors such as adverse lipid, insulin, and blood pressure levels.

In 2000, the US spent \$11 billion on medical expenses for morbidly obese adults alone.

About the Correlation Between Obesity and Mental Health

It is commonplace to read that there is "a clear association between obesity and depression and anxiety disorders among children and teens" and "untreated depression is both the cause and effect of obesity." Here's a sampling of what is reported:

- (1) The American Psychiatric Association sees the mental health impact of childhood obesity as a burgeoning public health crisis in the U.S. In an online article entitled: "Obesity can be Harmful to your Child's Mental Health," the association states: "Children who are obese are at increased risk for emotional problems that last well into adulthood, according to several studies and experts on the subject. Obesity and the mental disorders they contribute to should be considered as serious as other medical illnesses."
<http://news.bio-medicine.org/medicine-news-2/Obesity-can-be-harmful-to-your-childs-mental-health-5452-1/>
- (2) Investigators at the University of Medicine and Dentistry of New Jersey report that "obese Hispanic and white females demonstrate significantly lower levels of self-esteem by early adolescence. In addition, obese children with decreasing levels of self-esteem demonstrate significantly higher rates of sadness, loneliness, and nervousness and are more likely to engage in high-risk behaviors such as smoking or consuming alcohol." They note that depression, often an outcome of low self-esteem, affects as many as 750,000 teens in the U.S. <http://pediatrics.aappublications.org/content/105/1/e15>
- (3) A University of Minnesota study reports that children who were teased about being overweight were more likely to have poor body image, low self-esteem, and symptoms of depression. The study found that 26 percent of teens who were teased at school and home reported they had considered suicide, and 9 percent had attempted it.
[http://www.jahonline.org/article/S1054-139X\(02\)00610-9/abstract](http://www.jahonline.org/article/S1054-139X(02)00610-9/abstract)

Health Education

The World Health Organization states: *Health education is any combination of learning experiences designed to help individuals and communities improve their health, by increasing their knowledge or influencing their attitudes.*

Tappe and Galer-Unti note research on health education suggests that it is a preventative effort to “reduce human suffering, contribute to preparation for classroom learning, affect long-term health, and contain health costs due to preventable diseases.” In this context, advocates argue that good health education programs can help address obesity and related concerns currently and in the future, thereby cutting down the burdens that can result. At the same time, proponents stress that the federal government fails to formulate and support implementation of policy for regular school health education.

In general, health education also is marginalized and highly fragmented in state and local school improvement policy planning and practice. A majority of states do require health education, and advocates usually recommend that schools offer the content as part of a designated course. However, some schools find it financially difficult to schedule a separate health education course and try to incorporate the content into existing course curricula. In addition, some schools reach out to community resources that can help cover health education in class and/or as part of after school programming. The latter venue is especially feasible at the elementary school level.

For discussion of school-based health education practices , see the Society of Health and Physical Educators – http://www.shapeamerica.org/publications/products/appropriatepractice_schoolhealth.cfm

Examples of Two Branded Programs that are in Schools

Planet Health describes itself as “an interdisciplinary curriculum focused on improving the health and well-being of sixth through eighth grade students while building and reinforcing skills in language arts, math, science, social studies, and physical education. Through classroom and physical education activities, Planet Health aims to increase activity, improve dietary quality, and decrease inactivity [to] help prevent overweight, and ... lower risk factors for diabetes, cardiovascular disease, certain types of cancer, and osteoporosis.” <https://www.hsph.harvard.edu/prc/?s=Planet+Health>

The program is widely implemented in school districts across Massachusetts. It is designed to help teachers incorporate physical activity and nutrition lessons into existing middle school curriculum such as math, science, English, and social studies. The materials were developed by working closely with teachers, administration, students, and parents. Reported findings suggest that the program effectively reduced TV viewing time in both girls and boys, decreased obesity in girls, was readily adopted by teachers, and was cost-effective. The economic analysis suggests that for “every dollar spent on the program, \$1.20 in medical costs and lost wages would be saved” in later life.

