

Overcoming Weight Bias in the Management of Patients With Diabetes and Obesity

Rebecca M. Puhl,¹ Sean M. Phelan,² Joseph Nadglowski,³ and Theodore K. Kyle⁴

Rising obesity rates in the past several decades have been paralleled with increasing evidence of bias, stigma, and discrimination toward individuals with obesity (1). Weight discrimination is commonly reported by Americans (2) at rates comparable to those of racial discrimination (especially in women) (2,3) and has increased in recent decades (4). Individuals with obesity are vulnerable to stigma and unfair treatment from multiple sources, including inequities in employment settings, educational institutions, and health care facilities, as well as in the broader society and the mass media (1), all of which can lead to negative consequences for their psychological and physical health. Several decades of evidence demonstrate consistent weight bias expressed by health care providers (HCPs), which can impair quality of care to patients with obesity and diabetes. In this brief review, we summarize evidence in these areas, discuss the importance of addressing weight bias in clinical care for patients with obesity and diabetes, and highlight the need for increased awareness of this form of bias in diabetes management.

Health Consequences of Weight Bias

Being the target of weight bias and discrimination can lead to numerous adverse health consequences affecting psychological, social, and physical health (Figure 1). Individuals who experience weight stigma have

an increased risk for depression, anxiety, low self-esteem, poor body image, substance abuse, and suicidality (5–8). These outcomes remain even after controlling for variables such as BMI, obesity onset, sex, and age, suggesting that psychological consequences are not associated with obesity per se, but rather with experiences of weight stigmatization (9,10).

Weight stigma also increases vulnerability to unhealthy behaviors that can contribute to weight gain and obesity (11), including increased likelihood of engaging in binge-eating behaviors, maladaptive weight control, disordered eating patterns, increased calorie intake (11–16), avoidance of exercise, and lower motivation for physical activity (17–19). Experimental studies have demonstrated increased calorie consumption after exposure to weight stigmatization among women with overweight or obesity compared to women at a lower body weight (15,20). These findings parallel self-report research showing that as many as 79% of women with obesity report eating food as a coping strategy to temper the distress of being stigmatized (21).

Emerging evidence has additionally demonstrated heightened physiological reactivity in response to experiences of weight stigmatization, including heightened cortisol reactivity, C-reactive protein, and blood pressure (22,23). This evidence has relevant implications for people with diabetes, especially given research showing that weight discrimination

¹Rudd Center for Food Policy and Obesity, University of Connecticut, Hartford, CT

