

Weighing the risks and benefits of BMI reporting in the school setting

linking researchers and the community to solve weight, health and hunger related problems

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Introduction

The prevalence of overweight among children and adolescents has risen dramatically in recent decades. Ironically, in the past, when rates of overweight were low, schools commonly measured the heights and weights of students. Today the practice is less common.

Many school districts are currently considering

- whether to reinstitute or increase the collection of height and weight measurements and
- whether to send this information to parents.

To reach an informed decision on *whether* to gather data, school authorities must consider not only the logistics of data collection and the additional expense in a time of restricted budgets, but also the ways in which the information gathered may be used. Weighing and measuring children is a large undertaking; the benefits must outweigh the costs. (Accurate techniques for *how* to measure heights and weights of children will be described below in Appendix A.)

Deciding Whether to Measure Weight and Height in the School Setting

To begin, schools must define their objectives:

- 1.) Are student weight and height measurements being collected for analysis and comparison with measurements from past eras and other locales (e.g. other schools, communities, states)?
 - This type of *surveillance* may possibly facilitate the development of national or community-wide or school-wide efforts at improving or reducing factors contributing to rising rates of overweight.
- 2.) Are the measurements being collected in order to provide information to parents?
 - If this type of *screening* is the goal, similar to current programs to identify vision and hearing problems, then schools must determine what to tell parents and whether to notify all parents, or only the parents of children who are overweight (or underweight) or at risk for overweight.
 - What will parents be told when they are notified?
 - Will they be advised to seek medical guidance?
 - Will another action plan or behavioral recommendations be provided?
 - Can the school's method of presentation increase the likelihood that raising weight concerns will do more good than harm to the overweight child?



- a. Is the goal of parental notification treatment or is it prevention?
- This will influence whether all parents are notified or only the parents of high BMI children who are already at risk.
 - What is the school's expectation of parents who are told of children with high BMI scores?
 - Will parents be expected to take action based upon the information they are given?
 - Can we fairly (or realistically) expect parents to help change the child's weight when health care professionals are frequently at a loss when confronted with the problem?
 - Is there any reason to think that providing messages about the benefits of physical activity and healthy eating to all parents, including parents of overweight children, will help to prevent future increases in BMI?
- b. To what extent is the school itself prepared to make changes based upon the data it collects?
- Is the school prepared to institute programs such as nutritional or physical activity programs that might well be beneficial to children and might be sought by parents who are notified of their child's weight status?
 - Does the school share responsibility for the problem with the parents?

Children spend a significant portion of their time in school, possibly receiving two out of three daily meals in the school setting along with products from on-campus vending machines. Schools rarely offer nutrition education, and physical education has been pared back significantly

Using Growth Charts and Assessing Children's Growth

The generally accepted purpose of weighing and measuring children is to determine if they are growing "normally." A wide range of heights and weights are considered 'normal,' since children grow at very different rates even when they are the same age. The Centers for Disease Control and Prevention and the National Center for Health Statistics issued new growth charts for children in 2000, including new body mass index (BMI) charts.

BMI is the unit of measurement currently used for assessing the growth of children. BMI is calculated by dividing one's weight in kilograms by one's height in meters squared. The new BMI charts can be accessed at <http://www.cde.gov/growthcharts>. It's important to be aware that BMI is only a rough estimate of risk for overweight.

- For an individual child or adolescent, BMI is likely to change over time, moving up or down as height and weight vary in relation to each other and as the child's muscle mass and stage of puberty change.
- Some children who have a high BMI are actually not at risk of having too much body fat while others with a lower BMI do have high body fat.
- Not all children with high BMI are at high risk for overweight ("false positives").
- Some at risk children are not identified by their BMI score ("false negatives").

- BMI is a good “clue” but only additional testing by a healthcare provider can fully assess the actual situation.
- BMI calculations are therefore most useful not for individual diagnoses but for surveillance of the body composition of a large group, such as all the children of a particular age or grade level at school.

Further, interpreting of a BMI is equivalent to making a diagnosis, therefore school administrators should insure that they have personnel qualified in this area.

Logistics of Measuring Children’s Weight and Height

As a school considers whether to measure children, it must consider the means by which heights and weights (the required variables for determining BMI) are to be gathered.

