

## ORIGINAL ARTICLE

# What do parents want for their children who are overweight when visiting the paediatrician?

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## Summary

### Objective

The objective of this study was to determine whether parental preferences regarding primary care weight-management strategies differ by child age, gender, overweight severity, race/ethnicity or parental agreement that their child is overweight.

### Methods

A survey was administered to parents of 2- to 18-year-old children who are overweight at an academic primary-care clinic regarding perception of child overweight, helpful/harmfulness of having the child present during weight discussions, and dietary-advice preferences. Multivariable analyses examined factors associated with preferred weight-management strategies, after adjustment for parent/child characteristics.

### Results

Eighty-three per cent of parents agreed that a child's presence during weight discussions is helpful/very helpful, 74% that paediatricians should prescribe specific diets, and 55% preferred specific vs. general dietary advice only ( $N=219$ ). In multivariable analyses, characteristics associated with helpfulness of child presence included older child age (vs. 2–5 year olds, 6–11 year olds: odds ratio [OR], 4.6; 95% CI, 1.3–16; 12- to 18-year-olds: OR, 23; 95% CI, 4–136), male gender (OR, 5.0; 95% CI, 1.7–10) and obesity (vs. overweight: OR, 2.8; 95% CI, 1.7–12). Characteristics associated with preferring specific diets included Latino race/ethnicity (OR, 5.3; 95% CI, 3–12), older age (vs. 2–5 year olds, 6–11 year olds: OR, 2.8; 95% CI, 1.1–7; 12–18 year olds: OR, 3.7; 95% CI, 1.5–10) and agreement that the child is overweight (OR, 2.3; 95% CI, 1.1–5) and, for specific dietary advice, older age (vs. 2–5 year olds: OR, 2.3; 95% CI, 1.1–5) and agreement that the child is overweight (OR, 2.1; 95% CI, 1.2–4).

### Conclusions

Findings suggest that weight-management strategies tailored to child age, gender, overweight severity, race/ethnicity and parental agreement that their child is overweight may prove useful in improving child weight status.

**Keywords:** Childhood obesity, paediatric primary care, parental preferences, weight-management strategies.

## Introduction

Effective weight-management strategies are needed to address the significant public-health problem of childhood overweight (including obesity) (1). Despite the tripling in prevalence of childhood obesity since 1980, how best to treat a child who is overweight remains

unclear. Because overweight is a major risk factor for diabetes, hypertension and psychosocial issues, identifying effective primary care weight-management strategies for children who are overweight is a national priority (2,3).

Primary-care visits for school-age children are important opportunities to address weight management. Ninety-seven per cent of school-age children are seen

regularly for well-child visits, and parents consider paediatricians to be important advisors on their child's weight status (4–6). Although primary care weight-management guidelines exist, they are based on expert consensus and lack parental input (3,7). Parental input is needed, however, because interventions that include parents and incorporate preferences of the target population have been shown to be more effective than those that do not (8). Thus, identifying parental preferences regarding weight-management strategies may promote parental acceptance of and adherence to primary care weight-management interventions.

In prior studies of parental perspectives regarding primary-care weight management, parents differed in their preferences for specific weight-management strategies, including child presence during weight discussions and whether paediatricians should prescribe specific vs. general dietary advice (6,9,10). Characteristics of study participants also differed, including child age, weight status and race/ethnicity. Data from a survey of parents of Caucasian children who were predominately normal weight indicated that two-thirds of parents prefer that their child be present during weight discussions (9); however, data from a focus-group study of parents of Latino and African-American children with overweight and obesity suggest that some parents prefer that paediatricians speak directly with their child about weight status, and others prefer that paediatricians talk with the parent alone (10). In a focus-group study, parents reported that they prefer guidance on healthy dietary practices rather than specific diets, whereas a separate study reported that parents prefer specific, tailored nutrition information from paediatricians, such as detailed menus (6,10). Although both studies surveyed parents of school-age children, in the first study, most parents had Latino children who were overweight, and in the second study, Caucasian children who were predominately normal weight. Thus, differences in parental preferences regarding primary care weight-management strategies may be related to characteristics such as child age, weight status and race/ethnicity.

