

# Childhood Overweight and Orthodontists: Results of a Survey

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## Abstract

**Objectives:** A survey among orthodontists to assess clinical procedures of overweight screening and nutrition intervention among youth was conducted. **Methods:** Orthodontists identified through professional society membership were invited to participate via email. The web-based survey collected information regarding overweight screening, nutrition counseling, and referral habits. **Results:** 91% of 111 respondents reported counseling children and families on nutrition recommendations. Referral of overweight youth to a dietitian or pediatrician was sporadic. Orthodontists who felt that overweight had a severe negative impact on dental health were more likely to screen patients for overweight and perform dietary counseling for all patients than orthodontists who felt the impact of overweight on dental health was less severe. **Conclusions:** Orthodontists report regularly engaging in dietary discussions with their pediatric patients and may serve as important clinical advocates for healthy dietary choices among youth. Overweight screening and referral practices among orthodontists to appropriate health professionals should be further evaluated as interventions for pediatric obesity.

**Key Words:** Orthodontists, obesity, children, adolescents, nutrition

## Introduction

Over thirty percent of adolescents in the US are overweight (BMI (body mass index)  $\geq 95\%$  for age and sex) or at risk for overweight (BMI  $\leq 85\%$  for age and sex) (1). The American Academy of Pediatric Dentistry (AAPD) (2) has identified monitoring, preventing, and managing childhood overweight as important research agenda (2). Orthodontists have frequent contact with pre-teen and teenaged youth, and have been identified as clinicians with significant opportunity to impact adolescent health and well-being (3).

A web-based survey of orthodontists was performed to determine clinician opinions regarding the effect of childhood overweight on medical and dental health and to assess the current status of overweight screening practices and nutrition education offered to pediatric patients and their families at orthodontic offices.

## Methods

The study protocol was approved by the University of California, San Diego Human Research Protections Program. Orthodontists were identified via membership in local (California-based) and national professional societies (4,416) and were required to have an active email address to participate (3,956). E-mail invitations with a provided link to a web-based questionnaire were delivered to orthodontists. Unique entry codes were provided with each invitation so that the web-based questionnaire could only be accessed once by invitees. Informed consent was obtained.

The 32-item survey collected information regarding weight assessment procedures, nutrition information distribution practices, and clinical and nutrition referral practices. Opinions on the negative impact of overweight and diet in regards to medical and dental health were assessed via items rated on a 4-point scale (Strong to None). Respondent opinions regarding their preparedness as nutrition

counselors were solicited on a 4-point scale (Strongly agree to Strongly disagree). Respondents were asked to judge their effectiveness as nutrition counselors by selecting what percentage category of patients would modify their lifestyle based on their advice. Data regarding professional experience were also collected.

The influences of various factors on the schedule of nutritional advice to children and parents and of overweight screening were assessed using chi-square analyses. Factors examined included: respondent opinion of the effect of obesity on dental health, years of professional experience, and patient population. For bivariate analyses, item answers were dichotomized, as follows: 1. Opinion of the effect of obesity on dental health (severe or very severe negative effect, or less than severe negative effect); 2. Years of professional experience (Professional experience was subdivided at the 5-year mark in order to determine whether recent dental training may have impacted clinical practice); 3. Patient population (inclusive or exclusive of Medicaid subscribers); 4. Schedule of nutritional advice to parents (frequent (at every visit or at least once), or occasional (only in cases of oral pathology or never)); 5. Schedule of nutritional advice to children (frequent (at every visit or at least once), or occasional (only in cases of oral pathology or never)); 6. Collection of weight data via patient-report (performed or not performed); 7. Collection of objective weight data (performed or not performed); 8. Assessment for obesity (performed or not performed). Significance was set at  $p < 0.05$ . Only univariate models are

reported; this study was designed as a descriptive analysis to inform future multivariate models. Statistical analyses were performed on questionnaire responses using JMP-5.0 software (Cary, NC).

**Results**

One hundred and eleven orthodontists participated with a response rate of 92% of the 121 who accessed the website link. 48% were from Western states, 27% from the Central/Mountain states, and 25% from the Eastern states. 52% of respondents had been in practice over 15 years, and 84% had been in practice at least 5 years. 99% of respondents evaluated patients who were self-pay or insured, and 36% of respondents treated patients receiving Medicaid.