- On the methodological level, standardized equipment will be required and staff must be trained in the methods of precise measurement. The statistical process by which BMI is calculated requires that measurements be accurate.
- But as important as the need to ensure accuracy is the need to protect the privacy and self-esteem of the students.
 - One must avoid encouraging unrealistically thin body images and stigmatizing children who do not possess the current ideal body shape.
 - This concern is equally important when and if a decision is made to notify parents of individual children about their child’s BMI measurement.
 - Parents of overweight children may even feel that they are being blamed or stigmatized as bad parents, in common with a group of parents in Pennsylvania who were notified by school authorities of the results of school measurements (“Letters on Students’ Weight Ruffle Parents,” S.F. Chronicle, March 26, 2002)
- School authorities must also find ways to ensure that notification, albeit well-meaning, doesn’t lead to more harm than good.

An overweight prevention pilot study in Cambridge, Massachusetts (Chomitz, *et al*) reported that among parents who were notified by elementary schools that their children were overweight or at risk for overweight the most common nutritional responses were to “put child on a diet,” “skip meals or snacks,” or “give diet pills or herbal supplements.” These behaviors are all too likely to increase the children’s weight problems in the long run and they are certainly not what the schools had in mind when they sent home advice to serve fruits and vegetables and follow other accepted nutritional guidelines.

- Factors to consider:
 - Consider the obvious costs of notifying parents (staff time, mailing, responding to queries) as well as the potential for damaged self-esteem and unhealthy weight loss practices among identified children.
 - If the decision is made to notify parents, behavioral messages should be realistic, non-judgmental, actionable, and specific.

- Although personalized messages to parents of at risk children probably get more attention, most children (and their siblings) can benefit from healthier lifestyles, and prevention may be more effective than treatment.
- If referrals are made, are they for treatment (e.g. physicians/health care providers or weight management programs) or prevention (e.g. after school physical activity programs or nutrition classes)?
- Are safe and effective programs (whether for treatment or prevention) available and accessible to the families served by the school?
- Are there alternative activities that can be instituted on campus that may be more effective?

Alternatives: Making Changes in the School Environment

If the information you have collected tells you that many children in your school are overweight or at risk for overweight, you may wish to consider health-promoting changes in the school environment. The costs of these changes, like the costs involved in parent notification and in the process of measurement itself, will have to be viewed within the context of school budgetary concerns. All of the students can be encouraged to eat healthfully and to be physically active since good nutrition and an active lifestyle are known to be protective against undesirable weight gain.

Healthy behavior messages can be incorporated into the academic curriculum throughout the school year.

- Nutritious choices can be made more available in school cafeterias, vending machines and other school-based food venues.
- Less healthful food choices, such as sodas and other sweetened beverages, candy, chips and high fat foods, may be eliminated or restricted on campus.
- Opportunities for physical activity at school may be expanded, either by regular physical education classes or in after school programs.

Alternatives: Working Within the Community

Since the prevalence of childhood overweight is rising throughout the country, you may find that the children at other schools within your district are at risk for overweight.

- Cooperative efforts within the district may be appropriate when it comes to developing programs in response to the height and weight measurements of your students.
- It may also be possible for the district to participate in coalitions with other community groups that are concerned about rising rates of childhood obesity.

Recording Changes over Time

If annual height and weight measurements of students are taken, you will be able to look at progress over time, both in the overall school population and--if record keeping techniques permit--for the individual child.

- This will give the school a sense of whether any programs that it institutes are effective.
- It will provide ongoing information on the health status of the school population.

- It is important to remember, however, that change in this area may be slow.
- Healthful programs that have been developed should be maintained even if they do not produce immediate results.

Sharing Information with Parents

Decide whether to send information to parents:

The school must decide whether to give BMI results to individual parents. Guidelines for this decision include the following criteria:

- Is the condition serious?
- Do effective interventions exist?
- Are parents likely to be the most effective change agents?
- Is this the most cost-effective use of available resources to address this problem?
- What are the risks?