#####

HealthCorps is a 501 (c)(3) high school peer mentoring program designed to provide teens with “tools to improve physical and mental health so they can learn to live more productive and happier lives.” <https://www.healthcorps.org/about-us/>

The emphasis is on physical activity, diet, health knowledge, and practicing positive thoughts. One study on the effectiveness of HealthCorps reports that the peer mentoring holds promise for improving youth diet and physical activity behaviors. A main finding was that the approach reduced soda pop consumption, particularly among girls.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3601540/>

Other School Programs of Relevance to Obesity Concerns

In addition to health education classes, concern for obesity is reflected at schools through a focus on nutrition, access to healthy foods, balanced meals, and physical activity. Story and colleagues have lamented that, on average, only about 5 school hours a year are spent teaching about nutrition and diet, and only about 4 school hours a year are spent on teaching the importance of physical activity.

Providing nutritional meals at schools. Schools are encouraged to “practice what they preach” by establishing and effectively implementing a “Nutrition Integrity Policy.” (e.g., see Michigan Department of Education). However, schools have a difficult time providing healthy meals due to sparse budgets. Healthier foods are often much more costly than healthier options. As Story and colleagues report, school food service programs are often expected to be “self-supporting and cover costs of food, labor, and other expenses.” Public schools participating in the federal school lunch program report that, given regulations for nutritional content, federal reimbursements barely cover half the costs.

As a source of revenue to help with the budget, schools often offer commercial food items for sale. These are sold in vending machines, at a la carte cafeterias, and student stores. Unlike federal school meals, such items are not regulated by the federal guidelines for nutritional content. Studies report that much of what is sold (e.g., cookies, chips, sodas) are high in sugar content and calorie intake and low in nutritional value and are replacing student consumption of fruits and vegetables.

Increasingly, school districts are encouraged to establish higher nutritional standards for all meals they serve and for all foods sold on campus. Where feasible, they are encouraged to use locally farmed produce.

Research suggests that nutrition policy matters. For example, a study by Larson and Story reports that a Texas public school nutrition policy restricting portion sizes and fat content was associated with an increase in nutritional uptake in students as well as a decrease in high sugar and high sodium contents. (We note that concern about excessive intake of sugar-loaded soft drinks has led some locales to increase taxes on sodas. Early reports indicate this has reduced sales.)

In *Making It Happen! School Nutrition Success Stories*, CDC describes 32 diverse schools and districts across the U.S. that have “implemented innovative strategies to improve the nutritional quality of foods and beverages sold outside of Federal meal programs.” The stories highlight the following themes for making it happen:

- One champion, such as a parent, food-service manager, or school principal, is usually the driving force behind the change.
- Improving school nutrition involves multiple steps; teams with diverse skills and backgrounds are well-positioned to undertake such change.
- A useful starting point is to assess the current nutrition environment of the school to identify strengths and weaknesses.
- Attention to the change process is important in order to help sustain the change.
- Improvements are occurring, but more data are needed to document their impact.
- Change is occurring at all levels: school, school district, State, and national.”

CDC also states that one insight from the work is that “students will buy and consume healthful foods and beverages—and schools can make money from selling healthful options. Of the 17 schools and school districts that reported income data, 12 increased their revenue as a result of the changes and four reported no change.” <https://www.cdc.gov/healthyyouth/mih/pdf/exec.pdf>

For more, see *Tools for Schools* – topic-specific policy and resource materials to assist schools in meeting nutrition standards – <https://www.fns.usda.gov/healthierschoolday/tools-schools>

Physical education. Interest in providing children with ways to be active encompasses a focus on recreation, sports, and formal physical education. While advocates recommend at least 60 minutes of physical activity everyday, available evidence suggests that this is not the case for many children.

Schools do provide various opportunities for student activity. However, for a variety of reasons (including sparse budgets), some schools have reduced time for recess and physical education. In cases where it is a budgetary consideration, studies support the alternative of providing physical activity in classrooms is cost-effective and produces positive results.

Schools that focus on physical education often use the PE classes as a way to educate students broadly about healthy lifestyle and about risks related to a sedentary lifestyle and obesity. And advocates for social emotional learning note that all venues of activity at school are natural opportunities for facilitating social and emotional development.