Parental recognition that their child is overweight also may impact preferences regarding weight-management strategies. Half of parents of children who are overweight underestimate their child's weight, and children of parents who misclassify their child's weight status have more than six times the likelihood of overweight (11,12). Understanding weight-management strategies preferred by parents who agree vs. disagree that their child is overweight may aid paediatricians in selecting parent-preferred weight-management approaches tailored to parental recognition that their child is overweight.

The study objectives, therefore, were to examine parental preferences regarding primary care weight-management strategies and to determine if preferences differ by child age, gender, overweight severity, race/ethnicity or parental agreement that their child is overweight.

## Materials and methods

In this cross-sectional survey study, a consecutive sample of parents was recruited from an academic primary-care resident clinic in Dallas, TX, which serves predominately Latino and African-American children. Study eligibility criteria were child age between 2 and 18 years old, child overweight (defined on the day of enrolment as having a directly measured body mass index [BMI] of  $\geq 85$ th percentile for age and gender) and parental English or Spanish proficiency. Electronic medical records from all patients scheduled for clinic between June and September 2013 were reviewed, 244 eligible participants were identified and screened in clinic and 221 were enrolled in the study. Of the 23 eligible parents that were screened but not enrolled, the most common reasons cited for not enrolling were time limitations and lack of interest. Parents who enrolled in the study, compared with those who did not enrol, were more likely to have Latino children and children ages 2–5 and 12–18 years old. Data from two surveys were censored from the analysis because one child was gastrostomy-tube dependent and one survey was not completed. Two of the parents participating in the study attended clinic on separate days with different children and were surveyed independently regarding each child. Overall, 219 surveys were collected from 217 parents; with this sample size, it was estimated that analyses could detect a 25–30% difference in responses with 80% power.

English and Spanish surveys were verbally administered by trained, bilingual study staff to avoid problems with literacy. Written informed consent was obtained from parents in their preferred language, and a \$10 gift card was provided upon survey completion. The study protocol was approved by the UT Southwestern Medical Center Institutional Review Board.

Child weight and height were measured in the clinic by trained clinical staff using standard clinical protocols and calibrated instruments. BMI was calculated as weight in kilograms divided by height in metres squared. BMI percentiles were determined using age-specific and gender-specific Center for Disease Control growth charts (13). BMI-percentile categories were defined using Expert Committee-recommended cut points, including overweight, obesity and severe obesity, defined, respectively, as  $\geq 85$ th to  $< 95$ th,  $\geq 95$ th to  $< 99$ th and  $\geq 99$ th BMI percentiles for age and gender (3). Parental obesity was

defined as a BMI of  $\geq 30 \text{ kg m}^{-2}$ , using self-reported parental weight and height (14).

## Survey

A 32-question survey was used to assess sociodemographic characteristics and parental preferences regarding primary care weight-management strategies. Sociodemographic information included the child's age, gender and parental-reported race/ethnicity; the primary caregiver's (hereafter referred to as 'parent') relationship to the child, age, weight, height (by self-report); agreement that their child is overweight (assessed using a 5-point Likert scale ranging from strongly agree to strongly disagree) (Appendix 1); educational attainment; and annual household income. Questions regarding primary care weight-management strategies included helpful/harmfulness of child presence during weight discussions (assessed using a 5-point Likert scale ranging from very helpful to very harmful), preference for prescription of a specific diet for their child (yes/no) and the dietary approach that parents would find most helpful (a specific diet, more general healthy eating habits, both or neither) (Appendix 1).

To assess helpfulness of child presence, responses were categorized as very helpful/helpful, neither helpful nor harmful or very harmful/harmful. To assess parental preferences for a specific diet vs. general dietary advice only, responses to the dietary approach that parents would find most helpful were trichotomized as (i) a specific diet or both a specific diet and general healthy eating habits, combined to determine whether parents want paediatricians to prescribe a specific diet; (ii) general healthy eating habits only or (iii) neither specific nor general dietary advice. Other survey items, including free-text responses that were analysed qualitatively, will be reported separately.

