Screening for Obesity in Pediatric Primary Care: A Review of the Literature

Stephen Cook, MD 1, Eliana M. Perrin, MD, MPH 3, Kori B. Flower, MD, MPH 3, Alice S. Ammerman, DrPH, RD 3, Charles Homer, MD, MPH 5, Michael Weitzman, MD 2, Mark S. Johnson, MD, MPH 4, and Jonathan D. Klein, MD, MPH 1.


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Abstract

Objective: Childhood obesity must be properly identified for prevention and treatment to occur, and this is the task of the pediatric primary care providers. Body mass index (BMI) and BMI growth curves are the recommended method to screen for obesity in pediatrics. This paper will examine the literature on the use of BMI in the pediatric primary care setting, describe barriers to its implementation, and discuss chronic care and collaborative models as possible solutions.

Methods: A systematic review of the literature from 1996 to 2005 focused on studies describing physician practice patterns, ambulatory care, and clinical use of BMI from pediatric samples.

Results: We identified studies with various research methodologies. Providers reported high levels of concern about their patients becoming obese, and recognized its immediate and long term consequences. Providers reported using a variety of methods to screen for obesity but BMI was rarely used and obesity was rarely identified in medical records. Chart reviews showed an under-use of BMI and a significant proportion of overweight children, BMI ≥ 95th percentile, who were not identified as such. This occurred among younger children and children with less severe obesity. Providers reported issues with patient motivation, intervention support and reimburse related to next steps of treatment as barriers.

Conclusions: BMI accurately identifies children early in the onset of obesity, and the undiagnosed children maybe more amenable to simple behavioral changes that can be delivered in the primary care office setting. Providers concerns with downstream interventions may hinder the early steps of identification.
Public officials and the national media have created widespread awareness of profound increases in the prevalence of childhood obesity, and addressing the issue of obesity in the clinical setting has never been more necessary. Obesity in childhood predicts adult obesity (1), it is associated with antecedents of adult cardiovascular disease such as type 2 diabetes and the metabolic syndrome during childhood (2-4), and it is leading to increasing pediatric medical costs (5). Prevention and treatment models are now needed to reverse this epidemic. Childhood obesity is a chronic disease with growing implications for immediate morbidity. It needs to be recognized as such, taking lessons learned from other chronic conditions such as diabetes and hypertension, and socially-mediated diseases, such as tobacco abuse. Although the underlying genetic components may not be modifiable, poor food choices, increased sedentary behaviors and decreased physical activity can be changed. Social and political awareness have led to reexamination of policies and practices related to every-day food consumption and physical activity. Changing the availability and acceptance of these behaviors may allow health providers to have a clearer role and accomplish primary care goals, but the precise clinical activities clinicians should undertake is still under investigation.

The Center for Disease Control has defined “overweight” in children as a BMI ≥ 95% and “at risk of overweight” in children as a BMI between the 85th and 95th percentiles (6). The American Academy of Pediatrics (AAP) has published recommendations about childhood obesity, which include the recommendation to “calculate and plot BMI once a year in all children and adolescents,” and the American Academy of Family Physicians (AAFP) also supports calculating BMI at every visit during which weight is assessed (7). The AAP recent policy statement to assist pediatric clinicians in prevention of overweight and obesity (8)
represents the first such statement in over 20 years (9). During this time, childhood overweight tripled (10, 11) with a disproportionate rise in overweight among African Americans and Hispanic populations (12). In 2004, the Institute of Medicine developed a prevention-focused action plan, "Preventing Childhood Obesity: Health in the Balance," which calls for "immediate action" and provides recommendations that are "based on the best available evidence—as opposed to waiting for the best possible evidence." The Institute of Medicine report specifically recommends:

- Health-care professionals should routinely track body mass index (BMI), offer relevant evidence-based counseling and guidance, serve as role models, and provide leadership in their communities for obesity prevention efforts.