²Division of Health Care Policy and Research, Mayo Clinic, Rochester, MN

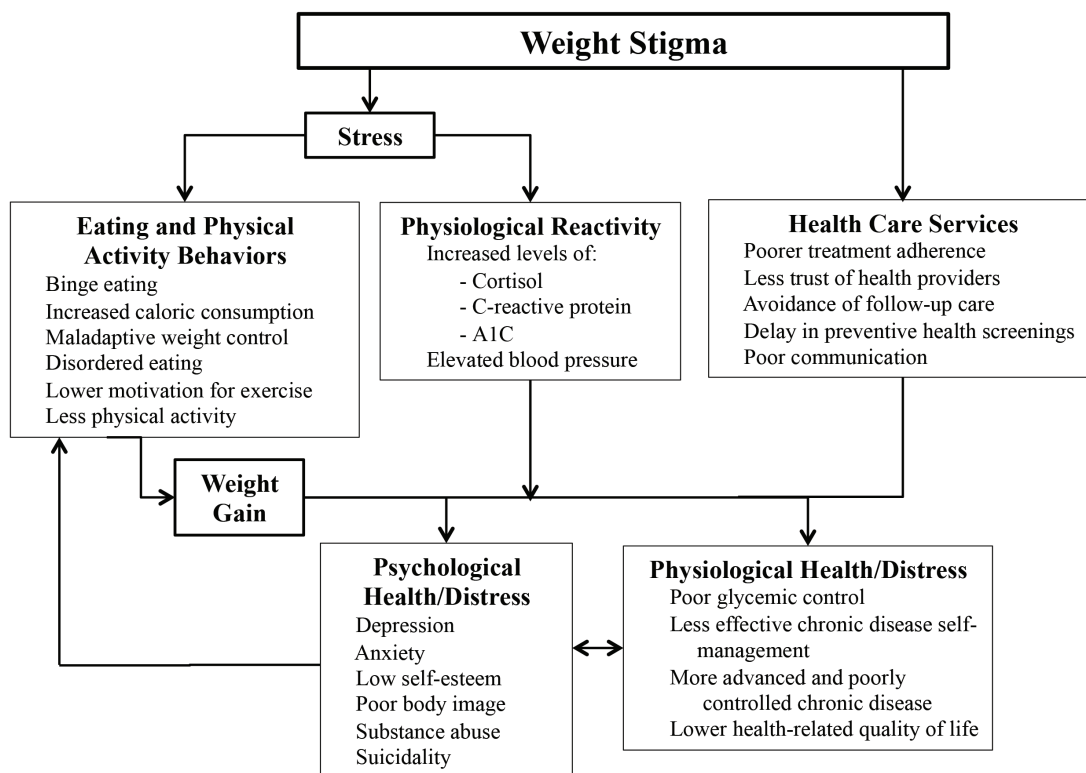
³Obesity Action Coalition, Tampa, FL

⁴ConscienHealth, Pittsburgh, PA

Corresponding author: Rebecca Puhl, rebecca.puhl@uconn.edu

DOI: 10.2337/diaclin.34.1.44

©2016 by the American Diabetes Association. Readers may use this article as long as the work is properly cited, the use is educational and not for profit, and the work is not altered. See <http://creativecommons.org/licenses/by-nc-nd/3.0> for details.



■ **FIGURE 1.** Health consequences resulting from experiences of weight stigma.

exacerbates the harmful effects of waist-to-hip ratio on glycemic control (indexed by A1C) (24).

Finally, recent longitudinal evidence has documented more direct links between perceived weight discrimination and obesity and weight gain. In a nationally representative study of >6,000 adults from the Health and Retirement Study, those who reported experiences of weight discrimination (but not other forms of discrimination) were 2.5–3 times more likely to develop obesity or maintain obesity through time compared to individuals with no experiences of weight discrimination, regardless of baseline BMI (25). In a similar study of 2,944 adults from the English Longitudinal Study of Aging, participants who reported experiencing weight discrimination had greater odds of developing obesity and increases in weight and waist circumference regardless of baseline BMI (26).

Taken together, this evidence indicates that weight stigma can

impair quality of life through a range of health consequences, some of which may reinforce behaviors that contribute to obesity, interfere with weight and diabetes management, and ultimately increase risk of further weight gain over time. These findings highlight the need for increased awareness among medical providers treating people with obesity and diabetes about weight bias and its adverse health consequences.

Weight Bias in Clinical Care

Unfortunately, negative societal weight biases against people with obesity often are shared and expressed by HCPs. Weight bias has been demonstrated among primary care providers (PCPs), endocrinologists, cardiologists, nurses, dietitians, and medical trainees, including attitudes that patients with obesity are lazy, lack self-control and willpower, personally to blame for their weight, noncompliant with treatment, and deserving targets of derogatory humor (27–33). A recent study of 2,284 physicians found that weight bias is as

pervasive among medical doctors as it is in the general public (31). Other research shows that women with obesity view physicians as one of the most frequent sources of weight bias that they encounter in their lives (21). Some of these negative weight biases appear to have worsened rather than improved over time, even among professionals who specialize in obesity (34).

Given these findings, it is perhaps not surprising that some people with obesity have reported a lack of empathy from HCPs, feeling blamed for their weight, upset by comments that HCPs make about their weight, and reluctant to discuss their weight concerns in light of previous negative experiences (35–38). People with obesity have reported negative weight-related judgments from PCPs and maternity care providers and perceive disparities in provider communication quality, especially among people of ethnic minority status (37–39).

Emerging research also has begun to examine weight stigmatization

experienced by people with diabetes, with attention to the overlap between stereotypes common to both obesity and type 2 diabetes stigma (40), such as being blamed for causing their condition (41). This has led to concerns that HCPs' weight biases may interfere with effective diabetes management for their patients and has stimulated calls to reduce weight bias among HCPs to provide an optimal medical environment conducive to diabetes management (42). These calls seem particularly warranted given the evidence regarding weight bias in health care and the fact that clinical guidelines for diabetes treatment are increasingly emphasizing body weight and obesity in diagnostic and treatment approaches (43). Furthermore, the American Diabetes Association's Standards of Medical Care in Diabetes—2015 emphasize patient-centered approaches to weight management for patients with diabetes and highlight the importance of advocating for these patients given the adverse consequences that obesity can impose on their health (44). Thus, recognition of the need to address body weight in diabetes management and support patients in adopting healthy lifestyle behaviors underscores the importance of taking steps to reduce weight bias in diabetes care.

