



Body Mass Index Measurement in Schools

$$\text{BMI} = \frac{\text{weight(kg)}}{\{\text{height(m)}\}^2}$$

BMI

Executive Summary

Centers for Disease Control and Prevention



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As the United States continues to search for answers to the growing problem of obesity among children and adolescents, much attention has focused on body mass index (BMI) measurement programs in schools. The BMI is the ratio of weight to height squared. It is often used to assess weight status because it is relatively easy to measure and it correlates with body fat.⁵⁻⁹

In 2005, the Institute of Medicine called on the federal government to develop guidance for BMI measurement programs in schools.¹⁰ With guidance from an expert panel, the Centers for Disease Control and Prevention (CDC) developed a report to help inform decision-making on school-based BMI measurement programs. This Executive Summary presents an overview of the report, which was published in the December 2007 issue of the *Journal of School Health*. The report describes the purposes of BMI measurement programs, examines current practices, reviews existing research, summarizes the recommendations of experts, identifies concerns about school-based programs, and provides guidance on BMI measurement programs, including a list of safeguards and ideas for future research.

BMI measurement programs in schools may be conducted for surveillance and screening purposes. BMI surveillance programs assess the weight status of a specific population (e.g., students in an individual school, school district, or state) to identify the percentage of students who are potentially at risk for weight-related health problems. Surveillance data are typically anonymous and can be used for many purposes, including identifying population trends and monitoring the outcomes of interventions. BMI screening programs assess the weight status of individual students to identify those at risk and provide parents with information to help them take appropriate action.

Some states have initiated BMI measurement programs in recent years. Arkansas, for example, implemented a statewide BMI screening and surveillance program in 2003 (State of Arkansas, 84th General Assembly, Regular Session. Act 1220 of 2003. HB 1583. 2003). In California, students participate in physical fitness testing that assesses BMI along with other fitness-related variables.¹¹

From 1980 to 2012, the percentage of youth who were obese* increased from 7% to nearly 18% in children (6-11 years) and 5% to nearly 21% in adolescents (12-19 years).¹⁻⁴

* These youth were classified as "overweight" in the articles cited; the classification was changed to "obesity" to reflect the June 2007 recommendations from the Expert Committee on the Assessment, Prevention, and Treatment of Child and Adolescent Overweight and Obesity.



BMI

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Little is known about the outcomes of BMI measurement programs, including effects on weight-related knowledge, attitudes, and behaviors of youth and their families. As a result, no consensus exists on the utility of BMI screening programs for young people. The U.S. Preventive Services Task Force concluded that insufficient evidence exists to recommend for or against BMI screening programs for youth in clinical settings as a means to prevent adverse health outcomes;¹² however, the American Academy of Pediatrics (AAP) recommends that BMI should be calculated and plotted annually on all youth as part of normal health supervision within the child's medical home.^{13,14} The Institute of Medicine recommends annual school-based screening.¹⁰

BMI screening meets some of the criteria established by the AAP for determining whether school-based screening should be implemented for any pediatric health condition:¹⁵ obesity is an important and highly prevalent condition;^{3,4} BMI is an acceptable measure;^{6,8} and schools are a logical measurement site because they reach virtually all youth.¹⁶ However, BMI screening programs typically do not meet other AAP criteria: effective treatments for obesity are not available,^{9,17,18} research has not established the effectiveness and cost-effectiveness of BMI screening programs, and communities typically do not have resources in place to help at-risk individuals access treatment services.¹⁰ More evaluation is needed to determine whether BMI screening programs are a promising approach for addressing obesity among children and adolescents.



BMI

American Academy of Pediatrics Criteria¹⁵

Criteria for a Successful Screening Program in Schools

Disease	Undetected cases must be common or new cases must occur frequently and the disease must be associated with adverse consequences.
Treatment	Effective treatment must be available and early intervention must be beneficial.
Screening Test	The test should be sensitive, specific, and reliable.
Screeener	The screener must be well trained.
Target Population	Screening should focus on groups with high prevalence of the condition/disease in question or in which early intervention will be most beneficial.
Referral & Treatment	Those with a positive screening test must receive a more definitive evaluation and, if indicated, appropriate treatment.
Cost / Benefit	The benefit should outweigh the expenses (i.e., costs of conducting the screening and any physical or psychosocial effects on the individual being screened).
Site	The site should be appropriate for conducting the screening and communicating the results.
Program Maintenance	The program should be reviewed for its value and effectiveness.



A number of concerns have been expressed about school-based BMI screening programs, including that they might stigmatize students and lead to harmful behaviors.^{17,19-24} Other concerns are that these programs might be ineffective, waste scarce health promotion resources, and distract attention from other school-based obesity prevention activities.²⁵ More research is needed to assess the validity of these concerns. BMI surveillance programs are less controversial, because they do not involve the communication of sensitive information to parents and do not require individualized follow-up care for students identified to be at risk. Schools that initiate BMI measurement programs should have in place a safe and supportive environment for students of all body sizes and a comprehensive set of science-based strategies to promote physical activity and healthy eating. In addition, BMI screening programs should ensure that parents receive a clear and respectful explanation of the BMI results and appropriate follow-up actions; and that resources are available for safe and effective follow-up.



To reduce the risk of harming students, BMI measurement programs should adhere to the following safeguards:^{19,26}

- (1) introduce the program to school staff and community members and obtain parental consent,
- (2) train staff in administering the program (ideally, implementation will be led by a highly qualified staff member, such as the school nurse),
- (3) establish safeguards to protect student privacy,
- (4) obtain and use accurate equipment,
- (5) accurately calculate and interpret the data,
- (6) develop efficient data collection procedures,
- (7) avoid using BMI results to evaluate student or teacher performance, and
- (8) regularly evaluate the program and its intended outcomes and unintended consequences.

BMI

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