Based on recent research, Castelli and colleagues offer the following findings and recommendations to schools in support of physical activity:

- Regular participation in physical activity has academic performance benefits.
- Single sessions of physical activity can enhance attention and memory.
- The effects of physical activity on brain health may explain improvements in academic performance.
- Educators, administrators and parents should thoughtfully integrate physical activity across the curriculum throughout the school day to facilitate learning for all students.

For more, see the range of prevention strategies for schools and communities advocated by the Centers for Disease Control and Prevention (CDC):

- ><https://www.cdc.gov/obesity/strategies/>
- ><http://apps.nccd.cdc.gov/shi/default.aspx>
- ><http://www.cdc.gov/HealthyYouth/physicalactivity/index.htm>
- ><http://www.cdc.gov/nccdphp/dnpa/programs/index.htm>

Addressing Obesity at School as Part of a Unified, Comprehensive, and Equitable System of Student and Learning Supports

While some schools already have a proactive approach for playing a role in addressing obesity, many do not. We suggest that all school improvement planning embed such a concern into their student and learning support efforts. And, we recommend unifying and then developing existing student/learning supports into a comprehensive and equitable system.

Furthermore, we stress that key to transforming current student and learning supports into an effective system is expanding school improvement policy and reworking operational infrastructure for implementation and sustainability. Rather than adding a myriad of different health programs, the aim is to *fundamentally* improve ways to address a broad range of barriers to learning and teaching and promote healthy development. Such systemic changes are essential to ending the marginalization, fragmentation, counterproductive competition, and overspecialization that characterizes efforts to address factors interfering with academic success and healthy development (e.g., see the box on the last page for more on this.)*

A University Student's Personal Experience Teaching Health Education

Jacqueline Nguyen currently teaches health education to low-income elementary children through an after-school program called TEACH, a collaborative effort of UCLA and a non-profit community housing project that provides after school programs. TEACH is a student organization which focuses on tutoring, mentoring, and health education for at-risk youth. TEACH advocates and works towards student health and well-being (<http://www.teachatucla.com/>). Here is a brief observation Jacqueline wanted to share (edited):

This program takes place everyday after school from 3PM - 5PM. The first half of the program is dedicated to providing homework assistance to the kids. The kids then take 20 minutes for snack and playtime. The remainder of the program is dedicated to showcasing health modules. The intent is for children to learn about health topics for at least an hour everyday.

I have found the health modules very effective. We volunteers are tasked with creating an interesting and dynamic module to present to the students. As the students are K-5, these educational modules do not delve deeply into details and are designed to be entertaining (e.g., engaging demonstrations and games). Prior to the module, the kids are given a pre-test to assess current knowledge about the particular health topic. A post-test assesses what they learned. I have found post-test results usually average 80% correct answers.

The site coordinator tells me that many after school programs do not include this type of component. My experience, after volunteering for the past year, suggests that it is an effective, cost-efficient method for embellishing health education at schools. I strongly suggest that other after school programs adopt this approach.

I see that bully stole your lunch again.



Well, unless he likes broccoli and tofu, he won't be happy about taking it.