However, even when a test meets rigorous criteria for use, barriers to its widespread adoption may be present that require systematic efforts to overcome these barriers and promote high quality care. For obesity, the continuous quality improvement collaborative change model provides a framework for action for both chronic care and prevention (13-15). A common first step for clinical interventions in general is effective screening to identify those at risk or in need of interventions; this was recently recommended by the U.S. Preventive Services Task Force for overweight in children (16). Body mass index (BMI), the calculation of weight in kilograms divided by height in meters squared, is an appropriate option for overweight screening in pediatric primary care since weight and height are often routinely measured in pediatric practices. The purpose of this paper is to review the recent literature on screening for obesity in children in primary care and the use of BMI in the pediatric setting. We also discuss practice models and collaborative efforts that can be specifically applied to recommendations and future efforts to address childhood obesity in the office setting.
Anthropometrical Data in Pediatrics:

Anthropometrical measures have long been used in pediatrics to identify children’s nutritional status. As early as the 1880s, infant weight and infant health were linked, though malnourishment, rather than over-nourishment, originally prompted systematic growth assessment (17). In the 1970s, sex- and age-specific growth charts based on national survey data were developed and disseminated for clinical use (6). Most recently, the CDC released Growth Charts in 2000 (18) (available at: http://www.cdc.gov/growthcharts), which include two new charts for Body Mass Index-for-Age for each gender. These allow for assessment of weight adjusted for stature by providing BMI percentiles for children between the ages of 2-20.

The accurate assessment of body composition has become more important as obesity research and technology have evolved. Since true or “in-vivo” body mass measurement can only be accomplished through methods such as chemical cadaver analysis, non-invasive and indirect methods for estimating fat and fat-free mass, such as underwater weighing and dual energy x-ray absorptiometry (DEXA) have been developed. These methods are limited to research centers and not used in everyday clinical or public health practice (19, 20). Such measures provide detailed quantification of body fat mass, fat free mass, and regional fat distribution. They require specialized equipment, specific corrective factors for age and pubertal development, and compliance on behalf of the study subject. Additional practical considerations which may limit the utility of these techniques include 1) initial cost, 2) training of the operator, 3) maintenance and operating costs, 4) precision; and, 5) accuracy (21). There is an extensive literature using BMI to track obesity in adults and children in longitudinal or cross sectional epidemiological studies. BMI shows a good correlation with body fat (r= 0.50 to 0.87), measured by either
DEXA or underwater weighing, from studies with both normal and overweight children and adolescents (22-26). Most children with BMI in the highest categories have > 30% body fat (19, 27-30). Many studies have evaluated the sensitivity and specificity of BMI in children and adolescents. The CDC BMI percentiles were compared against DEXA scans in 596 children. BMI percentile ≥85\textsuperscript{th} was useful for identifying children who may be obese while, BMI ≥ 95\textsuperscript{th} percentile had a high specificity (96\%) and high Positive Predictive Value, but a modest sensitivity, 65\%. In general, BMI percentiles for overweight and/or obesity were moderately sensitive (60-80\%) and highly specific (94-99\%) with very high Positive Predictive Values (97-99\%) for identifying children or teens with high body fat percentage. The high specificity and low false positive rate of BMI percentiles in these studies should reassure clinicians that the vast majority of children found to be overweight truly have an excess of fat tissue.

Methods

Part of the purpose of this paper was to review the literature on issues or barriers to assessing children’s BMI or percent ideal body weight in primary care practice. A search of the English-language literature in MEDLINE between 1996 and December 2005 was performed to find references to the use of BMI in clinical practice to assess for obesity in children and adolescents. A series of searches were performed with key words and search terms. These were combined, limited to English language as well as limited to infant, toddler, preschool child, child and adolescent and then followed by manual scanning of titles and abstracts to eliminate review, commentaries, editorials, and case reports. The remaining articles were further examined for primary studies involving the practice of identifying overweight or obese patients in pediatric clinical settings or from surveys of child health clinicians.
The search strategy employed yielded a large number of studies for overweight or obesity in general. Combining this large sample with the groups diagramed below led to smaller samples shown in Figure 1. This resulted in less than 50 articles, from which we manually reviewed abstracts and methods for appropriateness. Several studies surveyed physicians about their practices and beliefs about childhood obesity, and a smaller number of studies used chart reviews to examine clinicians’ practices towards documentation of overweight and obesity. One study included a quasi experiment design to its survey of physicians comparing weight and height for age to BMI growth curves.

