analysis that is specifically analyzing "dietary interventions only" or "physical activity interventions only."

An additional detail regarding studies classified as "combined lifestyle interventions" is noteworthy. The authors suggested a statistically non-significant trend for a larger treatment effect in interventions involving parental involvement in children 8 years of age or younger. This conclusion was based on only 2 studies in which the majority of participants were under age 8 years. Moreover, one of these studies examines a parent-only approach to weight management.[3]

Given some of our observations, it might be premature to draw firm conclusions about the magnitude of effect sizes of dietary or behavioral interventions and their variability across populations. The obvious risk would be to make pronouncements that bias future research agenda.

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References

1. August GP, Caprio S, Fennoy I, et al. Prevention and treatment of pediatric obesity: An endocrine society clinical practice guideline based on expert opinion. J Clin Endocrin Metab. 2008;93:4576-4599.
2. Sondike SB, Copperman N, Jacobson MS. Effects of a low-carbohydrate diet on weight loss and cardiovascular risk factor in overweight adolescents. J Pediatr. 2003;142:253-258.
3. Golan M, Crow S. Targeting parents exclusively in the treatment of childhood obesity: Long-term results. Obes Res. 2004;12:357-361.

Prevention of Pediatric Obesity: Meta-Analysis of Behavioral Interventions

The prevalence of overweight (ie, BMI >95th percentile for age) is currently 16% in children of all ages living in the US. The highest rate occurs among African-American youth. The Endocrine Society's Task Force on Pediatric Obesity commissioned a meta-analysis of published, randomized trials for interventions aimed at preventing pediatric obesity.[1] In contrast to previous summaries of the literature that focused on the endpoint of body weight, this study sought to summarize the efficacy of interventions aimed at changing lifestyle behaviors, including increased physical activity (PA), decreased sedentary activity (SA), increased healthy dietary habits (HD), and decreased unhealthy dietary habits (UD) to prevent pediatric obesity. In addition, the investigators sought to assess the effect of these interventions on BMI.

Studies eligible for inclusion in the meta-analysis were randomized controlled trials (RCTs) assessing these lifestyle behavior interventions in children or adolescents 2 to 18 years of age. Participants received the interventions at home, school, clinic, or a community setting and healthcare professionals, community members, or health authorities delivered the interventions. Trials with participants who were all overweight or obese were excluded.

Fully published randomized trials were identified through a systematic search of the following databases: MEDLINE, ERIC, EMBASE, CINHAL, PSYCInfo, DISSERTATION abstracts, Science Citation Index, Social Science Citation Index, and the Cochrane CENTRAL database of Controlled Clinical Trials. Publications through February 2006 were included. Reference sections of reviews and expert suggestions were incorporated; 29 trials were considered eligible for the meta-analysis analyzing at least one behavioral endpoint and 34 trials had complete data for BMI. Working in pairs, trained reviewers extracted study details related to the following intervention components: informational (ie, passive information, education), cognitive (ie, general cognitive strategies, goal setting, problem solving/relapse prevention), behavioral (ie, reminders and prompts for desired behaviors, skill building, practice and rehearsal, monitoring and feedback, and reinforcement of behavior), environmental (ie, physical changes made to change the environment of the school, home, and community), and parental support (ie, active involvement).

An effect size and 95% confidence interval (CI) for the difference between the intervention and control groups were calculated for each of the 4 behavioral targets (ie, increase physical activity, decrease sedentary activity, increase healthy behavior, and reduce unhealthy dietary behavior) and BMI. Standardized mean differences of about 0.2 or less were considered small, about 0.5 as moderate, and about 0.8 or greater as large effect sizes. The likelihood of between-study variability being attributable to true between-study differences (vs chance) was quantified using the I^2 statistic (inconsistency is considered small when I^2 is >25%, moderate 25%-50%, and large >50%). Several preplanned subgroup analyses of RCTs were performed.

Interventions to increase physical activity. Twenty-two randomized trials were included in the meta-analysis to assess the effects of interventions to increase physical activity. Results suggested a small increase in physical activity (effect size = 0.12; CI = 0.4 to 0.20) with moderate inconsistency across trials (I^2 = 63%) which could not be explained by subgroup analyses. There was a trend toward favoring the inclusion of multiple cognitive components (0.15; CI = 0.05 to 0.4; vs 1 or no cognitive components) and reinforcement (0.24; CI = 0.06 to 0.41; vs no reinforcement).

Interventions to decrease sedentary activity. Meta-analysis of 14 RCTs yielded a small reduction of sedentary activity (–0.29; CI = –0.35 to –0.22), with high consistency in results across studies (I^2 = 0%). Several significant treatment x subgroup interactions were detected: treatment effects were greater in trials measuring in-treatment outcomes (–0.32; CI = –0.39 to –0.25; vs outcome measured after treatment), treatment duration >6 months

(–0.31; CI = –0.39 to 0.24; vs briefer trials), and when trials involved children were enrolled (–0.31; CI = –0.39 to –0.24; vs adolescents). A trend also emerged toward favoring multiple cognitive components (–0.31; CI = –0.38 to –0.24; vs one or no cognitive components).