References and Resources Used in Preparing this Information Resource

- Adelman, H. S., & Taylor, L. (2006). *The school leader's guide to student learning supports: New directions for addressing barriers to learning*. Thousand Oaks, California: Corwin Press.
- Adelman, H.S., & Taylor, L. (2017). *Transforming student and learning supports: Developing a unified, comprehensive, and equitable system*. San Diego: Cognella.
- Adelman, H. S., & Taylor, L. (2010). *Mental health in schools: Engaging learners, preventing problems, and improving schools*. Thousand Oaks, California: Corwin Press.
- Biro, F.M., & Wien, M. (2010). Childhood obesity and adult morbidities. *The American Journal of Clinical Nutrition*, 91, 1499S-1505S. <http://doi.org/10.3945/ajcn.2010.28701B>
- Castelli, DM, Barcelona, J.M., Calvert, H.G., & Hwang, J. (2015). *Active education: Growing evidence on physical activity and academic performance*. San Diego, CA: Active Living Research. www.activelivingresearch.org
- Cawley, J., Cisek-Gillman, L., Roberts, R., Cocotas, C., Smith-Cook, T., Bouchard, M., & Oz, M. (2011). Effect of HealthCorps, a high school peer mentoring program, on youth diet and physical activity. *Childhood Obesity*, 7, 364-371. <http://doi.org/10.1089/chi.2011.0022>
- Chan, R.S., & Woo, J. (2010). Prevention of overweight and obesity: How effective is the current public health approach. *International Journal of Environmental Research and Public Health*, 7, 765-783. <http://doi.org/10.3390/ijerph7030765>
- Davison, K.K., & Birch, L.L. (2001). Childhood overweight: A contextual model and recommendations for future research. *Obesity Reviews*, 2, 159-171.
- Dietz, W.H., & Gortmaker, S.L. (2001). Preventing obesity in children and adolescents. *Annual Review of Public Health*, 22, 337-353.
- Freedman, D., Mei, Z., Srinivasan, S.R., Berenson, G.S., & Dietz, W.H. (2006). Cardiovascular risk factors and excess adiposity among overweight children and adolescents: The Bogalusa Heart Study *The Journal of Pediatrics*, 150, 12–17.e2 <http://www.sciencedirect.com/science/article/pii/S0022347606008171>
- Dunn, L.L., Venturanza, J.A., Walsh, R.J., & Nonas, C.A. (2012). An observational evaluation of Move-To-Improve, a classroom-based physical activity program. *Preventing Chronic Disease*, 9, E146. Online <https://www.ncbi.nlm.nih.gov/pubmed/22974754>
- Guo, S.S., & Chumlea, W.C. (1999). Tracking of BMI in children in relation to overweight in adulthood. *American Journal of Clinical Nutrition*, 70(suppl),145s-148s.
- Guo, S.S., Huang, C., Maynard, L.M., Demerath, E., Towne, B., Chumlea, W.C., & Siervogel, R.M. (2000). Body mass index during childhood, adolescence and young adulthood in relation to adult overweight and adiposity: The Fels Longitudinal Study. *International Journal of Obesity*, 24, 1628-1635. <http://www.nature.com/ijo/journal/v24/n12/full/0801461a.html>
- Guo, S.S, Roche, A.F., Chumlea, W.C., Gardner, J.D., & Siervogel, R.M. (1994). The predictive value of childhood body mass index values for overweight at age 35. *American Journal of Clinical Nutrition*, 59, 810-819.
- Hennekens, C.H., Schneider, W.R., & Barice, E.J. (2007) Obesity in childhood: Introduction and general considerations. *Pediatric Research*, 61, 634–635.
- Institute for Clinical and Economic Review (2015). *Controversies in obesity management*. Boston: Author. https://icer-review.org/wp-content/uploads/2016/02/CTAF_OM_Revised_Draft_Report_062315.pdf
- Kleinert, S., & Horton, R. (2015). Rethinking and reframing obesity. *The Lancet*, 385, 2326–2328.
- Michigan Department of Education (2001). *The role of Michigan schools in promoting healthy weight: A consensus paper*. Lansing, MI: Author.

