

Letters to the Editor

Authors' Response:

We thank the authors for taking the time to write because engagement is the first step to growth within our fields. Similar to the authors of the letter, we also have extensive experience as clinicians and scientists in both fields, and some of us have the lived experience of obesity and/or eating disorders. Still, although there is overlap, there are also areas where we interpret the data in different ways or use additional, but related, data to inform ways forward. We are grateful for this opportunity and wish to continue the professional and respectful exchange.

Intensive, multicomponent behavioral interventions (IBIs) focus on changing energy-balance behaviors to create a caloric deficit that occurs from changing dietary composition (eg, reducing ultra-processed foods and decreasing sugar-sweetened beverages), increasing physical activity, and decreasing sedentary behavior that has been shown to promote overeating.¹⁻⁵ In addition, the encouragement of meals at home improves nutrient quality and reduces the caloric density of foods.^{6,7} These healthful lifestyle changes result in moderate caloric deficits leading to modest, albeit clinically significant, weight losses.⁸ In addition, a focus on the establishment of healthful routines such as regular patterns of eating, sleep, stress management, and activity assist in making these changes sustainable over the long-term.^{1,6,9} Thus, we agree that a tenet of IBIs can include caloric restriction because this is often a component of weight management.¹⁰ However, there is a critical distinction between severe caloric restriction that results in perceived deprivation (which can thereby increase cravings and hunger) and the modest reduction in caloric intake that occurs in IBIs. Severe caloric restriction, often a part of self-directed dieting, is usually accompanied by elimination of whole food groups and deprivation.¹¹ Conversely, given that a primary goal of IBIs is to sustain changes in weight and healthy habits, dietary intake goals are designed to optimize flexibility and

livability and to prevent deprivation. These treatments focus on improving overall diet quality by increasing intake of nutrient-dense foods and moderating intake of high-energy-dense foods;¹⁰ no food groups are eliminated, and treatment providers work with patients to ensure that they consume a balanced dietary pattern (eg, using an “all foods fit” approach). As such, research has shown that IBIs are associated with a reduction in cravings and hunger, underscoring that obesity treatment does not necessarily require deprivation.¹² Moreover, there is nothing unusual about making dietary changes to help manage one's health. Similar dietary changes are suggested for patients managing blood pressure or cholesterol.¹³

We appreciate the point that weight loss maintenance following participation in supervised obesity treatment is challenging. Indeed, it is commonly cited as the most substantial problem with IBIs by the scientists who develop and study them.¹⁴ The meta-analysis referenced by the commenters was published in 2001 and reviews studies from the 1980s and 1990s.^{15,16} Since then, the field has changed considerably and has been modified in response toward consideration of a health-promotion paradigm.¹⁷ Nevertheless, the numbers are more promising than suggested. The meta-analysis from 2001 demonstrated at 5 years following treatment, participants had maintained, on average, a weight loss of 3.2% of their initial body weight.¹⁵ Weight losses of this magnitude are clinically meaningful because they are associated with beneficial improvements in risk factors for type 2 diabetes and cardiovascular disease, particularly for triglyceride levels and fasting plasma glucose concentrations.^{15,18} Studies examining IBIs that include continued treatment show better outcomes, such as the Action for Health in Diabetes (Look AHEAD) trial, which found that 50% of intervention participants maintained a weight loss of more than 5% at 8 years.¹⁹ It is important to note that the Look AHEAD trial was ended early when the intervention did not have an effect of the primary outcome of mortality from cardiovascular-related events.²⁰

However, the Look AHEAD IBI had very positive effects on changes in long-term measures of glycated hemoglobin, which is important given an increased glycated hemoglobin level is related to significant complications (eg, retinopathy) and reduced quality of life.²⁰⁻²² In addition, the IBI group was more likely to go into partial diabetes remission at Year 4.²³ Compared with the control over 10 years, the IBI group also had sleep apnea remission, fewer hospitalizations, fewer medications, and lower overall health care-related costs.^{24,25}

The issue of relapse or recurrence of disease is also not unique to IBIs; it is the norm, rather than the exception, in the treatment of many physical and mental health conditions. For instance, treatments for substance use show relapse rates of 40% to 60% and, at 9 years, 40% to 60% of individuals who attend eating disorder treatment are not recovered.^{26,27} However, these relapse rates do not preclude the use of these treatments. On the contrary, it would be considered unethical to not provide such a treatment just because some individuals experience relapse. Weight loss alone does not describe the full picture. Sustained changes in health-related behaviors such as increasing activity, improving diet quality or sleep, improving stress management skills, and/or improvements in health-related markers should also be considered when thinking about the effectiveness of an IBI.