Adverse Consequences of Weight Bias on Health Care Delivery

The importance of addressing weight bias in clinical care is further highlighted by evidence that weight bias by HCPs can impair quality of health care for patients. Evidence suggests that HCPs spend less time in appointments (45), provide less education about health (46), and are more reluctant to perform certain screenings with patients who have obesity compared to thinner patients (47). Furthermore, some physicians view patients with obesity as less adherent to medications (28), express less desire to help these patients, and report

that treating obesity is "more annoying" and a greater waste of their time compared to providing care to their thinner patients (45). In addition, perceived weight bias in the health care setting contributes to reduced health care utilization among patients with obesity, especially for women (35,48,49).

HCPs' weight biases may contribute to negative outcomes for patients with obesity and diabetes through several mechanisms. First, extensive evidence suggests that implicit and explicit beliefs about groups that are stigmatized can negatively affect interpersonal behavior and patient-centered communication with patients who are members of those groups (50–53). This may explain the finding that encounters with patients with obesity include less rapport and relationship-building talk (54,55). A common stereotype of patients with obesity is that they are undisciplined and non-adherent (1,28,56,57), especially with regard to weight loss recommendations. Providers have been shown to use less patient-centered language with patients they perceive as non-adherent (58). Thus, the expectation that patients will not comply with advice to lose weight may reduce the quality of counseling. The potential impact of this impaired communication is concerning given strong evidence that less patient-centered care predicts lower patient adherence, less patient-provider trust, and worse patient outcomes (54,59–61). In one study, individuals with obesity who were counseled to lose weight were more successful when they reported their physicians did not come across as judgmental when discussing weight (62).

Weight bias can also affect care for people with diabetes through stress responses. Physicians' implicit bias has been shown to predict lower patient satisfaction with care (63). Several studies have shown that feeling stigmatized causes a stress response (64,65) that may have immediate and long-term effects on people with obesity. First, physicians

whose behavior is influenced by weight bias may trigger a "stereotype threat response" from patients, which occurs when individuals are aware that they are perceived stereotypically, triggering an immediate stress response. This response lowers cognitive capacity and impairs the abilities to communicate effectively and to learn and retain new information (66,67). Longer-term effects of stigmatization in health care include the cumulative effects of stress on health (68,69) and avoidance of follow-up care, which is linked to poor outcomes in diabetes. In addition, there is evidence that the experience of weight bias is associated with poorer weight loss outcomes, possibly resulting from both the stress response and coping behaviors (70–73).

Strategies to Reduce Weight Bias in Clinical Practice

Addressing weight bias in clinical practice is challenging because it is pervasive and more socially acceptable than other types of bias (32,74). Thus, weight bias is frequently explicit (consciously and deliberately expressed), as well as implicit (at the unconscious level and involuntarily formed). Explicit and implicit weight bias are only moderately correlated (75,76), and strategies to address them may be more suitable for one or the other.

Interventions that have reduced explicit weight bias include education that emphasizes the complex causes of obesity, including genetic, metabolic, and social factors (77,78). Many providers support the energy balance model of weight gain and loss almost exclusively (56,79), which can limit the scope of the counseling they give patients and may contribute to beliefs that obesity is simply an issue of personal responsibility. For example, presenting medical trainees with information about contributing factors of obesity outside of personal control (e.g., biological and genetic factors) have demonstrated reductions in negative weight bias (57,80–82) and improved self-efficacy for coun-

selling patients with obesity (83). These approaches have demonstrated success in different delivery formats (e.g., educational films, lectures, written materials, and simulated interactions with virtual patients), indicating that this strategy can be feasibly included in health-related curriculums and clinical training settings.

Interventions that focus on reducing implicit weight bias include making providers aware of the evidence that implicit, unconscious attitudes influence the quality of the care they provide to develop motivation to address implicit bias. One strategy is exposure to counterstereotypical exemplars of people who have obesity. Counterstereotypical traits include success and intelligence. Exposure to individuals who defy stereotypes and rejecting media portrayals and public health messages depicting individuals who behave in ways consistent with group stereotypes can reduce implicit bias (84). Implicit biases are most likely to influence behavior when providers are cognitively taxed and do not have the energy or time to process patient information deliberately. Therefore, strategies to reduce implicit bias aim to maintain focus and clarity by learning and practicing emotion regulation and stress-reducing techniques such as deep breathing, which may free HCPs' cognitive resources to approach patients as individuals rather than relying on group stereotypes to guide counseling (85,86).

