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A Conceptual Framework for the Expansion of Behavioral Interventions for Youth Obesity: A Family-Based Mindful Eating Approach

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Abstract

Background: Currently, over 30% of US youth are overweight and 1 in 6 have metabolic syndrome, making youth obesity one of the major global health challenges of the 21st century. Few enduring treatment strategies have been identified in youth populations, and the majority of standard weight loss programs fail to adequately address the impact of psychological factors on eating behavior and the beneficial contribution of parental involvement in youth behavior change.

Methods: A critical need exists to expand treatment development efforts beyond traditional education and cognitive-behavioral programs and explore alternative treatment models for youth obesity. Meditation-based mindful eating programs represent a unique and novel scientific approach to the current youth obesity epidemic given that they address key psychological variables affecting weight.

Results: The recent expansion of mindfulness programs to include family relationships shows the immense potential for broadening the customarily individual focus of this intervention to include contextual factors thought to influence youth health outcomes.

Conclusions: This article provides an overview of how both mindful eating and family systems theory fits within a conceptual framework in order to guide development of a comprehensive family-based mindful eating program for overweight youth.

Introduction

The prevalence of obesity (BMI ≥95th percentile) among youths in the United States ages 12–19 years increased 83% from 1999 to 2012 (from 11.2% to 20.5%).[1,2] According to the latest National Health and Nutrition Examination Survey (2011–2012), the percentage of overweight (BMI ≥85th percentile) adolescents is even higher at 34.5%.[1] Though some data suggest that increases in obesity rates have leveled off in 2011–2012, young adults still experience some of the highest levels of obesity in the nation.[3] Further, recent investigations have shown that obese teens may not be spared from early health complications.[4] At present, diabetes is the third-most prevalent chronic disease of childhood in the United States, and the proportion of those with diabetes or ''prediabetes'' increased from 9% in 1999 to 23% in 2008.[5] Obesity during adolescence is the single best predictor of adult obesity and ensuing health complications, including Type 2 diabetes mellitus, heart disease, and premature death.[6–8] Thus, adolescence is a critical period for obesity treatment and prevention.[9]

Efficacy of Traditional Weight Loss Interventions

Until recently, the obesity treatment literature has focused significantly more attention on children and adults then on adolescents as fewer randomized, controlled trials of weight loss interventions have been conducted with youth ages 13–18.[4] Reviews have summarized the results of different aspects of youth obesity treatment, including nutrition education, exercise, dietary interventions, behavioral therapy, and medication trials,[10–12] though the majority of interventions produce only modest effects.[13,14] Currently, there is limited evidence for clinically effective, *long-term* weight management interventions that are sustainable in community settings,[4,13] and the examination of mind-body therapies in youth weight loss research is practically nonexistent.[15,16] Thus, a critical need exists to expand treatment development

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efforts beyond traditional education and behavioral programs and explore alternative treatment models for youth obesity.

The Influence of Psychosocial Factors on Eating Behaviors

One area of research that has received little attention in treatment development efforts is the influence of psychological factors. Psychosocial factors are found to play a prominent role in obesity and eating behavior and in the development and maintenance of metabolic syndrome.[15,17,18] Indeed, the widespread prevalence of psychological distress in obesity populations is thought to be a key factor in the inability to maintain behavior change over time.[19] Three primary psychosocial factors stand out as being highly correlated with eating behaviors in youth, including psychological distress, body dissatisfaction, and physiological distress.[9,17,20–22] For example, overweight youth report engaging in significantly more emotional binge eating behaviors and experiencing lower self-esteem, and higher levels of emotional distress, than their non-overweight peers.[23–26] In regard to depression, the considerable literature on this topic connects symptoms of depression and being overweight[27–29] in a bidirectional manner. Specifically, not only can the experience of being overweight increase depressive symptoms,[29] but studies also show a predictive relationship between depressive symptoms and later development of obesity.[30,31]