Weight cycling is also not an inevitable outcome of weight regain. The Look AHEAD study, as described earlier, demonstrated that the majority of participants did not experience any weight cycling over 8 years following participation in an IBI; rather, rates of weight cycling in the intervention group were actually lower than those in the control group.²⁸ Moreover, the body of literature on weight cycling and health outcomes is also mixed, with some studies showing neutral or even beneficial effects of weight cycling on indicators of health.²⁹⁻³³ Cross-sectional data support that a relationship may exist between weight cycling and adverse psychological outcomes; however, there exists no causal

evidence to date that weight cycling increases internalized weight stigma.³⁴⁻³⁶ Thus, conclusions citing negative outcomes of weight cycling are premature.³⁷

Relatedly, the authors rightly highlight the harms caused by diet culture. An objective of our original article was to illustrate the differences between the destructive and pervasive messaging promoted by diet culture and the science behind IBIs, which differ significantly from self-directed dieting in terms of harms and its relationship with weight stigma and internalized weight bias. In addition, we acknowledge that weight is only one of many data points in assessing health risk and that simply looking at a person's weight or body mass index does not convey information about a patient's health, behaviors, or habits. Other physiological, psychological, and behavioral parameters are also important in consideration of overall health and well-being, such as use of the Edmonton Classification Systems, which assess physical, mental, and functional health in the characterization of weight severity.³⁸ Although the standard of care should move toward a more health-focused (rather than weight-focused) model of care, the dismissal of weight as a potential health indicator may not be beneficial, particularly for patients who seek weight loss due to physical health reasons.^{39,40} Controlled overfeeding studies have clearly demonstrated a causal link between weight gain and adverse physical health outcomes.⁴¹ Qualitative research has revealed there are many reasons an individual may choose to pursue weight management treatment, ranging from physical or physiological health to psychosocial health factors.^{42,43} For patients who do not seek weight loss, weight-inclusive care, which places an emphasis on viewing health and well-being as multifaceted while directing efforts toward health behaviors without any focus on weight, is an excellent option. However, weight-inclusive interventions currently have no long-term data and have not been tested among marginalized or minoritized racial and ethnic groups, those with severe obesity, or those with comorbidities. Future research is warranted, and funding is needed, to evaluate hard outcomes of weight-inclusive approaches.

The commentators state that focusing on weight loss as treatment increases the risk of weight stigma and

eating disorder development. However, the few studies that have included measures of weight stigma in IBIs have shown modest decreases (not increases) in perceived and internalized weight stigma.⁴⁴⁻⁴⁶ A recent randomized controlled trial tested the effects of adding an intervention to reduce internalized weight stigma to a group-based IBI, compared with IBI alone, in a sample of adults with obesity who reported personal experiences of weight bias and high levels of internalized weight stigma. Results showed significant improvements in internalized weight stigma in both conditions following approximately 6 months of treatment, and after an additional 6-month nonintervention follow-up.^{47,48} Treatment acceptability ratings were high across conditions, and qualitative responses described a supportive (not stigmatizing) treatment environment.^{47,48} More studies with long-term follow-up are needed to fully understand the relationship between weight management and internalized weight stigma. Still, these findings suggest that, for patients, weight loss and stigma reduction are not necessarily contradictory efforts and can indeed be complementary, especially when treatment is delivered in a compassionate and respectful manner. With a more balanced focus on the use of weight as only one (of many possible) indicators of overall health and a call to stop the perpetuation and proliferation of weight stigma, we believe it is possible to reverse the internalized bias and shame that can result from struggles in managing one's weight. However, continued research is needed in the weight management field on the topic of weight stigma and eating pathology.