Beyond these approaches, several other bias reduction strategies may influence both explicit and implicit forms of weight bias. For example, contact theory stipulates that having shared experiences with members of stigmatized groups reduces bias against that group if those interactions are positive, include the exchange of information and thoughts, and focus on shared goals (87–90). Positive contact with patients or peers with obesity during medical school has been shown to reduce implicit and explicit weight

bias in medical trainees (91). The effect of positive contact on bias is partially mediated by increased empathy (92), which has been linked to bias reduction (93,94). One strategy to build empathy is perspective-taking, through which participants imagine themselves as a member of a stigmatized group and write about their experiences. Evidence of the effects of empathy-focused interventions on weight bias has been limited (95) or mixed (96,97), and more work is needed to determine whether empathy induction is an effective approach to reduce weight stigma.

Another strategy involves altering a clinic's normative beliefs about and expectations of how to behave toward patients with obesity (98). For example, adopting a zero-tolerance policy for clinic staff's use of derogatory language about patients with obesity may be beneficial (99). Derogatory comments or humor occur frequently in some institutions (100), and overhearing this language predicts increases in bias in medical trainees (91). Thus, adopting policies for more respectful language toward patients with obesity may help to shift otherwise common weight bias expressed in the clinical care environment (27,100). To this end, there have been increasing calls by health experts and medical organizations for the use of "people-first language" in the context of obesity, with the aim of treating patients with obesity with respect, as individuals, rather than labeling them by their disease (101,102).

Finally, training and practice in patient-centered communication strategies such as motivational interviewing may help reduce the impact of implicit bias on quality of communication. Preliminary evidence indicates that training providers in communication skills addressing language to discuss obesity, recognition of stigma, and increased empathy can facilitate improved counseling skills among medical trainees (83).

Conclusion

Weight bias has received increasing attention as a clinical concern for people with obesity. Three factors provide ample justification for the need to address this problem in diabetes care: the prevalence of this form of bias expressed by HCPs, the adverse consequences that stigmatizing experiences pose for health and health care quality for patients, and the increasing emphasis on body weight and obesity in diagnostic and treatment approaches to diabetes. Provision of training and education about the complex causes of obesity, implementation of respectful language when discussing body weight with patients, and concerted efforts to challenge negative weight-based stereotypes in the clinical care setting can all help to shift the medical culture from one that often shames and stigmatizes patients because of their weight to one that supports and empowers patients with obesity and diabetes in their efforts to improve their health.

Duality of Interest

No potential conflicts of interest relevant to this article were reported.

References

1. Puhl RM, Heuer CA. The stigma of obesity: a review and update. *Obesity* 2009;17:941–964
2. Puhl RM, Andreyeva T, Brownell KD. Perceptions of weight discrimination: prevalence and comparison to race and gender discrimination in America. *Int J Obes* 2008;32:992–1000
3. Roehling MV, Roehling PV, Pichler S. The relationship between body weight and perceived weight-related employment discrimination: the role of sex and race. *J Vocat Behav* 2007;71:300–318
4. Andreyeva T, Puhl RM, Brownell KD. Changes in perceived weight discrimination among Americans: 1995–1996 through 2004–2006. *Obesity* 2008;16:1129–1134
5. Hatzenbuehler ML, Keyes KM, Hasin DS. Associations between perceived weight discrimination and the prevalence of psychiatric disorders in the general population. *Obesity* 2009;17:2033–2039
6. Bucchianeri MM, Eisenberg ME, Wall MM, Piran N, Neumark-Sztainer D. Multiple types of harassment: associations with emotional well-being and unhealthy