Research suggests that social stigmatization regarding weight may mediate the relationship between obesity and psychosocial functioning through its association with increased depression and body dissatisfaction.[32–36] Body dissatisfaction has been implicated as another key psychosocial outcome given that it puts youth at high risk for engaging in disordered eating behaviors, including use of unhealthy weight control practices,[37–40] dietary restraint,[9,41] and binge eating.[42–44] In addition, and of particular relevance to obesity prevention efforts, is that recent findings from the seminal study, Project EAT, suggests that body dissatisfaction actually predicts increased weight gain over time.[45,46] Thus, researchers have contended that not only does body dissatisfaction make it difficult to engage in self-care behaviors, but also that its effect on disordered eating behaviors contributes to the maintenance of obesity long term.[9]

Chronic psychosocial stressors, including household (*e.g.*, family relationship strain), environmental (*e.g.*, neighborhood safety), and peer and school (*e.g.*, bullying) have also been linked to obesity risk.[20] Though the stress and obesity connection in youth is complex,[47] two primary pathways of influence have been hypothesized. The first is through chronically elevated glucocorticoid levels resulting from hypothalamic-pituitary-adrenal axis activation.[17,48] Elevated glucocorticoids stimulate appetite while conserving energy expenditure, thereby leading to weight gain. Glucocorticoids also enhance the preference for calorically dense ''comfort foods.''[48] Also hypothesized is that psychosocial stressors can influence obesity risk through use of maladaptive coping behaviors, such as lack of exercise and overeating.[20,49] Thus, the need for obesity treatment programs that teach youth how to build resources to cope effectively with stressors is being increasingly acknowledged.[17,18]

Expanding Treatment Models for Youth Obesity

Overall, there appears to be a consistent association between reduced psychosocial functioning, disordered eating behaviors, and maladaptive coping strategies in overweight youth.[9,22,46] However, traditional weight loss interventions may not adequately address these important risk factors.[16,37,50] Traditional behavioral weight loss interventions focus primarily on increasing physical activity, reducing caloric intake, and teaching cognitive and behavioral control strategies, such as, but not limited to, cognitive restructuring for negative thoughts, and behavioral monitoring.[51,52] Though they have shown promise in decreasing the incidence of obesity and its comorbidities,[53,54] benefits have been extremely limited in youth, as observed by modest effect sizes, high rates of attrition, and low levels of compliance, with most participants quickly regaining weight.[4,55,56] It has been theorized that the long-term lack of success may be owing, in part, to an incomplete understanding of the critical psychosocial factors that lead to disordered eating behaviors among youth.[37,57] In addition, research findings are beginning to support the notion that dieting is not a sustainable strategy for weight loss or for promoting a healthy lifestyle.[58,59] Indeed, dieting is now coming into question owing to long-term ineffectiveness and unfavorable physio- and psychological effects.[60,61] Instead, an emphasis on reducing overeating tendencies is increasingly being recommended as an alternative to dieting.[62] Given that the literature continues to show a link between obesity and disordered eating,[63,64] the relevance of multiple psychosocial factors continues to grow. Austin (2011) states that it is indeed the field's inability to recognize and target the multidimensional psychological factors involved in eating behavior that is the current ''blind spot'' of pediatric obesity treatment efforts.[65]

The Role of Mindful Eating for Weight Loss

Mindfulness is a state of consciousness, defined in the literature as ''the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment to moment.''[66] It is thought that through continuous nonjudgmental attention to, and acceptance of, the moment-to-moment experience,[67] a heightened sense of self emerges, which can allow an individual to disengage from habitual reactions and patterns related to thoughts, emotions, and behaviors.[68,69]

Mindfulness-based programs are now being modified successfully for populations attempting to make dietary health changes,[16,72,73] and recent reviews conclude that these programs warrant further clinical and empirical attention[16,72] owing to their positive effects on psychological distress,[74] disordered eating,[75] and weight loss.[76,77] The focal point of these programs is the use of mindfulness, or increased awareness of mental and physical states, and the physical, cognitive, and emotional triggers to eat.[78] Of particular relevance to overweight youth, three key therapeutic factors are targeted and include: (1) experiential acceptance as a positive coping skill for controlling responses to psychological distress; (2) self-regulation through developed awareness of the emotional and physical cues to eat; and (3) compassion as a way to cultivate self-acceptance and body satisfaction.