Ultimately, we believe providers should have collaborative relationships with their patients, providing patient-centered care that meets the desired goals of the patient and promotes overall health and well-being. This means encouraging patients to challenge the goal of a thin ideal and move toward a healthy ideal, getting away from a one-size-fits-all approach regarding treatment, and pursuing behaviors to achieve patient goals. However, systematic reviews show that for most adolescents and adults, IBIs do not worsen eating disorder risk, at least during the intervention and early

follow-up period, and result in modest improvements.^{49,50} Other markers of psychosocial health related to the development of eating disorders, such as depression, anxiety, self-esteem, body image, and quality of life, also show modest improvements after a weight management intervention.⁵⁰⁻⁵² Nevertheless, people with eating disorders are more likely to present for weight loss support than for eating disorder treatment and individual trials have identified a small subset of people who experience the onset of symptoms of eating disorders during, or following, weight management.⁵³ Considering the serious and potentially lifelong consequences of eating disorders, it is important that individuals are screened and those at risk are identified as a standard of care before initiating an IBI, that treatment addresses the shared-risk factors between obesity and eating disorders, and that the longer-term outcomes of weight management interventions be adequately assessed.⁵⁴

We recognize that access to the patient-centered care that we described in the original article and herein may be limited, particularly among underresourced communities. Thus, addressing social determinants that create barriers to care for both weight management and eating disorders is essential, as is advocating for increased access to evidence-based care and patients' rights to choose or refuse weight management treatment.⁵⁵ Development and implementation of evidence-based IBIs that screen for and mitigate eating disorder risk, while actively continuing to fight weight stigma and discrimination, can be achieved when health care providers across fields work together and have productive and respectful conversations for reaching the shared goals of our patients—which include physical, social, and mental health through the use of safe and effective interventions. In addition, we recognize there is more work to do in bettering weight management treatment options and we encourage continued conversations among clinicians and scientists. We also support elevating patient voices and experiences in these important conversations, in research and among professional conference presentations.

Michelle I. Cardel, PhD, MS, RD
Adjunct Professor, Department of Health
Outcomes and Biomedical Informatics,
University of Florida College of Medicine,
Gainesville, FL
Senior Director of Global Clinical Research
& Nutrition, WW International Inc, City,
State

Faith A. Newsome
Graduate Research Assistant, Department of
Health Outcomes and Biomedical
Informatics, University of Florida College of
Medicine, Gainesville, FL

Rebecca L. Pearl, PhD
Assistant Professor
Department of Clinical and Health
Psychology, University of Florida College of
Public Health and Health Professions,
Gainesville, FL

Kathryn M. Ross, PhD, MPH
Associate Professor
Department of Clinical and Health
Psychology, University of Florida College of
Public Health and Health Professions,
Gainesville, FL

Julia R. Dillard
Medical Student, University of Toledo
College of Medicine and Life Sciences,
Toledo, OH

Jacqueline F. Hayes, PhD
Assistant Professor
Weight Control and Diabetes Research
Center at the Miriam Hospital, Department
of Psychiatry and Human Behavior, Brown
University, Providence, RI

Denise Wilfley, PhD, MA
Professor of Psychological and Brain
Sciences, Professor of Medicine, Pediatrics
and Psychiatry, Washington University in St
Louis College of Medicine, St Louis, MO

Pamela K. Keel, PhD
Distinguished Research Professor,
Department of Psychology, Florida State
University, Tallahassee, FL

Emily J. Dhurandhar, PhD
Chief Scientific Officer, Obthera Inc,
Lubbock, TX

Katherine N. Balantekin, PhD, RD
Assistant Professor and Clinical Assistant
Professor, Department of Exercise and
Nutrition Sciences, School of Public Health
and Health Professions, University at
Buffalo, Buffalo, NY

STATEMENT OF POTENTIAL CONFLICT OF INTEREST

M. I. Cardel is an employee and shareholder at WW International Inc and has served as a consultant for Novo Nordisk (but did not accept personal fees for this work), all outside of the submitted work. F. A.

Newsome reports personal fees from Novo Nordisk outside the submitted work. R. L. Pearl has received grant funding from WW International Inc and has served as a consultant for WW International Inc and Novo Nordisk outside of the submitted work. E. J. Dhurandhar is an employee of Obthera Inc.