Interventions to increase healthy dietary behavior. Meta-analysis of 14 RCTs suggested, overall, a small and nonsignificant increase (0.06; CI = –0.09 to 0.21) with considerable heterogeneity (I^2 = 83%) in healthy dietary behavior. The trials showed great effect when reinforcement was included (0.41; CI = –0.05 to 0.76).

Interventions to reduce unhealthy dietary behavior. This category included 23 RCTs. Results indicated a small but significant reduction in unhealthy dietary behavior (–0.15; CI = –0.22 to –0.08), with greater treatment effects for trials with briefer training (–0.40; CI = –0.62 to –0.19). Thirty-four trials were examined for effects on BMI and the results were not significant (–0.02; CI = –0.06 to –0.02).

Interventions to reduce BMI. A meta-analysis of 34 RCTs of lifestyle interventions (involving 43 comparisons) on BMI failed to reveal a significant benefit (–0.02; CI = –0.06 to 0.02; I^2 = 17%). All modalities of intervention (dietary only, physical activity only, or combined lifestyle interventions) yielded similar trivial to small effects on BMI compared with controls.

Kamath CC, Vickers KS, Ehrlich A, et al. Behavioral interventions to prevent childhood obesity: A systematic review and metaanalyses of randomized trials. J Clin Endocrinol Metab.2008;93:4606-4615.

Editors' Comment: *The meta-analyses of interventions to prevent childhood obesity described above represent the first attempt to systematically quantify the benefits of cognitive, behavioral, informational, and environmental components of obesity prevention programs. While the authors acknowledged that analyses may be underpowered to detect interactions between the interventional components and the outcomes of interest; this report remains an important first step in the process of determining which intervention strategies are most effective for preventing childhood obesity. The authors discussed that previous attempts to summarize the prevention literature have been limited by the heterogeneity of the interventions and the measurement of obesity outcomes.*

Conceptually, this meta-analysis would have benefited from categorizing the prevention programs as primary (ie, all children in a given population), secondary (ie, only delivered to individuals with risk factors, such as a parent being overweight), or tertiary (ie, targeted to children who are already overweight). For the randomized trials selected for this study, categorization would be limited to primary or secondary prevention programs, as the exclusion criteria included programs with the majority of participants classified as overweight or obese. Categorizing programs in such a way would provide further information about the sample, leading us to better understand which intervention strategies may be most helpful for participants with particular characteristics and risk-profiles. It may also help us to determine if being at greater risk for obesity affects parent and child adherence to obesity prevention activities.

An additional factor to be considered when interpreting this study is the designation of intervention strategies as cognitive or behavioral. Goal-setting is considered by some to represent a behavioral strategy.[2] Generally, goal-setting is not a strategy that is used in isolation; rather, participants usually set a goal and then monitor the behavior targeted to determine how many days the goal was met. By designating goal-setting as cognitive, it may incorrectly overemphasize the importance of cognitive strategies and inadvertently diminish the impact of behavioral skills. Perhaps looking at specific strategies, rather than the classification of strategies (ie, cognitive or behavioral), may provide us with information that is easier to interpret and implement in future research studies.

We wholeheartedly agree with the authors that future publications of prevention and treatment research must detail the specifics of intervention programs. This should become a standard practice that scientific journals require.

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References

1. August GP, Caprio S, Fennoy I, et al. Prevention and treatment of pediatric obesity: An endocrine society clinical practice guideline based on expert opinion. J Clin Endocrinol Metab. 2008;93:4576-4599.
2. Myers VH, Martin PD. Behavioral counseling: Family-based behavioral counseling in clinical settings. In: Sothern MS, Gordon ST, von Almen TK. eds. Handbook of Pediatric Obesity: Clinical Management. Boca Raton, FL: Taylor & Francis Group;2006:147-170.

Brown Fat Controls – PRDM16 and Bone Morphogenetic Protein 7

Adipocytes are cells that store fats as triglycerides. White fat cells (WFC) store fats within one large, cell-filling lipid droplet. After readily available energy sources have been exhausted, the WFC hydrolyzes triglycerides and exports fatty acids to be utilized as fuel by other cells.[1] Brown fat cells (BFCs) store lipids in multiple small droplets, have a large number of mitochondria (that stain brown), and actively hydrolyze triglycerides to fatty acids which are then oxidized to produce heat. The BFC is able to oxidize fatty acids, because it expresses uncoupling protein 1 (*UCP1*, chromosome 4q31, OMIM 113730) that, in association with its co-factor (coenzyme Q),