Ninety-eight percent of respondents agreed that being overweight has a serious negative impact on a child's medical health with the majority (68%) reporting strong agreement. In contrast, only 41% agreed or strongly agreed that overweight has a serious negative impact on a child's dental health; 48% reported that being overweight had a minor impact on a child's dental health; and 11% reported that being overweight had no impact on a child's dental health. In regards to the impact of diet on development of dental caries, 99% agreed (95% expressing strong agreement) that dietary factors might increase the risk of developing caries in children.

Weight collection and assessment data are presented in Table 1. Weight information, if obtained, was self-reported by patients.

Methods of nutrition education employed are reported in Table 2. Most orthodontists delivered nutrition information to patients via oral discussion; the average length of oral discussion regarding nutrition was 5 (2, 6) minutes (median (interquartile range)). 56% of orthodontists reporting oral discussions specifically addressing nutrition issues also provided supplemental nutrition handouts. Respondents were unlikely to refer overweight children to dieticians (1% always, 1% often, 5% sometimes,

**Table 1**  
**Weight collection and assessment practices by respondents**

	Results
Frequency of weight information gathering	22% at initial visit only 3% at every visit 21% only when prescribing medications 55% never
Directly measure pediatric patients' weights on a scale	4%
Directly measure pediatric patients' heights using a stadiometer	4%
Method of obesity assessment	23% based on appearance 1% based on plotting of weight for height on growth chart 3% based on plotting of BMI on growth chart 73% do not assess for obesity

BMI = Body Mass Index

**Table 2**  
**Data regarding nutrition information delivered to pediatric patients or families by respondents**

	Results
Frequency of nutritional advice to parents	9% at every visit 39% at least once during treatment course 46% only if dental caries were discovered 6% never
Frequency of nutritional advice to children	9% at every visit 48% at least once during treatment course 40% only if dental caries were discovered 3% never
Method of nutritional information delivery **	91% oral discussion regarding nutrition 56% patient handouts regarding types of food to avoid 32% patient handouts regarding types of food to encourage 3% nutrition/dietary services referral
Comfort level of practitioner with offering nutritional advice	44% Very comfortable 44% Somewhat comfortable 11% Somewhat uncomfortable 1% Very uncomfortable
Preparedness level of practitioner regarding offering nutritional advice	31% Very prepared 54% Somewhat prepared 13% Somewhat unprepared 2% Very unprepared
Effectiveness of nutritional advice*	35% 50% or more 32% 20-50% 26% Less than 20% 7% None
Barrier to offering nutritional advice**	48% Lack of time 10% Language or cultural barriers 10% No compensation 16% No resources 18% Do not feel comfortable

\*Reported as proportion of patients who would modify their dietary intake based on delivered information/advice.

\*\*Subjects were able to select more than one answer.

93% never) or pediatricians (2% always, 16% sometimes, 82% never).

Respondents who believed that obesity had a serious negative impact on dental health were more likely to

collect weight data (by report, p=0.03; and by actual measurement, p=0.01) and assess for obesity (via both subjective and objective methods, p=0.01) than those who did not. Similarly,

orthodontists who considered obesity to have a serious negative effect on oral health reported increased frequency of nutrition counseling (of parents,  $p=0.03$  and of children,  $p=0.03$ ) compared to clinicians who felt otherwise. No differences in weight screening or nutrition counseling practices were found according to professional experience or patient population characteristics.

### Discussion

The authors report results of a survey assessing current practices of overweight screening and nutrition counseling at the offices of 111 orthodontists.

Overweight negatively impacts a child's medical (4) and dental health (5,6). Surveyed orthodontists were aware of the impact of overweight on health. The majority of respondents acknowledged the negative impact of overweight on a child's medical and dental health, although the impact of overweight on dental health was not believed to be as severe as that on medical health.

Monitoring of children's weight and screening for overweight are intervention priorities identified by the American Academy of Pediatrics (AAP) (4) and the AAPD (2). Our surveyed orthodontists did not routinely gather weight information or assess for weight status in their pediatric patients. Furthermore, when weight status was assessed, subjective methods were used. Screening practices for childhood overweight thus appear to be suboptimal in orthodontist offices.