An underlying tenet of mindfulness-based models is that many forms of disordered behavior (including maladaptive eating patterns) are related to attempts to avoid or escape aversive internal experiences.[75,79] Indeed, consistent findings across studies suggest a pattern of experiential avoidance in overweight individuals.[19] Characteristics that have been ascribed include psychological inflexibility and the use of maladaptive coping responses during stress.[19,80] With chronic exposure to stressors, they tend to use passive coping strategies, such as avoidance distraction or emotional-oriented styles of coping, and often binge eat in response to stress.[72,81] Increasing awareness of the connections between emotional states and impulsive eating patterns is an essential component of mindful eating[75,82] and is predicated on the assumption that healthy eating choices depend on one's ability to tolerate and accept aversive internal experiences (*i.e.*, to develop experiential acceptance).[83] Remaining in mental contact with uncomfortable experiences, without judging or reacting upon them, can foster emotional balance and assist in interrupting patterns of automatic reactivity as it relates to maladaptive eating choices.[83–85]

Further, overweight individuals often underestimate how much food they are eating and tend to eat in a dissociative manner.[86] Thus, mindful eating promotes intuitive eating, an eating style that relies on physiological hunger and satiety cues to guide eating, rather than externally driven emotional factors or dieting behaviors.[82,87] The emphasis on calorie reduction taught in traditional weight loss programs depends, to a large degree, on ignoring body signals related to hunger and satiety. Thus, a commonality between emotional eating and dieting is their association with ignored or suppressed responses to internal and external cues.[88,89] In contrast, mindful eating promotes a healthier approach by attempting to restore body/mind balance by reconnecting individuals with natural internal cues of hunger and satiety.[58] By strengthening the awareness of both the physical and emotional triggers to eat, individuals can develop a trust in their body's ability to know when and how much to eat while utilizing other self-care strategies to manage psychological distress.[90]

Finally, increased self-compassion is an additional mechanism by which mindfulness may have clinical benefit through its ability to foster present moment acceptance for body shape and size and promoting lower self-criticism.[91,92]

Whereas mindfulness-based interventions have typically been used in adult populations, the literature on their use in youth populations is gathering considerable momentum. Over the past few years, it is becoming more commonplace to see mindful programs implemented among youth in school-, community-, and clinic-based settings.[94] Along with their adult counterparts, the use of mindfulness with youth has proven successful with various conditions, such as anxiety,[95] attention deficit hyperactivity disorder,[96,97] blood pressure and heart rate,[98,99] chronic pain,[100] inflammatory bowel disease,[101] post-traumatic stress,[102] sleep quality,[103] and heterogeneous mental health disorders.[104]

Family Systems Theory in Youth Weight Loss

Over the past decade, there has been a shift in the mode of treatment services for youth obesity that prioritizes the development of interventions that target multiple factors. One of the driving forces in this shift is the recognition that the development of overweight and obesity involves interactions among multiple domains, including interpersonal, environmental/social, and physiological. Researchers increasingly recognize that improving obesity treatment outcomes necessitates moving beyond the lens of individual intrapersonal factors to incorporate the social, contextual, and environmental influences associated with health behaviors.[18] For example, youth eating behaviors are not developed in a vacuum, but are vastly influenced by family and culture. Thus, incorporating the family system into obesity interventions has been identified as an important strategy for sustained behavioral change.[105,106] Several home environment characteristics have been identified as correlates of obesity that have potential for significant family influence. Eating practices in the home, eating-related parenting styles, and family relationships hold the potential to either help or hinder obesity outcomes.[106–107] For example, not only is a youth's BMI most strongly predicted by parental BMI,[108] family environmental factors, such as levels of conflict and cohesion in family relationships, contribute an additional layer of risk factors for youth overweight/obesity.[109]