FUNDING/SUPPORT R. L. Pearl is supported by a K23 award from the National Heart, Lung, and Blood Institute (NHLBI)/National Institutes of Health (NIH) (grant no. K23HL140176). J. F. Hayes is supported by NIH NHLBI (grant nos. T32 HL076134 and K23 DK128561). K. N. Balantekin is supported by NIH National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) (grant no. K01 DK120778). P. K. Keel is supported by the NIH National Institute of Mental Health (NIMH) (grant nos. R01MH111263 and R01MH126990), and the National Cancer Institute (grant no. U54CA267730). K. M. Ross is supported by the NIDDK (grant no. R01DK119244) and NHLBI (grant no. R03HL154272).

AUTHOR CONTRIBUTIONS M. I. Cardel, J. F. Hayes, K. N. Balantekin, and F. A. Newsome drafted the manuscript. All authors participated in revision of the manuscript and final manuscript approval.

References

1. Steinbeck KS, Lister NB, Gow ML, Baur LA. Treatment of adolescent obesity. *Nat Rev Endocrinol.* 2018;14(6):331-344.
2. Samdal GB, Eide GE, Barth T, Williams G, Meland E. Effective behaviour change techniques for physical activity and healthy eating in overweight and obese adults; systematic review and meta-regression analyses. *Int J Behav Nutr Phys Act.* 2017;14(1):42.
3. Kwasnicka D, Dombrowski SU, White M, Sniehotta F. Theoretical explanations for maintenance of behaviour change: a systematic review of behaviour theories. *Health Psychol Rev.* 2016;10(3):277-296.
4. Rhodes RE, Mark RS, Temmel CP. Adult sedentary behavior: a systematic review. *Am J Prev Med.* 2012;42(3):e3-e28.
5. Myers A, Gibbons C, Finlayson G, Blundell J. Associations among sedentary and active behaviours, body fat and appetite dysregulation: investigating the myth of physical inactivity and obesity. *Br J Sports Med.* 2017;51(21):1540-1544.
6. The Diabetes Prevention Program (DPP). description of lifestyle intervention. *Diabetes Care.* 2002;25(12):2165-2171.
7. Phillips-Caesar EG, Winston G, Peterson JC, et al. Small Changes and Lasting Effects (SCALE) Trial: the

formation of a weight loss behavioral intervention using EVOLVE. *Contemp Clin Trial.* 2015;41:118-128.

8. Ryan DH, Yockey SR. Weight loss and improvement in comorbidity: differences at 5%, 10%, 15%, and over. *Curr Obes Rep.* 2017;6(2):187-194.
9. Cardel MI, Atkinson MA, Taveras EM, Holm J-C, Kelly AS. Obesity treatment among adolescents: a review of current evidence and future directions. *JAMA Pediatr.* 2020;174(6):609-617.
10. Wilfley DE, Hayes JF, Balantekin KN, Van Buren DJ, Epstein LH. Behavioral interventions for obesity in children and adults: evidence base, novel approaches, and translation into practice. *Am Psychol.* 2018;73(8):981-993.
11. Polivy J, Herman CP. Dieting and bingeing. A causal analysis. *Am Psychol.* 1985;40(2):193-201.
12. Chao AM, Wadden TA, Tronieri JS, et al. Effects of addictive-like eating behaviors on weight loss with behavioral obesity treatment. *J Behav Med.* 2019;42(2):246-255.
13. Sacks FM, Svetkey LP, Vollmer WM, et al. Effects on blood pressure of reduced dietary sodium and the Dietary Approaches to Stop Hypertension (DASH) diet. *N Engl J Med.* 2001;344(1):3-10.
14. Maclean PS, Wing RR, Davidson T, et al. NIH Working Group report: innovative research to improve maintenance of weight loss. *Obesity.* 2015;23(1):7-15.
15. Anderson JW, Konz EC, Frederich RC, Wood CL. Long-term weight-loss maintenance: a meta-analysis of US studies. *Am J Clin Nutr.* 2001;74(5):579-584.
16. Hall KD, Kahan S. Maintenance of lost weight and long-term management of obesity. *Med Clin North Am.* 2018;102(1):183-197.
17. Wharton S, Lau DCW, Vallis M, et al. Obesity in adults: a clinical practice guideline. *Can Med Assoc J.* 2020;192(31):E875-E891.
18. Jensen MD, Ryan DH, Apovian CM, et al. 2013 AHA/ACC/TOS guideline for the management of overweight and obesity in adults: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines and The Obesity Society. *J Am Coll Cardiol.* 2014;63(25 Pt B):2985-3023.
19. Look AHEAD Research Group. Eight-year weight losses with an intensive lifestyle intervention: the look AHEAD study. *Obesity.* 2014;22(1):5-13.
20. The Look AHEAD Research Group. Cardiovascular effects of intensive lifestyle intervention in type 2 diabetes. *N Engl J Med.* 2013;369(2):145-154.
21. Cheng YJ, Gregg EW, Geiss LS, et al. Association of A1C and fasting plasma glucose levels with diabetic retinopathy prevalence in the U.S. population: implications for diabetes diagnostic thresholds. *Diabetes Care.* 2009;32(11):2027-2032.
22. Ingerski LM, Laffel L, Drotar D, Repaske D, Hood KK. Correlates of glycemic control and quality of life outcomes in adolescents with type 1 diabetes. *Pediatr Diabetes.* 2010;11(8):563-571.