- behaviors in adolescents. *J Adolesc Health* 2014;54:724–729
7. Friedman KE, Reichmann SK, Costanzo PR, Zelli A, Ashmore JA, Musante GJ. Weight stigmatization and ideological beliefs: relation to psychological functioning in obese adults. *Obes Res* 2005;13:907–916
 8. Chen EY, Bocchieri-Ricciardi LE, Munoz D, et al. Depressed mood in class III obesity predicted by weight-related stigma. *Obes Surg* 2007;17:669–671
 9. Friedman KE, Ashmore JA, Applegate KL. Recent experiences of weight-based stigmatization in a weight loss surgery population: psychological and behavioral correlates. *Obesity* 2008;16(Suppl. 2):S69–S74
 10. Rosenberger PH, Henderson KE, Bell RL, Grilo CM. Associations of weight-based teasing history and current eating disorder features and psychological functioning in bariatric surgery patients. *Obes Surg* 2007;17:470–477
 11. Puhl R, Suh Y. Health consequences of weight stigma: implications for obesity prevention and treatment. *Curr Obes Rep* 2015;4:182–190
 12. Almeida L, Savoy S, Boxer P. The role of weight stigmatization in cumulative risk for binge eating. *J Clin Psychol* 2011;67:278–292
 13. Durso LE, Latner JD, Hayashi K. Perceived discrimination is associated with binge eating in a community sample of non-overweight, overweight, and obese adults. *Obesity Facts* 2012;5:869–880
 14. Durso LE, Latner JD, White MA, et al. Internalized weight bias in obese patients with binge eating disorder: associations with eating disturbances and psychological functioning. *Int J Eat Disord* 2012;45:423–427
 15. Schvey N, Puhl RM, Brownell KD. The impact of weight stigma on caloric consumption. *Obesity* 2011;19:1957–1962
 16. Puhl R, Suh Y. Stigma and eating and weight disorders. *Curr Psychiatr Rep* 2015;17:1–10
 17. Schmalz DL. ‘I feel fat’: weight-related stigma, body esteem, and BMI as predictors of perceived competence in physical activity. *Obesity Facts* 2010;3:15–21
 18. Vartanian LR, Novak SA. Internalized societal attitudes moderate the impact of weight stigma on avoidance of exercise. *Obesity* 2010;19:757–762
 19. Schvey NA, Puhl RM, Brownell KD. The stress of stigma: exploring the effect of weight stigma on cortisol reactivity. *Psychosom Med* 2014;76:156–162
 20. Major B, Hunger JM, Bunyan DP, Miller CT. The ironic effects of weight stigma. *J Exp Soc Psychol* 2014;51:74–80
 21. Puhl RM, Brownell KD. Confronting and coping with weight stigma: an investigation of overweight and obese adults. *Obesity* 2006;14:1802–1815
 22. Sutin AR, Stephan Y, Luchetti M, Terracciano A. Perceived weight discrimination and C-reactive protein. *Obesity* 2014;22:1959–1961
 23. Tomiyama AJ, Epel ES, McClatchey TM, et al. Associations of weight stigma with cortisol and oxidative stress independent of adiposity. *Health Psychol* 2014;33:862–867
 24. Tsenkova VK, Carr D, Schoeller DA, Ryff CD. Perceived weight discrimination amplifies the link between central adiposity and nondiabetic glycemic control (HbA1c). *Ann Behav Med* 2011;41:243–251
 25. Sutin AR, Terracciano A. Perceived weight discrimination and obesity. *PLoS One* 2013;8:e70048
 26. Jackson SE, Beeken RJ, Wardle J. Perceived weight discrimination and changes in weight, waist circumference, and weight status. *Obesity* 2014;22:2485–2488
 27. Wear D, Aultman JM, Varley JD, Zarconi J. Making fun of patients: medical students’ perceptions and use of derogatory and cynical humor in clinical settings. *Acad Med* 2006;81:454–462
 28. Huizinga MM, Bleich SN, Beach MC, Clark JM, Cooper LA. Disparity in physician perception of patients’ adherence to medications by obesity status. *Obesity* 2010;18:1932–1937
 29. Ferrante JM, Piasecki AK, Ohman-Strickland PA, Crabtree BF. Family physicians’ practices and attitudes regarding care of extremely obese patients. *Obesity* 2009;17:1710–1716
 30. Bocquier A, Verger P, Basdevant A, et al. Overweight and obesity: knowledge, attitudes, and practices of general practitioners in France. *Obes Res* 2005;13:787–795
 31. Sabin JA, Marini M, Nosek BA. Implicit and explicit anti-fat bias among a large sample of medical doctors by BMI, race/ethnicity and gender. *PLoS One* 2012;7:e48448