Results

The results of our search are summarized in three tables below. Table 1 is a summary of studies that performed secondary analysis for assessment or documentation of obesity, including chart reviews and national data sets. Table 2 summarizes findings from surveys of providers’ practices of obesity identification and treatment in children. Table 3 highlights physician reported barriers to obesity diagnosis and treatment.

Studies of more objective measures of clinical practice are reported in Table 1, and underscore previous reports by providers. These studies indicate that although rates of overweight and at-risk for overweight among children may be as high as 50% (31-34), children are commonly under-diagnosed and obesity is often poorly documented or treated (31-33, 35, 36). Among children, BMI is underutilized and documentation has been shown to vary by age and degree of obesity, with younger children and those of lower severity being identified less (33-36). Because intervention has been shown to be most (and often only) effective if started early, before the condition has become severe (37, 38), early identification is essential.
Furthermore, while documentation has been associated with higher rates of counseling and intervention, such efforts may often be limited to only general advice (31, 34, 35), possibly warranting the need for further education and skills training (39).

Though rates vary, there were some consistent findings concerning physician attitudes toward obesity identification, summarized in Table 2. Physicians indicate that while most feel it is important to identify obesity (40-42) and most used some method to screen for excess weight, including weight-for-age and weight-for-height, few used the preferred screening measures of BMI and BMI percentile (43-46). Many report this is because of feelings of low self-efficacy toward treating obesity (40, 42). However, knowledge of national guidelines was often associated with greater feelings of self-efficacy (44, 45), and BMI charting was associated with greater concern by clinicians than did height and weight charting (45).

According to the studies in Table 3, the main barriers to obesity identification and treatment reported by providers can be separated into patient, system, and clinician specific factors. Providers often report difficulty in treatment due to lack of patient motivation and compliance (41, 44, 47), and also because of worries concerning possible treatment-related risks (42). Barriers within the system (41, 42, 44, 47), including lack of time, effective tools, or adequate education on treatment, and lack of reimbursement are often reported, and these factors often coincided with feelings of low self-efficacy on the part of providers (42, 47, 48). Provider self-perception of their own weight status has been found to be related to ease of counseling (48), highlighting a possibly influential but over-looked barrier.

In summary, providers believe obesity in childhood is an important problem, although there have been very few studies of BMI in pediatric primary care setting. While self reported studies suggest high rates of screening for and treatment of obesity, BMI doesn’t appear to be
widely used when objective measures of provider practice are examined. There are limitations to
several of these studies, including low response rates or limited geographic samples, and the
BMI growth curves have only been available for about 5 years. Medical record review studies
help overcome the response and recall bias demonstrated by surveys and self-report. However,
the under identification in younger children and less overweight children suggests opportunities
are being missed in children whose overweight may not be that longstanding. Repeatedly,
providers report that patients’ lack motivation, that they are frustrated with treatment, and that
inadequate reimbursements remain significant barriers to treatment.

Discussion

When addressing the efficacy of any disease process screening or diagnosis, usually
screening must be feasible, effective interventions must exist for the condition identified, and
individuals must be better off if they are screened or identified early (14, 15, 49-51). As a screen
for overweight in pediatrics, BMI is a good screening test, with low start up and maintenance
costs, simple training, and good accuracy. While preliminary studies are encouraging, strong
evidence for interventions for children in primary care or for child and youth obesity
interventions linked to primary care are not yet available (52). Nonetheless, the gravity of the
public health problem of obesity suggests a justification for proceeding despite lack of entirely
effective treatments (53). There are few logistical impediments to BMI screening, yet the
primary obstacles appear to be “downstream” from the actual performance of the test, and are
focused more on whether the use of the test results in improved outcomes and whether primary
care clinicians use this information to guide weight-related diagnosis, treatment and follow-up in
children.
In the review for the USPSTF, the Oregon Evidence-base Practice Center addressed the evidence on effective screening and treatment strategies for child and adolescent obesity (16, 52). They found that BMI is a reasonable measure for identifying children and adolescents who are overweight or at risk for becoming of overweight. They also reported that there was fair evidence that overweight youth 8 years and older are at increased risk for becoming obese adults. Nonetheless, the Task Force concluded that there was insufficient evidence to recommend for or against screening for overweight in children and adolescents as a means to prevent adverse health outcomes. While other methods exist to screen for excess weight in children, BMI is recommended method for adult and universal adoption should greatly facilitate the smooth transition of care from adolescence to adulthood. Also, the current literature only uses BMI as the metric to examine associations and show causality for adolescent and adult morbidity and mortality.