## Analysis

Descriptive statistics were used to summarize sample characteristics. Bivariate and multivariable analyses were used to examine associations of parent and child characteristics with helpful/harmfulness of child presence during weight discussions, agreement that paediatricians should prescribe a specific diet to children who are overweight and dietary approach that the parent would find most helpful. Bivariate analyses were performed using Pearson's or Fisher's  $\chi^2$  statistic, where appropriate, to compare parental preferences by certain characteristics to identify factors associated with specific preferences. A  $P < 0.05$  was considered to be statistically significant. In the multivariable models, independent variables included child age, gender, BMI-percentile category, race/ethnicity,

parental agreement that their child is overweight, parental obesity and educational-attainment level (household income and educational-attainment level were collinear, and results were unchanged when one variable was substituted with the other; therefore, although household income was included in the bivariate analyses, only educational-attainment level was included in the multivariable models). All independent variables were forced into the models, and backward stepwise logistic regression was used to select variables using an alpha-to-stay of  $< 0.15$ . Statistical analyses were conducted using SAS version 9.2 (SAS Institute, Cary, NC, USA).

## Results

For children ( $N = 219$ ), 42% were 2–5 years old, 30% 6–11 years old and 28% 12–18 years old; 43% were female, 42% were obese, compared with 36% overweight and 22% severely obese, and 60% were Latino (Table 1). For parents

**Table 1** Participant characteristics ( $N = 219$ )\*

Characteristic	<i>N</i> (%), mean (SD) or median (IPR95) <sup>†</sup>
Child age, in years	
2–5	93 (42%)
6–11	65 (30%)
12–18	62 (28%)
Child gender, female	94 (43%)
Child BMI-percentile category	
Overweight	79 (36%)
Obesity	92 (42%)
Severe obesity	48 (22%)
Child race/ethnicity	
Latino	131 (60%)
African-American	75 (34%)
Non-Latino white	2 (1%)
Multiracial or other	11 (5%)
Mean parental age, in years (SD)	34 (9.1)
Parental obesity (BMI $\geq 30 \text{ kg m}^{-2}$ )	100 (46%)
Agreement that child is overweight	
Strongly agree/agree	150 (68%)
Neither agree nor disagree	35 (16%)
Strongly disagree/disagree	34 (16%)
Parental educational attainment	
Not a high-school graduate	42 (19%)
High-school graduate/General Equivalency Diploma	74 (34%)
Technical school/some college	74 (34%)
College/professional degree	27 (12%)
Median annual household income (IPR95)	\$24,000 (23,740–31,880)

\*Sample size for parents was  $n = 217$  (two pairs of siblings were enrolled separately in the study).

<sup>†</sup>Interpercentile range.

BMI, body mass index; SD, standard deviation.

( $n=217$ ), the mean age was 34 years old, 46% was obese, 68% strongly agreed/agreed that their child is overweight, only 12% had a college or professional degree, and the median annual household income was 24,000 year<sup>-1</sup> (Table 1).

### Bivariate analyses

Eighty-three per cent of parents stated that child presence during weight discussions would be very helpful or helpful and was associated with older child age and child BMI-percentile category (Table 2). The majority (74%) of parents stated that paediatricians should prescribe a specific diet for children who are overweight, especially parents with children of Latino race/ethnicity and those who agree that their child is overweight (Table 3). Ninety-eight per cent of parents stated that paediatricians should provide dietary advice (Appendix 2), including 55% who

**Table 2** Bivariate analysis of the association of child/parent characteristics with helpfulness of child presence during weight discussions ( $n = 217$ )\*

Characteristic	Neither			<i>P</i>
	Very Helpful /helpful (%)	helpful nor harmful (%)	Very harmful /harmful (%)	
Overall	83	11	6	—
Child age, in years				<0.001
2–5	68	25	7	
6–11	89	6	5	
12–18	92	3	5	
Child BMI-percentile category				0.02
Overweight	76	17	8	
Obesity	92	4	3	
Severe obesity	77	17	6	
Child gender				0.2
Female	79	16	5	
Male	86	8	6	
Child race/ethnicity				0.7
African–American	81	14	5	
Latino	85	10	4	
Agreement that child is overweight				0.7
Strongly agree/agree	84	11	5	
Neither agree nor disagree	86	9	6	
Strongly disagree/disagree	76	18	6	

\* $n$  differs from that of the total sample ( $N$ ) because of two parents not providing responses to the question regarding helpfulness of child presence.