According to Kitzman-Ulrich and colleagues, Family Systems Theory (FST) provides a conceptual framework for how family factors influence youth health behaviors.[110] Specifically, key variables to consider when developing health behavior change programs include components to improve family functioning, such as promoting authoritative style parenting (providing a nurturing environment), enhancing parenting skills (monitoring, reinforcement, and role modeling), and teaching child management strategies to encourage positive behaviors in weight loss programs.[110]

Among the links studied, evidence over the last few years indicates that positive family relationships can serve as a protective influence against youth psychosocial difficulties that have been associated with overweight during adolescence.[18,106] In general, the family's social-emotional environment, including family connectedness, prioritizing of family meals, and a positive family mealtime environment, are positively associated with higher self-esteem and body satisfaction and inversely associated with unhealthy weight control behaviors among at-risk-for-overweight and overweight youth.[111] These findings provide further support for the consideration of additional contextual factors, such as improvement in family relationships, for inclusion into the next generation of treatment programs.[23]

Conceptual Model for a Family-Systems Based Mindful Eating Program

The recent expansion of mindfulness programs to include family relationships shows the immense potential for broadening the customarily individual focus of mindfulness interventions to include other factors thought to influence youth health outcomes. New models for family-based prevention programs that integrate mindfulness into existing evidence-based behavioral programs (*e.g.*, youth substance abuse prevention) have begun to show promising results given that they seek to extend the concepts and practices of mindfulness to parenting relationships.[112,113] With this newly emerging evidence, we contend that a family systems framework provides the most comprehensive perspective from which to teach mindful eating skills for adolescents.

The following is a description of how both mindfulness and family systems theory could fit within a conceptual framework for an integrated family-based mindful eating program for overweight youths.

Figure 1 provides a schematic conceptual model for how a family-systems based mindful eating program might be run. The inner rectangles reflect the goals and specific family participants at various phases of the program. The outer circle highlights the ongoing influence of the family throughout the program, regardless of which family members attend treatment.

Phase 1: Family Engagement and Assessment

The first phase of the program would ideally include all family members. This initial phase serves multiple purposes that include introducing the family to the concept of mindful eating, providing an engaging first experience of a mindful practice, identifying areas of potential resistance, enhancing motivation if necessary, highlighting the role of the family in both helpful and unhelpful eating behaviors, and encouraging active support from the entire family. The purpose of the assessment is to identify potential targets of change in family eating-related practices and behaviors, and to identify relationally oriented issues that may contribute to poorly regulated and mindless eating that could be addressed directly through the mindful eating intervention. Examples include family organization and