23. Gregg EW, Chen H, Wagenknecht LE, et al. Association of an intensive lifestyle intervention with remission of type 2 diabetes. *JAMA*. 2012;308(23):2489.
24. Espeland MA, Glick HA, Bertoni A, et al. Impact of an intensive lifestyle intervention on use and cost of medical services among overweight and obese adults with type 2 diabetes: the Action for Health in Diabetes (Look AHEAD) trial. *Diabetes Care*. 2014;37(9):2548-2556.
25. Kuna ST, Reboussin DM, Strotmeyer ES, et al. Effects of weight loss on obstructive sleep apnea severity. Ten-year results of the Sleep AHEAD study. *Am J Respir Crit Care Med*. 2021;203(2):221-229.
26. McLellan AT, Lewis DC, O'Brien CP, Kleber HD. Drug dependence, a chronic medical illness. *JAMA*. 2000;284(13):1689.
27. Eddy KT, Tabri N, Thomas JJ, et al. Recovery from anorexia nervosa and bulimia nervosa at 22-year follow-up. *J Clin Psychiatr*. 2017;78(2):17085.
28. Pacanowski CR, Mason TB, Crosby RD, et al. Weight change over the course of binge eating disorder treatment: relationship to binge episodes and psychological factors. *Obesity*. 2018;26(5):838-844.
29. Diabetes Prevention Program Research Group. Long-term effects of lifestyle intervention or metformin on diabetes development and microvascular complications: the DPP Outcomes Study. *Lancet Diabet Endocrinol*. 2015;3(11):866-875.
30. Knowler WC, Fowler SE, Hamman RF, et al. 10-year follow-up of diabetes incidence and weight loss in the Diabetes Prevention Program Outcomes Study. *Lancet*. 2009;374(9702):1677-1686.
31. Lindström J, Peltonen M, Eriksson JG, et al. Improved lifestyle and decreased diabetes risk over 13 years: long-term follow-up of the randomised Finnish Diabetes Prevention Study (DPS). *Diabetologia*. 2013;56(2):284-293.
32. Gong Q, Zhang P, Wang J, et al. Morbidity and mortality after lifestyle intervention for people with impaired glucose tolerance: 30-year results of the Da Qing Diabetes Prevention Outcome Study. *Lancet Diabet Endocrinol*. 2019;7(6):452-461.
33. Willis EA, Huang W-Y, Saint-Maurice PF, et al. Increased frequency of intentional weight loss associated with reduced mortality: a prospective cohort analysis. *BMC Med*. 2020;18(1):248.
34. Quinn DM, Puhl RM, Reinka MA. Trying again (and again): weight cycling and depressive symptoms in U.S. adults. *PLoS ONE*. 2020;15(9). 2020;e0239004.
35. Pearl RL, Puhl RM, Himmelsstein MS, Pinto AM, Foster GD. Weight stigma and weight-related health: associations of self-report measures among adults in weight management. *Ann Behav Med*. 2020;54(11):904-914.
36. Boswell RG, White MA. Gender differences in weight bias internalisation and eating pathology in overweight individuals. *Adv Eat Disord*. 2015;3(3):259-268.
37. Mehta T, Smith DL, Muhammad J, Casazza K. Impact of weight cycling on risk of morbidity and mortality. *Obes Rev*. 2014;15(11):870-881.
38. Atlantis E, Sahebolamri M, Cheema BS, Williams K. Usefulness of the Edmonton Obesity Staging System for stratifying the presence and severity of weight-related health problems in clinical and community settings: a rapid review of observational studies. *Obes Rev*. 2020;21(11). 2020;e13120.
39. Malfliet A, Marnef AQ, Nijs J, et al. Obesity hurts: the why and how if integrating weight reduction with chronic pain management. *Physical Therapy*. 2021;101(11):pzab198.