Decide how to present information to parents:

If you decide to send BMI results to individual parents:

- Define your objective.
- Do formative research (e.g. focus groups) to determine receptiveness of parents and children and to design your approach.
- Determine if you will target children of all sizes or just children who are overweight or at risk for overweight. If targeting all children, will the messages differ?
- Choose behavioral messages that are clear, actionable, safe, and effective; include warnings about inappropriate actions.
- Implement school, community and health system-based efforts to reinforce advice given to parents.
- Make sure any referrals are realistic, offer effective programs, and are accessible.

Appendix A. Techniques for Measuring Heights and Weights

The Appropriate Setting

- Each child should be weighed and measured in private with no other children present.
- Recruit an adult to record the measurements or do it yourself. Do not have another child do it.
- Consider having the child face away from the scale if s/he appears anxious about being weighed.

Appropriate Comments to Children

- Do not comment on the height or weight of a child at the time the measurements are being taken.
- Neutral comments such as “Thanks, you can get off the scale now” are appropriate.
- If a child makes a negative comment about his/her body, it is appropriate to say, “Kids’ bodies come in lots of different sizes and shapes. If other kids are teasing you about your body, let’s talk and see what we can do about it.”
- Teachers and other school staff should discourage teasing by modeling and promoting respectful behavior.
- The philosophy “we respect the bodies of others even though they are different from our own” should guide words and actions.

Measuring Weight

Children should be weighed using a platform scale.

- This may be a beam balance scale or a digital (electronic load cell or strain gauge) scale. Check your equipment regularly to make sure you are getting accurate measurements.
- Scales should be calibrated on a routine basis. Calibration involves putting known weights on the scale to check accuracy.

Procedure for Measuring Weight:

1. Ask child to remove outer clothing and shoes.
2. Before the child steps on the scale, place the scale in the “zero” position.
3. Ask the child to stand still with both feet in the center of the platform.
4. Record the measurement to the nearest $\frac{1}{4}$ pound or 100 grams.
5. Have the child step off the scale.

Measuring Height

A standing height board or stadiometer is required. This device has a flat vertical surface on which a measuring rule is attached. It also has a moveable headpiece and either a permanent surface to stand on or the entire device is mounted on the wall of a room with a level floor.

Procedure:

1. Preparing the Child to be Measured:

- Before you begin, ask child to remove shoes, hat, and bulky clothing such as coats and sweaters.
- Ask the child to remove or undo hair styles and hair accessories that interfere with taking a measurement. In rare cases, a child may be unwilling to undo an intricate or costly hairstyle. In these situations, care should be taken to locate the actual crown of the head.

2. Adjusting the Child's Stance:

- Direct the child to stand erect with shoulders level, hands at sides, thighs together, and weight evenly distributed on both feet.
- The child's feet should be flat on the floor or foot piece, with heels comfortably together and touching the base of the vertical board.
- There are four contact points between the body and the stadiometer: head, upper back, buttocks and heels.

3. Adjusting Head Position:

- Ask the child to adjust the angle of his/her head by moving the chin up or down in order to align head into the Frankfort Plane.
 - The Frankfort Plane is an imaginary line from the lower margin of the eye socket to the notch above the tragus of the ear (the fleshy cartilage partly extending over the opening of the ear).
 - This is best viewed and aligned when the viewer is directly to the side of and at the eye level of the child.
 - When aligned correctly, the Frankfort Plane is parallel to the horizontal headpiece and perpendicular to the vertical back piece of the stadiometer.
 - **NOTE:** When the chin is correctly positioned, the back of the head may not make contact with the board. In fact, in a very few individuals, only two points will make contact with the vertical back piece.

4. Taking the Measurement:

- Ask the child to breathe in and maintain his/her position.
- Lower the headpiece until it firmly touches the crown of the head and is at a right angle with the measurement surface.
- Check contact points to ensure that the lower body stays in the proper position and the heels remain flat. Some children may stand up on their toes, but verbal reminders are usually sufficient to get them in proper position.

5. Recording the Measurement:

- Record height to the nearest 1/8th inch or 0.1 cm.

Summary of Guidelines for the Collection of Weights and Heights

- Use the revised CDC growth charts.
- Use a calibrated platform scale and height board or stadiometer.
- Collect heights and weights in a private setting.
- Remove the child's outer clothing and shoes.
- Use only respectful and encouraging comments.
- Do not make a diagnosis unless it's within your scope of work and you're prepared to offer guidance and follow-up.