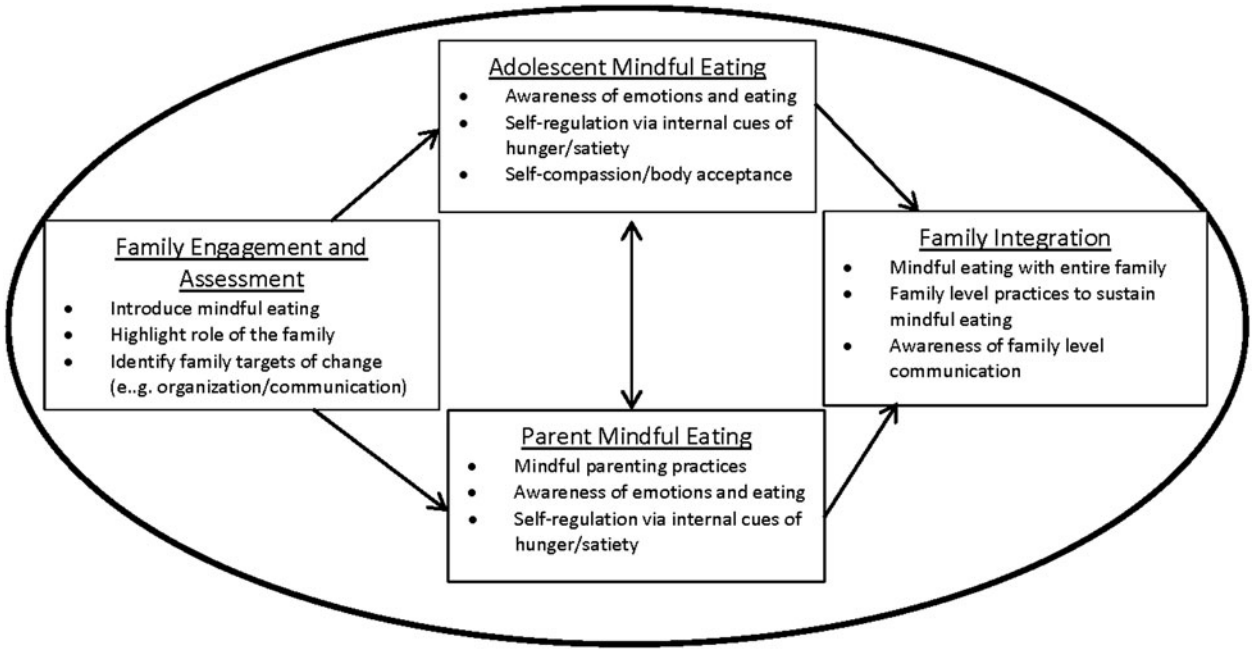

Figure 1. Conceptual model of a family systems-based mindful eating intervention. Oval represents the family system as environment. Bullet point represent examples of intervention content within each phase.

planning for meals, food acquisition habits, mealtime practices, family, or dyadic food-related communication and affective tone.

Phase 2: Parent and Adolescent Mindful Eating Groups

The middle rectangles in the model reflect a mindful-eating intervention run as two separate, but concurrent, groups with overlapping content and some combined group practice. The groups would have separate instructors and the material would be taught with experiential exercises related to mindful and mindless eating in addition to formal meditation practices that enhance body awareness, such as the body scan. Separating the groups allows for discussions that are developmentally appropriate for teens and parents. The adolescent group might emphasize more informal practices and games to teach mindful awareness and mindful eating principles than the parent group. The parent group could include additional discussions of mindful parenting practices to further support healthy eating-related behaviors in the family.

Phase 3: Family Integration

The final phase of the intervention would involve integration of the mindful eating principles within the entire family. This may involve, for example, formal practices of mindful eating with the entire family, problem solving family-related barriers to mindful eating, or identifying family-level practices that can help sustain mindful eating. Attention to positive changes in family-level communication around eating is another potential component. The overall goal would be to identify what is needed within the family system to sustain change in mindful eating habits over time.

Conclusions

The robust research findings linking psychosocial distress with disordered eating behaviors in overweight youth illustrate the need to expand treatment efforts beyond providing core diet and exercise education and begin to identify protective factors that can assist in developing healthy psychological functioning while promoting positive and adaptive eating styles.[114,115] Mindful eating programs represent a promising approach to youth obesity given that they have been shown to address key psychosocial variables associated with treatment outcomes and seek to provide a balanced, integrated approach to the prevention of weight-related problems in youth. The lack of long-term effectiveness regarding traditional weight loss interventions, coupled with the prioritization of multicomponent treatment programs, and the successful integration of mindfulness techniques with families point toward the potential of this novel, alternative model that could help augment and advance youth obesity treatment efforts. We believe that integration of these components will provide a richer picture of relevancy, broadening the content of what can be addressed within weight loss interventions. The growth of the literature on the use of mindfulness-based eating programs has gathered considerable momentum over the past decade and conveys the potential of this treatment in both prevention and intervention efforts. It is time to capitalize on this advancement and move this treatment modality outside the realm of the individual to a focus on systems. Investigators are beginning to work toward this end by integrating mindfulness within family-based programs.[113,116] We have introduced a conceptual model of a family systems-based mindful eating program in order to provide an initial framework to begin to generate discussion within the scientific and clinical community. However, much more research is needed in this area to help inform and propel further advances in the treatment of obesity and shed light on how mindfulness can be successfully integrated with broader social factors influencing youth health outcomes.

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