40. Wing RR, Lang W, Wadden TA, et al. Benefits of modest weight loss in improving cardiovascular risk factors in overweight and obese individuals with type 2 diabetes. *Diabetes Care*. 2011;34(7):1481-1486.
41. Bray GA, Bouchard C. The biology of human overfeeding: a systematic review. *Obes Rev*. 2020;21(9). 2020;e13040.
42. Jolles SA, Alagoz E, Liu N, Voils CI, Shea G, Funk LM. Motivations of males with severe obesity, who pursue medical weight management or bariatric surgery. *J Laparoendosc Adv Surg Tech A*. 2019;29(6):730-740.
43. Cohn I, Raman J, Sui Z. Patient motivations and expectations prior to bariatric surgery: a qualitative systematic review. *Obes Rev*. 2019;20(11):1608-1618.
44. Pearl RL, Wadden TA, Chao AM, et al. Weight bias internalization and long-term weight loss in patients with obesity. *Ann Behav Med*. 2019;53(8):782-787.
45. Pearl RL, Wadden TA, Tronieri JS, et al. Short- and long-term changes in health-related quality of life with weight loss: results from a randomized controlled trial. *Obesity (Silver Spring)*. 2018;26(6):985-991.
46. Mensinger JL, Calogero RM, Tylka TL. Internalized weight stigma moderates eating behavior outcomes in women with high BMI participating in a healthy living program. *Appetite*. 2016;102:32-43.
47. Pearl RL, Wadden TA, Bach C, et al. Effects of a cognitive-behavioral intervention targeting weight stigma: a randomized controlled trial. *J Consult Clin Psychol*. 2020;88(5):470-480.
48. Pearl RL, Wadden TA, Bach C, Tronieri JS, Berkowitz RI. Six-month follow-up from a randomized controlled trial of the Weight BIAS Program. *Obesity (Silver Spring)*. 2020;28(10):1878-1888.
49. Jebeile H, Gow ML, Baur LA, Garnett SP, Paxton SJ, Lister NB. Treatment of obesity, with a dietary component, and eating disorder risk in children and adolescents: a systematic review with meta-analysis. *Obes Rev*. 2019;20(9):1287-1298.
50. Jones RA, Lawlor ER, Birch JM, et al. The impact of adult behavioural weight management interventions on mental health: a systematic review and meta-analysis. *Obes Rev*. 2021;22(4). 2021;e13150.
51. Murray M, Pearson JL, Dordevic AL, Bonham MP. The impact of multicomponent weight management interventions on quality of life in adolescents affected by overweight or obesity: a meta-analysis of randomized controlled trials. *Obes Rev*. 2019;20(2):278-289.
52. Gow ML, Tee MSY, Garnett SP, et al. Pediatric obesity treatment, self-esteem, and body image: a systematic review with meta-analysis. *Pediatr Obes*. 2020;15(3).
53. Hart LM, Granillo MT, Jorm AF, Paxton SJ. Unmet need for treatment in the eating disorders: a systematic review of eating disorder specific treatment seeking among community cases. *Clin Psychol Rev*. 2011;31(5):727-735.
54. D'Adamo L, Fennig M, Grammar A, Jebeile H, Fitzsimmons-Craft E, Wilfley D. Weight management and eating pathology. In: Raynor H, Gigliotti L, eds. *Health Professional's Guide to Obesity and Weight Management*. Academy of Nutrition and Dietetics; In press.
55. Kumanyika SK. A framework for increasing equity impact in obesity prevention. *Am J Public Health*. 2019;109(10):1350-1357.

<https://doi.org/10.1016/j.jand.2022.09.017>