BMI, body mass index.

**Table 3** Bivariate analysis of the association of parent/child characteristics with parental preference for paediatricians prescribing a specific diet ( $N = 219$ )

Characteristic	Parental preference for paediatrician prescribing specific diet		<i>P</i>
	Yes (%)	No (%)	
Overall	74	26	—
Child race/ethnicity			<0.001
African–American	57	43	
Latino	83	17	
Agreement that child is overweight			0.02
Strongly agree/agree	79	21	
Neither agree nor disagree	69	31	
Strongly disagree/disagree	59	41	
Child age, in years			0.1
2–5	67	34	
6–11	74	26	
12–18	82	18	
Child gender			0.2
Female	79	21	
Male	70	30	
Child BMI-percentile category			0.8
Overweight	72	28	
Obesity	74	26	
Severe obesity	77	23	

BMI, body mass index.

prefer a specific diet or both a specific diet and general healthy eating habits, and 43% who prefer general healthy eating habits alone.

### Multivariable analysis

After adjustment, factors associated with helpfulness of child presence during weight discussions included older child age, male gender and obesity (Table 4). Characteristics associated with parents preferring a specific diet (Table 5) included Latino race/ethnicity, older child age and parental agreement that their child is overweight. Parental weight status and educational attainment were not significantly associated with preferences regarding weight-management strategies.

### Discussion

This study found that perceived helpfulness of child presence during weight discussions differs by child age, gender and overweight severity. The findings indicate that parents of older children and boys view child presence

**Table 4** Multivariable analysis of factors associated with helpfulness of child presence during weight discussions ( $N = 219$ )

Characteristic	Adjusted odds ratio (95% CI) for helpfulness of child presence
Child age, in years	
2–5	Referent
6–11	4.6 (1.3, 15.5)
12–18	23.0 (3.9, 136.3)
Male gender*	5.0 (1.7, 10.0)
Child BMI-percentile category	
Overweight	Referent
Obesity	2.8 (1.7, 11.6)
Severe obesity	0.3 (0.1, 1.2)
Latino race/ethnicity <sup>†</sup>	1.4 (0.5, 5.0)
Parent strongly agrees/agrees child is overweight <sup>‡</sup>	2.3 (0.7, 7.2)

\*Compared with female gender.

<sup>†</sup>Compared with African–American race/ethnicity.

<sup>‡</sup>Compared with strongly disagrees/disagrees/neither agrees nor disagrees child is overweight.

BMI, body mass index; CI, confidence interval.

**Table 5** Multivariable analysis of factors associated with parental preferences regarding dietary advice ( $N = 219$ )

Characteristic	Adjusted odds ratio (95% CI) for preferring specific diet (Y/N)	Adjusted odds ratio (95% CI) for preferring specific vs. general dietary advice
Latino race/ethnicity*	5.3 (2.6, 11.5)	— <sup>†</sup>
Child age, in years		
2–5	Referent	Referent
6–11	2.8 (1.1, 7.4)	1.9 (0.9, 4.0)
12–18	3.7 (1.5, 10.2)	2.3 (1.1, 5.0)
Parent strongly agrees/agrees child is overweight <sup>‡</sup>	2.3 (1.1, 5.0)	2.1 (1.2, 3.9)
Child BMI-percentile category		— <sup>†</sup>
Overweight	Referent	
Obesity	0.9 (0.3, 2.6)	
Severe obesity	2.0 (0.8, 5.5)	

\*Compared with African–American race/ethnicity.

<sup>†</sup>Characteristic not retained in model ( $\alpha$ -to-stay > 0.15).

<sup>‡</sup>Compared with strongly disagrees/disagrees/neither agrees nor disagrees child is overweight.

BMI, body mass index; CI, confidence interval.

as particularly helpful, whereas parents of younger children and girls are more likely to view their child's presence as neither helpful nor harmful. Although reasons for these interesting findings could not be determined in this study, they warrant further exploration. Parents of older children may want paediatricians to speak directly

to their child because older children may have more autonomy in choosing their diet and physical activities, be less responsive to parental input regarding lifestyle changes or be more open to suggestions regarding improving their weight status, because of greater awareness of physical appearance (15). Although one might view the greater percentage of parents of boys vs. girls that view child presence as helpful as evidence that parents are more concerned that these discussions might stigmatize girls (16), there were similar proportions (5–6%) of parents of both genders that reported that child presence may be very harmful/harmful. Although paediatricians can have meaningful conversations with both boys and girls about these topics, parents of male children may be more likely to want paediatricians to speak directly to their child because data suggest that, compared with girls, boys are more likely to have poor food habits, such as increased frequency of fast food consumption and decreased frequency of fruit and vegetable intake, and, therefore, discussions with the paediatrician may be particularly helpful for boys (17).

One surprising study finding regarding helpfulness of child presence during weight discussions is that although parents of children with obesity are more likely to view child presence as particularly helpful, 6–8% of parents of children with overweight and severe obesity view their child's presence as harmful. These findings are particularly noteworthy because, to our knowledge, the only other research on caregiver preferences regarding child presence during weight discussions surveyed parents of whom only 12% had children who were overweight (9). Although this study could not determine the reasons why parents of children with obesity, but not severe obesity, might view child presence more favourably, parents of children with severe obesity may be concerned that their child would be particularly sensitive to weight discussions. Studies document a direct association between severity of obesity and lower total, physical and psychosocial health-related quality of life, and children with severe obesity are more likely to report symptoms of depression, anger and fatigue (18,19). Thus, paediatricians may want to ask all parents' permission to discuss weight management in the presence of their child and particularly when counselling parents of children who are younger, are female and have overweight or severe obesity; however, when asking permission, they might also note that child participation ultimately is needed to implement behavioural changes.

The results indicate that most parents want paediatricians to prescribe a specific diet to children who are overweight and prefer to receive a specific diet, rather than general healthy eating habits only, particularly parents of Latino, older children and those who agree that their child



is overweight. These findings complement those from other studies reporting that parents want paediatricians to provide specific dietary recommendations (6,20). The findings also clarify conflicting data from a focus-group study, in which parents both reported that they prefer general dietary guidance to specific diets, and also identified ways to make diets understandable to children and acceptable to parents (10). For Latino families who want a specific diet, paediatricians might offer information regarding improving the healthfulness of traditional meals, portions and examples of healthy options that are consistent with traditional Latino cuisine (21). Parents of older children, who were more likely to prefer specific dietary advice, may be signalling that their more autonomous older children need more structured guidance to make healthy food choices. Parents who agree that their child is overweight may welcome specific dietary advice from paediatricians because they are ready to make dietary changes; however, many parents who disagreed that their child is overweight nevertheless reported that a specific diet could be helpful. Given that parents often have not been educated on what is the most appropriate diet for them or their children, these study findings suggest that paediatricians might offer parents healthy options for both a specific diet and more general healthy dietary guidance and allow parents to select the best option for their family.

Certain study limitations should be noted. Parents' survey responses may have been altered or influenced by what they perceived to be the desired response (22). To reduce this possibility, questions were centred on responses such as 'neither agree nor disagree,' and research assistants were trained to ask questions in a neutral, unbiased manner. The child's presence during survey administration also could have impacted parental responses; for example, parents may have been less likely to agree with the assessment that their child was overweight if they feared hurting their child's feelings. Previous dietary recommendations given by paediatricians to parents might have impacted parental responses; however, the study did not assess prior recommendations. In addition, survey questions explored parental preferences regarding behavioural changes without addressing methods to implement them, for example, by setting specific goals or self-monitoring goals using electronic diet-and-activity logs/trackers that can be shared with providers. The study sample was recruited from an academic primary-care clinic that included few parents of non-Latino white children and had low mean parental educational attainment; therefore, the findings may not apply to other settings or demographics. In addition, given time pressures during office visits, some paediatricians may find it burdensome to incorporate particular parental

preferences based on patient characteristics or may not feel adequately trained to provide specific dietary guidance to parents, nor is one specific diet recommended over another (3). Many children with obesity and severe obesity warrant referral to tertiary weight-management programmes; however, this analysis did not explore parental preferences regarding tertiary-care referrals.

Strengths of the study are the inclusion of parents of predominately low-income minority children, who have disproportionately high rates of overweight and obesity (23); inclusion of Latino parents, because Latinos are the most rapidly growing segment of the US population (24); and inclusion of parents with limited English proficiency, who are underrepresented in published paediatric research (25). Overweight and obesity are critically important health issues for Latino children, because more than one in three Latino children is overweight and one in five is obese (1). The study identified parental preferences regarding weight-management strategies. Incorporating these preferences into primary care weight-management interventions may improve their efficacy, because studies indicate that interventions that incorporate the preferences of the target population and include parents are more effective than those that do not (8).

The study findings suggest that parents have key specific preferences regarding weight-management strategies. Parents of children who are older, male and obese consider child presence during weight discussions as particularly helpful, and parents of children who are Latino or older and those who agree that their child is overweight view prescriptions for a specific diet as valuable. Tailoring weight-management strategies to child age, gender, overweight severity, race/ethnicity and parental agreement that their child is overweight may prove useful in improving child weight status.

## Conflict of interest statement

The authors have no conflicts of interest to disclose.

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C. U., G. F. and C. B. T. conceived of the study design. C. U., P. P. and C. B. T. acquired the study data. C. B. T. and H. L. analysed the study data. C. U. drafted the manuscript. P. P., H. L., G. F. and C. B. T. critically revised the manuscript for important intellectual content. C. U. and C. B. T. provided funding for the study analyses. All authors were involved in writing the paper and had final approval of the submitted version.

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**Appendix 1.** Survey questions included in analysis

1. Your child's weight for his/her height indicates that he/she is overweight. Please tell us whether YOU AGREE that your child is overweight right now:  
Strongly Agree      Agree      Neither agree nor disagree      Disagree      Strongly disagree
2. During discussions with your child's pediatrician about your child's weight-status, how helpful or harmful would it be for your child to be in the room during the discussion?  
Very helpful      Helpful      Neither helpful nor harmful      Harmful      Very harmful
3. Do you want your pediatrician to prescribe a specific diet for YOUR CHILD so that he/she can achieve a healthy weight?  
<sub>1</sub> Yes  
<sub>2</sub> No
4. To help your child achieve a healthy weight, which dietary approach would you find most helpful for your pediatrician to discuss with you:  
<sub>1</sub> A specific diet (for example, a low-fat or low-carbohydrate diet)  
<sub>2</sub> More general, healthy eating habits for your child (for example, reducing sugar- sweetened beverages or reducing the number of fast-food meals)  
<sub>3</sub> A specific diet AND more general, healthy eating habits  
<sub>4</sub> I do not want the pediatrician to provide dietary advice

**Appendix 2.** Bivariate analysis of the association of parent/child characteristics and parental preferences regarding dietary advice (N = 219)

Characteristic	(%)			P <sup>a</sup>
	Specific or both specific and general dietary advice	General dietary advice only	No dietary advice	
Overall	55	43	2	—
Agreement that child is overweight				0.02
Strongly agree/agree	61	38	1	
Neither agree nor disagree	46	51	3	
Strongly disagree/disagree	38	56	6	
Child age, in years				0.1
2–5	47	52	1	
6–11	55	44	1	
12–18	65	32	3	
Child race/ethnicity				0.2
African–American	51	45	4	
Latino	57	42	1	
Child BMI-percentile category				0.6
Overweight	51	47	2	
Obesity	55	45	1	
Severe obesity	63	35	2	
Child gender				0.9
Female	54	44	2	
Male	55	43	2	

<sup>a</sup>Fisher's exact test used due to small cell sample size.



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