Implications for Identifying Barriers for Providers

Promoting adoption of BMI requires acknowledgement of the evidentiary basis for action, and will also require messages, tools, and support to address the barriers limiting child healthcare providers’ ability to incorporate preventive care recommendations into practice. Although tools are increasingly available, clinicians may remain unaware of a variety of available resources such as growth charts designed to easily derive BMI (54), to body mass index calculation wheels (www.trowbridge-associates.com/BMI.html), programs for personal digital assistants (e.g. www.statcoder.com/growthcharts.htm), and Web-based BMI calculation and interpretation programs (e.g. www.halls.md/body-mass-index/av.htm). Barriers to physician adherence to guidelines can be thought of as internal or external barriers (55).
Potential *internal* barriers to use of BMI for screening of overweight include lack of awareness, familiarity, or agreement with the recommendation. Internal barriers related to attitudes include lack of outcomes expectancy, self-efficacy, and lack of motivation. These potential barriers need to be better characterized in future studies in order to fully understand the factors that may prevent clinicians from using BMI to screen children for overweight. Lack of awareness could be a particularly important barrier; providers may feel challenged, given time constraints in primary care settings, to rapidly calculate, interpret, and record BMI as recommended. Potential barriers to BMI use *external* to clinicians include lack of time or financial resources to implement new recommendations, lack of access to appropriate materials (e.g., up-to-date growth charts), and lack of capability or willingness of non-provider staff to implement recommendations. For example, lack of systematic measurement, or lack of accuracy in height and weight measurements could be barriers to calculation and interpretation of BMI in some practice settings. Despite their potential importance, these external barriers also have been under-explored to date, but can be characterized by a knowledge-attitudes-behavior framework.

This framework is useful in identifying where further research regarding barriers to BMI use is needed, and suggests ways that the Wagner’s Chronic Care Model (CCM) for prevention and intervention may be applied to childhood obesity. The CCM provides a conceptual basis to organize quality improvement strategies in five specific areas that are readily applicable to obesity: patient self-management, clinical decision support, delivery system re-design, clinical information systems, and partnerships with community organizations.

Using BMI to screen for overweight is an appropriate first step in applying breakthrough collaborative methods and principles of chronic disease management to childhood overweight. If primary care practices identify populations of overweight children, clinicians will be better
able to implement interventions systematically, track health outcomes in overweight children
continuously, and initiate improvements in the quality of overweight children’s care. Importing
the care model’s multiple components previously mentioned into the management of childhood
overweight is a promising, albeit untested, approach to the long-term management of this chronic
problem. Studies are needed to test the application of each of these components of the chronic
care model in the management of childhood overweight.

Implications for Clinical Care and Preventive Services

Using BMI to assess for childhood overweight in primary care settings is a first step that
is necessary but not sufficient to further evaluate children’s medical needs and connect families
to overweight treatment resources. As previously discussed, though BMI has been widely
recommended to screen for overweight in primary care settings, it has been infrequently adopted
by clinicians; (34, 35, 43-45) thus the impact of this recommendation is currently under-realized.

To optimize clinical care for overweight children, clinicians also need clear, evidence-
based guidance on the medical evaluation and treatment of overweight children. While this
report is focused on screening and its implementation, studies on effective prevention and
treatment are needed so that clinicians are motivated to screen, in the belief that they can offer
something to those who are identified. Once physicians have identified children as overweight,
families need guidance regarding diet and physical activity changes. Strong recommendations
exist for diet and exercise counseling in adults (50, 51), and parent weight loss is the strongest
predictor of child weight loss (56, 57). Yet, physicians may not currently feel that they have they
have had adequate nutrition training or tools to help with nutritional guidance. Practice tools to
help physicians counsel about nutrition, such as innovative medical curricula, and the 5 A’s
based behavioral guidance, are needed to prepare physicians for giving nutritional guidance to overweight child and their families (58). Effective models to link office screening to community resources and interventions are similarly needed.