 32. Phelan SM, Dovidio JF, Puhl RM, et al. Implicit and explicit weight bias in a national sample of 4,732 medical students: the Medical Student CHANGES study. *Obesity (Silver Spring)* 2014;22:1201–1208
 33. Glauser TA, Roepke N, Stevenin B, Dubois AM, Ahn SM. Physician knowledge about and perceptions of obesity management. *Obes Res Clin Pract*. Epub ahead of print on 21 March 2015 (DOI: 10.1016/j.orcp.2015.02.011)
 34. Tomiyama AJ, Finch LE, Incollongo Belsky AC, et al. Weight bias in 2001 versus 2013: contradictory attitudes among obesity researchers and health professionals. *Obesity (Silver Spring)* 2015;23:46–53
 35. Amy NK, Aalborg A, Lyons P, Keranen L. Barriers to routine gynecological cancer screening for white and African-American obese women. *Int J Obes* 2006;30:147–155
 36. Brown I, Thompson J, Tod A, Jones G. Primary care support for tackling obesity: a qualitative study of the perceptions of obese patients. *Br J Gen Pract* 2006;56:666–672
 37. Gudzone KA, Bennett WL, Cooper LA, Bleich SN. Patients who feel judged about their weight have lower trust in their primary care providers. *Patient Educ Couns* 2014;97:128–131
 38. Mulherin K, Miller YD, Barlow FK, Diedrichs PC, Thompson R. Weight stigma in maternity care: women’s experiences and care providers’ attitudes. *BMC Pregnancy Childbirth* 2013;13:19
 39. Wong M, Gudzone KA, Bleich SN. Provider communication quality: influence of patients’ weight and race. *Patient Educ Couns* 2015;98:492–498
 40. Cameron E, O’Reilly C. Sizing up stigma: weighing in on the issues and solutions to type 2 diabetes and obesity stigma. *Biochem Cell Biol* 2015;93:430–437
 41. Browne JL, Ventura A, Mosely K, Speight J. ‘I call it the blame and shame disease’: a qualitative study about perceptions of social stigma surrounding type 2 diabetes. *BMJ Open* 2013;3:e003384
 42. Teixeira ME, Budd GM. Obesity stigma: a newly recognized barrier to comprehensive and effective type 2 diabetes management. *J Am Acad Nurse Pract* 2009;22:527–533
 43. Garvey T, Mechanick J, Einhorn D. 2014 advanced framework for a new diagnosis of obesity as a chronic disease. Jacksonville, Fla., American Association of Clinical Endocrinologists and American College of Endocrinology, 2014 p. 1–23
 44. American Diabetes Association. Strategies for Improving Care. Sec. 1 in Standards of Medical Care in Diabetes—2015. *Diabetes Care* 2015;38(Suppl. 1):S5–S7
 45. Hebl MR, Xu J, Mason MF. Weighing the care: patients’ perceptions of physician care as a function of gender and weight. *Int J Obes* 2003;27:269–275
 46. Bertakis KD, Azari R. The impact of obesity on primary care visits. *Obes Res* 2005;13:1615–1622
 47. Adams CH, Smith NJ, Wilbur DC, Grady KE. The relationship of obesity to the frequency of pelvic examinations: do physician and patient attitudes make a difference? *Women Health* 1993;20:45–57
 48. Puhl RM, Peterson JL, Luedicke J. Parental perceptions of weight terminology that providers use with youth. *Pediatrics* 2011;128:e786–e93
 49. Puhl R, Peterson JL, Luedicke J. Motivating or stigmatizing? Public perceptions of weight-related language used by health providers. *Int J Obes (Lond)* 2013;37:612–619
 50. Gordon HS, Street RL Jr, Sharf BF, Kelly PA, Soucek J. Racial differences in trust and lung cancer patients’ perceptions

- of physician communication. *J Clin Oncol* 2006;24:904–909
51. Ghods BK, Roter DL, Ford DE, Larson S, Arbelaez JJ, Cooper LA. Patient-physician communication in the primary care visits of African Americans and whites with depression. *J Gen Intern Med* 2008;23:600–606
52. Cene CW, Roter D, Carson KA, Miller ER 3rd, Cooper LA. The effect of patient race and blood pressure control on patient-physician communication. *J Gen Intern Med* 2009;24:1057–1064
53. Johnson RL, Roter D, Powe NR, Cooper LA. Patient race/ethnicity and quality of patient-physician communication during medical visits. *Am J Public Health* 2004;94:2084–2090
54. Gudzone KA, Beach MC, Roter DL, Cooper LA. Physicians build less rapport with obese patients. *Obesity* 2013;21:2146–2152
55. Richard P, Ferguson C, Lara AS, Leonard J, Younis M. Disparities in physician-patient communication by obesity status. *Inquiry* 2014;1:51
56. