What Factors Influence Uptake into Family-Based Obesity Treatment after Weight Screening?

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Objectives To determine what factors drive participation in a family-based weight management program for 4- to 8-year-old children following screening for overweight or obesity.

Study design Children (n = 1093) attended a comprehensive screening appointment where parents completed questionnaires on demographics, motivation for healthy lifestyles, feeding practices, and beliefs about child size, prior to feedback about the child's weight. Parents of overweight or obese children (body mass index ≥85th percentile) attended a follow-up interview to assess reactions to feedback and willingness to participate in a 2-year intervention.

Results A total of 271 (24.8%) children were overweight or obese with 197 (72.7%) agreeing to the intervention. Socioeconomic status differed in intervention participants (n = 197) compared with non-participants (n = 74), whereas no differences were observed in parental feeding practices, ineffective parenting practices, or self-determined forms of motivation. However, fewer non-participating parents believed their child to be overweight (23% vs 49%, $P < .001$) or were concerned about it (16% vs 43%, $P < .001$), despite children having an average body mass index approximating the 95th percentile. Non-participating parents did not expect their child to be overweight ($P = .002$) and rated receiving this information as less useful ($P = .008$) than participating parents.

Conclusion Preconceptions about child weight and reactions to feedback determined intervention uptake more than parenting or motivation for health. Many parents agreed to participate in the intervention despite not viewing their child as overweight. *(J Pediatr 2013;163:1657-62)*.

In New Zealand, almost 1 in 3 young children aged 2-4 years are overweight or obese.[1] This appears to conflict with widespread poor parental recognition of overweight in young children. The majority of parents simply do not see their child as being overweight, even when clinical measurements show that this is indeed the case.[2,3] Such poor recognition must reduce the likelihood of appropriate behavior change that could influence weight.[3] These parents are not likely to seek treatment for overweight or obesity or enroll in intervention opportunities should they arise.

The advent of weight screening initiatives in several countries[4,5] means that parents will learn about the weight status of their child, which will be unexpected news for many.[3] Although it is clear that discussing weight status is a sensitive issue for both parents and health professionals,[6] studies show that parents do want to know this information, as long as it is given in a non-judgmental manner.[7,8] Because ethical considerations dictate that participants must be informed of screening results and that effective treatment pathways are available,[9] it is crucial to determine how best to conduct the feedback process. We undertook a weight screening initiative in 4- to 8-year-old children to determine whether motivational interviewing for feedback was an appropriate way to inform parents that their young child was overweight, in comparison with usual care.[10] Prior to feedback of weight status, we collected extensive measures of parental motivation for healthy lifestyles in their child, parenting practices (ineffective parenting and feeding practices), and beliefs about child weight. We determined which demographic, lifestyle, and parenting factors assessed before knowledge of weight status (for many) might predict uptake into an intervention following a weight-screening initiative.

Methods

The Motivational Interviewing and Treatment study is a two-stage randomized controlled trial involving feedback of weight status after screening followed by a 2-year behavioral intervention. Ethical approval was obtained from the Lower South Regional Ethics Committee (LRS/09/09/039) and all parents gave informed consent.

The study has previously been described in detail.[10] In brief, all families with children aged 4-8.99 years enrolled at 9 participating primary care practices or attending secondary care clinics across 2 time periods (March 2009-March 2010 and January 2011-May 2011) were sent a personalized letter inviting

BMI	Body mass index
HCCQ	Health Care Climate Questionnaire

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them to participate. Exclusion criteria included cystic fibrosis, severe childhood arthritis, severe asthma, inflammatory bowel disease, congenital or chromosomal abnormalities, severe developmental delay, medication that may influence body composition, or not planning to remain in the region for the ensuing 2 years. Potential participants were able to leave a phone message saying they did not want to participate; no further contact was undertaken with this group. All remaining families were contacted by phone 1 week later to assess interest and eligibility. Once verbal consent was obtained, participants were randomized to feedback condition, motivational interviewing for feedback, or usual care, stratified by general practice.

After written informed consent was obtained, duplicate measures of the child's height (Leicester Height Measure [Invicta Plastics Ltd, Oadby, Leicester, United Kingdom]), weight (Tanita BC-418), and waist circumference (level of the umbilicus) were obtained with the children wearing light clothing and no shoes. Body mass index (BMI) was derived and z-scores calculated.[11] Body composition was assessed in all participants using bioelectrical impedance (Tanita BC-418) and in a random subsample (n = 268) by dual-energy X-ray absorptiometry. Parents completed an online questionnaire within the clinic appointment (100% completion rate), which included the following: (1) demographics (household structure, ethnicity of child, parental heights and weights), including information on the socioeconomic status of their place of residence using the New Zealand Index of Deprivation (ranges from 1 - least deprived to 10 - most deprived)[12]; (2) parental feeding practices were assessed using the Comprehensive Feeding Practices Questionnaire[13] and ineffective parenting practices using the Parenting Scale[14]; (3) parental motivation for healthy lifestyles in their children was measured using modified versions of the Treatment Self-Regulation Questionnaire (a 15-item questionnaire yielding several factors that indicate more [autonomous] and less [introjected] self-determined forms of motivation by asking parents to rate the extent to which these items play a role in making lifestyle changes for their family [7-point Likert scale is used, 1 = 'not at all true,' 7 = 'very true'])[15] and the Motivational Screening Measure (assesses parental intent to increase physical activity, improve the diet, and change the weight of the child through 3 questions: 'I am trying to…,' 'I could…' and 'It is important for me to…' on a scale from 0 to 10)[16]; and (4) parental concern about their child's weight was based on a 5-point Likert scale (1 = not at all concerned, 5 = very concerned), and parents were also asked to rate their child's current weight status using a 5-point scale (a little underweight, underweight, normal weight, a little overweight, overweight).

Parents of normal weight children (BMI <85th percentile) received feedback and had no further involvement in the study. Parents of overweight (BMI 85th to <95th percentile)[11] or obese children (BMI ≥95th percentile)[11] received feedback according to their randomized feedback condition, after all questionnaires and measures had been completed. For both situations, weight status was discussed in a neutral manner using a traffic light approach, which avoided the use of the terms overweight/obese.[17] Thus, the BMI chart for age and sex presented normal weight (BMI < 85th) as green, overweight (BMI 85th to <95th) as orange, and obese (BMI ≥95th) as red. In the motivational interviewing condition, interviewers used an Elicit-Provide-Elicit approach,[18] which allowed interviewers to explore parents' expectations and prior knowledge about their child's weight before providing the BMI results. It also allowed parents to discuss their reaction to the feedback and emphasized parents' autonomy and expertise with reference to their child and their family's lifestyle. Interviewers in this condition refrained from giving unsolicited advice to parents. Feedback sessions in both conditions were videotaped and transcribed in 270 participants; 1 participant did not consent to this.[17]

All parents of overweight or obese children were invited to complete an in-person follow-up interview approximately 1-2 weeks after the health check. Parents completed a shortened version of the online health check questionnaire and answered 10 questions, which assessed their response to feedback. Interview questions are shown in **Table I** (available at www.jpeds.com) and included 4 questions regarding their understanding of the BMI information and how useful they felt it was (Q1-4), 4 questions that asked about the way in which the information was delivered (Q5-8), and 2 questions that assessed whether they felt judged or blamed for their child's weight (Q9-10). All 10 questions were rated on a 7-point Likert scale and these data were analyzed quantitatively. Parents also completed the Health Care Climate Questionnaire (HCCQ), which assessed their perception of the degree to which their interviewer was

Table II. Multivariate regression predicting intervention uptake

	OR (95% CI)	P
Ethnicity		
Maori*	0.80 (0.31, 2.03)	.633
Pacific*	0.16 (0.06, 0.46)	.001
Maternal education		
Completed secondary school or some tertiary education (not university)†	1.44 (0.57, 3.62)	.442
University degree†	2.88 (1.12, 7.39)	.028
Other†	1.16 (0.25, 5.37)	.852
Parental rating of child's weight status before feedback	3.36 (1.49, 7.58)	.003
Parental concern about child's weight status before feedback	2.64 (0.74, 9.43)	.135
Self-determination theory[15]		
Autonomous motivation	1.09 (0.69, 1.73)	.699
Introjected motivation	0.93 (0.75, 1.14)	.473
Motivational screening measure[16]		
Trying to change child's weight	1.01 (0.82, 1.23)	.472
Parental feeling of being judged by the advisor	0.70 (0.56, 0.88)	.003
Parental agreement that it was useful to be given the information	1.40 (1.09, 1.80)	.009
Information about the child's weight was unexpected	1.02 (0.87, 1.21)	.767

*Reference group is New Zealand European and others.
†Reference group is some secondary school.