Implications for future interventions

Identifying overweight children through BMI screening could form the basis for collaborative continuous quality improvement interventions to help improve the care of overweight children. Office systems-based changes have led to improvements in pediatric primary care in other areas, including immunization and delivery of other preventive services (59, 60), and in clinical preventive services for adolescents in community health centers (61). Office systems-based improvement strategies (i.e., National Initiative for Children’s Healthcare Quality Practical Guide to Implementing Office Systems for Anticipatory Guidance, or Joint Commission on Accreditation of Healthcare Organizations’ Clinical Improvement Action Guide) could be similarly applied to identification and management of childhood overweight with existing local or national clinical collaborative models. Since childhood overweight disproportionately affects low-income and minority children, it will be essential for future interventions focused on overweight to include practices that serve these children.

Efforts to lower barriers to adoption of BMI screening, such as better reimbursement for time spent counseling about obesity, may lower the threshold for adoption of screening. However, reducing these barriers may not outweigh clinicians’ confidence (or lack thereof) in the effectiveness of their interventions. Nonetheless, diffusion of interventions that address obesity in primary care can benefit both from the CCM and from the use of theoretically-grounded strategies and evidence-based interventions.
A broad approach involving continued intervention research, demonstration projects to implement interventions, policy interventions to address community and the environment, and quality improvement collaboration to identify best practices for real-life clinical settings represent a logical approach to this highly complex condition. Interventions that link health care with better community resources, implement systems to track children and support interventions, provide decision support and promote patient (or family) self-management will lead to innovations that result in measurable outcomes. These in turn should lead to greater effectiveness, and sustained use of successful strategies for interventions in greater numbers of sites.

Collaboration of providers, health care institutions and other community partners to promote availability of community and decision support resources also needs support. Incremental effects of interventions on issues of reimbursement, linkages between clinical settings and schools or childcare, and provider education and skill development can be evaluated in an ongoing manner. Ongoing surveillance of clinician behaviors and changes in attitude, practice and community resource availability are needed to track successful implementation and dissemination of effective interventions. The universal use of BMI can provide some standardization to tracking its performance, and also tracking weight changes, as outcomes of these interventions.

Investment in a variety of demonstration projects that test different components of child obesity prevention and treatment, from intensive community change addressing all elements of physical activity and nutrition for children and families, to incremental implementation of different elements of effective clinical practice. The linkage between clinical self-management support and community resources appears to be key issue for childhood obesity, as the role of
clinical intervention in leveraging health insurer and community policy changes remains a
priority for primary care organizations and their members. Application of the care model to other
behavior change issues has laid the groundwork for rapid application of these techniques to both
preventive and intervention strategies. Pursuit of interventions addressing childhood obesity,
coupled with careful evaluation, will help achieve the goal of engaging clinicians in more
effectively addressing this critical public health problem.
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<th>Limitations/Relevant conclusions</th>
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<tr>
<td>Denen, 1993</td>
<td>115 adults, 113 children seen consecutively in an internal medicine/pediatrics</td>
<td>44% of children and 50% of adults were overweight or obese by body mass index. Residents were less likely to document children as being obese (18%), and did so significantly less often than they did adults (53%, p&lt;.001)</td>
<td>Study pre-dated the existence of the current BMI growth curves</td>
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<td>residency, chart audit</td>
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<td>Hamilton, 2003</td>
<td>231 inner-city children from the southwest LA area, retrospective medical record</td>
<td>58 patients (36%) were identified as overweight (OW) or at-risk for overweight (AROW), as defined by BMI ≥ 90th %tile; only 29% percent of affected children, 2-18 yrs of age, were identified; none of the children under 2 yrs of age, with weight/height ratio ≥ 90th %tile were documented or offered intervention</td>
<td>Limitations: Small sample size, retrospective study design and limited area of selection</td>
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<td>review</td>
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<td>Drobac, 2004</td>
<td>~997 children, 10-18 yrs of age, from the Chicago area, predominately low income,</td>
<td>26% of patients were OW and 22% were AROW, based on age, gender specific BMI %tiles; BMI charted for only 9% of subjects, BMI %tile plotted only 1%.</td>
<td>Limitation: Only inner-city practice in limited geographic area, mostly Hispanic.</td>
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<td></td>
<td>Mexican-American minority, retrospective medical record review</td>
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<td>Primary aim was screening for type 2 diabetes but lack of obesity screening a more significant issue that was also associated with less counseling.</td>
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<td>O’Brien, 2004</td>
<td>~2500 charts, chart review from an academic primary care clinic from an tertiary</td>
<td>Obesity documented in over half the charts of children meeting criteria (BMI ≥ 95th percentile for age and gender on CDC growth curves.) Documentation varied by child age and degree of obesity, with preschool-aged children documented the least and adolescents the most. Notation found in only 18% in the lowest quartile BMI still above 95th percentile, increasing to 82% in the top quartile. Greater documentation of obesity</td>
<td>Limited to an inner-city population at a single practice</td>
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<td>care center</td>
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<td>Identified first steps of counseling and referral if found to be obese</td>
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<td>Source</td>
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<td>Findings</td>
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<td>Dorsey, 2005</td>
<td>600 medical records from 4 pediatric clinics in the New Haven, Connecticut region, medical chart review</td>
<td>BMI documented only 0.05% charts and only 20% of AROW or OW children had documentation of diagnosis, and only 17% had documentation of treatment. Treatment was identified as general advice.</td>
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<td>Quattrin, 2005</td>
<td>~600 children referred to a pediatric endocrinology group for obesity; retrospective chart review</td>
<td>Previous growth records indicated 80% were obese before age 6; referrals, occurring a prolonged interval after onset, appeared ineffective in obesity treatment; underscores need for early identification to enable pediatricians to target “at risk for overweight” or newly overweight preschool children.</td>
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<td>Miller, 2002</td>
<td>Comparison of age at referral, 50 randomly selected charts at a Failure to Thrive (FTT) clinic</td>
<td>Ave age FTT children was 21 months and ‘Mild FTT’ by their % IBW while obese children were 10.3 yrs of age and at ‘Severely Obese’ range by % IBW;</td>
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<td>Cook, 2005</td>
<td>Pooled sample of 32,000 visits by 2-18 yr olds, National Ambulatory Survey</td>
<td>Nationally weight sample of ambulatory visits from 1996-2000 but only 0.78% of visits carried diagnosis of obesity, morbid obesity or excess weight gain, diet and exercise counseling rates increased 10-12 fold with documentation.</td>
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<td>Barlow, 2002 (43)</td>
<td>202 pediatricians, 293 peds NPs, 444 registered dieticians, national mailing</td>
<td>80% use ‘visual impression’, 19% BMI, and only 12% use BMI percentile to screen for excess weight</td>
<td>Limitations: Reporting bias of providers very interested in obesity, only 20% response rate for pediatricians</td>
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<td>Perrin, 2004 (45)</td>
<td>356 pediatricians/med-ped physicians North Carolina, mailed survey</td>
<td>11% ‘always’ used BMI, 31% ‘never’ used BMI, 21% ‘always’ used visual impression. Providers with clinical vignette that gave a girl’s BMI as opposed to her height and weight charts rated her with higher level of fatness and higher level of concern.</td>
<td>Limitations: limited to North Carolina pediatricians and hypothetical case; Strengths: Response rate ~71%, used a quasi-experimental design that physicians got a clinical case with either a BMI or weight and height growth curve</td>
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<td>Price, 1989 (40)</td>
<td>500 pediatricians, random national sample mailing survey</td>
<td>83% felt physicians are obligated to counsel parents of obese children about health risks of obesity, 70% believed designing programs and counseling children about weight loss was difficult, 11% felt counseling children &amp; parents on weight loss professionally gratifying and pediatricians received most of their weight control information from medical journals (70%) and past experience (68%).</td>
<td>Strength: 68% response rate</td>
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<td>Rattay, 2004 (46)</td>
<td>813 pediatricians, computer-assisted telephone survey with follow-up mailing, national sample</td>
<td>50% ‘Always’ counsel about healthy weight, were more likely women and spend more time during annual well child visits</td>
<td>Strength: 80% response rate</td>
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<td>Story, 2002 (41)</td>
<td>202 pediatricians, 293 peds NPs, 444 RDs, national mailing</td>
<td>Respondents felt that childhood obesity was a condition that needs treatment (78%), and affects chronic disease risk (87%)</td>
<td>Limitations: Reporting bias of providers very interested in obesity,</td>
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Kolagotta, 2004 (44) 700 pediatricians, 507 family physicians, national survey

BMI use reported at a much higher level than in previous surveys. However, while BMI was used by 30% of pediatricians and 49% of family physicians for adolescents, only 5% of family physicians and 15% of pediatricians used BMIs for children 3-7 years of age. 19% of physicians were aware of national recommendations, and knowledge of guidelines was associated with more positive attitudes toward personal counseling proficiency and the overall effectiveness.

Limitations: 28% response rate
Strength: Surveyed both pediatricians and family physicians.

only 19% response rate for pediatricians
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<tr>
<td>Jelalian, 2003 (42)</td>
<td>1243 pediatricians (62%) and family physicians (30%) from Southern New England area</td>
<td>25% providers feel they are not at all or only slightly competent/comfortable treating obesity. Factor analysis of respondents replies indicated two factors acting as barriers: Perceived Systems Barriers (associated with limited resources: including time, available staff, reimbursement, and training) and Perceived Treatment-Related Risks (associated with risks from addressing obesity, such as eating disorders and impact on growth and self-esteem.)</td>
<td>~40% response rate, 35% met screening criteria, responses limited by geographic area and due to self-report</td>
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<td>Perrin, 2005a (47) Amb Peds</td>
<td>356 pediatricians/med-ped physicians North Carolina, mailed cross-sectional survey</td>
<td>Most pediatricians feel ineffective treating obesity; most frequently encountered barriers included availability of soft-drinks (95%) and fast food (97%), though practice based barriers were most strongly associated with feelings of low self-efficacy among providers; most (96%) expressed desire for better counseling tools</td>
<td>Response rate good at ~71%, though geographically limited. Indicated that practice-based tool kits may improve self-efficacy.</td>
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<td>Story, 2002 (41)</td>
<td>202 pediatricians, 293 peds NPs, 444 registered dieticians, national mailing</td>
<td>Providers expressed the most frequent barriers were lack of parent involvement (~81%), lack of patient motivation (~86%), and lack of support services (60%)</td>
<td>Reporting bias of providers very interested in obesity, only 19% response rate for pediatricians</td>
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<td>Kolagota, 2004 (44)</td>
<td>700 pediatricians, 507 family physicians, national survey</td>
<td>Poor patient motivation (97%), patient noncompliance (95%), and treatment futility (78%) were perceived as the most frequently encountered barriers to obesity treatment</td>
<td>Limited by 28% response rate</td>
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<td>Perrin, 2005b (48) Ob Research</td>
<td>356 pediatricians/med-ped physicians North Carolina, mailed cross-sectional survey</td>
<td>~50% overweight pediatricians did not identify themselves as such; men misclassified more frequently; those self-classified as “thin” or “overweight” reported 6x’s and 4x’s more difficulty counseling, respectively</td>
<td>Response rate good at ~71%, though geographically limited.</td>
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We would like to acknowledge the Robert Wood Johnson Foundation for their support of this review and discussion project. We would like to thank Terry L. Bazzarre, Ph.D., M.S., and C. Tracy Orleans, Ph.D., for their thoughtful insight and commentary on this report. We would also like to thank all the attendees to the “Health Strategies Conference for Childhood Obesity” for their reviews and comments during the discussion of the findings of this paper. This report was presented as part of a White Paper for a Conference on “Improving Health Services to Prevent Obesity in Children” sponsored by the Robert Wood Johnson Foundation held in Washington DC on June 6th, 2004.
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