- Must, A., Jacques, P.F., Dallal, G.E., Bajema, D.J., & Dietz, W.H. (1992). Long-term morbidity and mortality of overweight adolescents. A follow-up of the Harvard Growth Study of 1922 to 1935. *New England Journal of Medicine*, 327, 1350-1355.
- Ogden, C.L., Carroll, M.D., Fryar, C.D., & Flegal, K.M. (2015). *Prevalence of obesity among adults and youth: United States, 2011–2014. NCHS data brief, no 219*. Hyattsville, MD: National Center for Health Statistics.
- Roberto, C.A., Swinburn, B., Hawkes, C. et al. (2015). Patchy progress on obesity prevention: Emerging examples, entrenched barriers, and new thinking. *The Lancet*, 385, 2400-2409.
- Serdula, M.K., Ivery, D., Coates, R.J., Freedman, D.S., Williamson, D.F., & Byers, T. (1993). Do obese children become obese adults? A review of the literature. *Prevention Medicine*, 22, 167-177.
- Singh, A.S., Mulder, C., Twisk, J.W.R., Van Mechelen, W., & Chinapaw, M.J.M. (2008). Tracking of childhood overweight into adulthood: a systematic review of the literature. *Obesity Reviews*, 9, 474–488.
- Society of Health and Physical Educators (2015). *Appropriate practices in school-based health education*. Reston, VA: Author.
http://www.shapeamerica.org/publications/products/appropriatepractice_schoolhealth.cfm
- Story, M., Nannery, M.S., & Schwartz, M.B. (2009). Schools and obesity prevention: creating school environments and policies to promote healthy eating and physical activity. *The Milbank Quarterly*, 87, 71–100. <http://doi.org/10.1111/j.1468-0009.2009.00548.x>
- Story, M., Kaphingst, K.M., & French, S. (2006). The role of schools in obesity prevention. *Future Child*, 16, 109-142.
- Tappe, M.K., & Galer-Unti, R.A. (2001). Health educators' role in promoting health literacy and advocacy for the 21st century. *Journal of School Health*, 71, 477-482.
- The Lancet (2017). Obesity and diabetes in 2017: A new year. *The Lancet*, 389, 1.
[http://thelancet.com/journals/lancet/article/PIIS0140-6736\(17\)30004-1/fulltext](http://thelancet.com/journals/lancet/article/PIIS0140-6736(17)30004-1/fulltext)
- Willett, W.K.J., Nugent, R., Dusenbury, C., Puska, P., & Gaziano, T.A. (2006). Prevention of chronic disease by means of diet and lifestyle change. In D.T. Jamison, J.G., Breman, A.R., Measham, et al., (Eds). *The international bank for reconstruction and development/The World Bank*. New York: Oxford University Press; 2006
- Wolf, A.M. & Colditz, G.A. (1998). Current estimates of the economic cost of obesity in the United States. *Obesity Research*, 6, 97-106.
- Yanovski SZ, Yanovski JA (Jan 1, 2014). "Long-term drug treatment for obesity: a systematic and clinical review.". *JAMA: The Journal of the American Medical Association (Review)*. 311 (1): 74–86

*A Note about Unifying and Developing a Comprehensive and Equitable System of Student and Learning Supports

With respect to transforming student and learning supports, our analyses (e.g., Adelman & Taylor, 2006, 2017) indicate the following changes are needed:

- Expanding the policy framework for school improvement from a two- to a three component framework. The third component coalesces all efforts to address barriers to learning and teaching (e.g., unifies them as a Learning Support Component); is prioritized and developed as primary and essential; is fully entwined with the Instructional and Management/governance Components.
 - Operationalizing the third component. Replacing fragmented practices that focus mainly on discrete problems requires reframing student and learning support interventions to create a unified, comprehensive, and equitable system of learning supports in classrooms and school-wide. A prototype intervention framework has been developed that encompasses
 - a continuum of interventions consisting of subsystems weaving together school-community resources (not the typical multi-tiered approach) for
 - >promoting effective schooling and whole child development
 - >preventing problems experienced by teachers and students
 - >addressing such problems as soon as feasible after they arise
 - >providing for students who have severe and chronic problems
- and
- a cohesively organized and delimited set of “content” arenas for addressing barriers to learning and teaching and re-engaging disconnected students in the classroom and school-wide. These arenas encompass the range of concerns a school copes with each day. They also stress enhancing intrinsic motivation and resilience as protective factors. Mentoring embeds nicely into all of these arenas.
- Implementing the third component. This involves
 - reworking the operational infrastructure to ensure effective daily implementation and ongoing development of a unified, comprehensive, and equitable systemic approach that enhances equity of opportunity;
 - enhancing mechanisms and strategic approaches for systemic change in ways that account for context and ensure effective implementation, replication to scale, and sustainability;
 - developing standards and expanding the accountability framework to account for the third component and to do so in ways that encompass both formative and summative evaluation



*For details about a *Unified, Comprehensive, and Equitable System of Learning Supports*, see
>ESSA, *Equity of Opportunity, and Addressing Barriers to Learning* – <http://smhp.psych.ucla.edu/pdfdocs/essaanal.pdf>
>*Piecemeal Policy Advocacy for Improving Schools Amounts to Tinkering and Works Against Fundamental System Transformation* – <http://smhp.psych.ucla.edu/pdfdocs/tinkering.pdf>
>All this is discussed in detail in a new book entitled: *Transforming Student and Learning Supports: Developing a Unified, Comprehensive, and Equitable System*.