Promotion of a balanced diet rich in fruits and vegetables and low in fat to treat and prevent overweight is recommended by the USDA and American Dental Association (ADA) (7,8). Our data reveal that the majority of surveyed orthodontists currently report participating in nutrition education efforts. Person-to-person contact is an effective modality for health promotion by clinicians (9,10), and our results indicate that orthodontists prefer this method of intervention. In addition, clinician confidence in regards to personal preparedness and ability to counsel patients and their families regarding nutrition issues

suggest that surveyed orthodontists will continue to promote healthy eating patterns in youth. Therefore, orthodontists may serve a promising role in overweight treatment and prevention via personalized nutrition and weight management counseling. Future research should address how best to ensure that orthodontists have sufficient expertise to carry out more substantive nutrition or weight control counseling in the context of usual orthodontic care. Alternatively, other supporting professionals, such as dental hygienists, in the orthodontic practice might be delegated to provide these services to at-risk patients. For those practitioners citing time as a limiting factor for participation in nutrition counseling, referral of at-risk for overweight and overweight patients to dietitians and pediatricians may be a more attractive overweight intervention to adopt. Our survey results highlight the need for improvement in referral practices among orthodontists.

The analyses of the authors demonstrate that orthodontists who felt that overweight had a severe or very severe negative impact on oral health were more likely to screen pediatric patients for overweight and discuss dietary issues with children and parents compared to orthodontists who reported that overweight had only a minor or no negative impact on dental health. Whether improving orthodontists' awareness of the relevance of overweight to their clinical practice will improve compliance with overweight intervention guidelines remains to be investigated.

The findings of this study are subject to a number of limitations. First, potential response bias must be considered in this study given the small sample size and reliance on a self-report measure. Second, we did not assess the content of nutritional advice delivered to patients. Thus, we were unable to assess whether orthodontists may have focused their counseling efforts on specific dietary behaviors associated with prevention of caries rather than the comprehensive USDA Dietary Guidelines for Americans (8) for general health and weight maintenance, as advocated by the

ADA (7). Lastly, this survey emphasized nutrition services, but did not include assessment of physical activity, reversal of sedentary lifestyles, and formal exercise promotion.

In conclusion, results of this survey of clinical nutrition screening and counseling practices by orthodontists demonstrate needed areas of improvement, particularly in regards to identification of at-risk youth. High rates of nutrition counseling by responding orthodontists suggest that orthodontists may play an important role in adolescent health promotion and prevention of childhood overweight. Further research is needed to identify appropriate and feasible interventions that can be delivered by orthodontists which may complement overweight intervention efforts by medical colleagues.

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### References

1. Ogden CL, Flegal KM, Carroll MD, Johnson CL. Prevalence and trends in overweight among US children and adolescents, 1999-2000. *JAMA* 2002; 288 (14):1728-32.
2. AAPD. American Academy of Pediatric Dentistry Research Agenda 2005.
3. Neeley WW, 2nd, Kluemper GT, Hays LR. Psychiatry in orthodontics. *Am J Orthod Dentofacial Orthop* 2006; 129 (2):176-93.
4. Krebs NF, Jacobson MS. Prevention of pediatric overweight and obesity. *Pediatrics* 2003; 112 (2):424-30.
5. Hilgers KK, Kinane DE, Scheetz JP. Association between childhood obesity and smooth-surface caries in posterior teeth: a preliminary study. *Pediatr Dent* 2006; 28 (1):23-8.
6. Hilgers KK, Akridge M, Scheetz JP, Kinane DE. Childhood obesity and dental development. *Pediatr Dent* 2006; 28 (1):18-22.
7. ADA. Diet and Oral Health 2006.
8. USDA, USDHHS. Dietary Guidelines for Americans 2005.
9. Keyserling TC, Ammerman AS, Davis CE, Mok MC, Garrett J, Simpson R, Jr. A randomized controlled trial of a physician-directed treatment program for low-income patients with high blood cholesterol: the Southeast Cholesterol Project. *Arch Fam Med* 1997; 6 (2):135-45.
10. Kreuter MW, Chheda SG, Bull FC. How does physician advice influence patient behavior? Evidence for a priming effect. *Arch Fam Med* 2000; 9 (5):426-33.

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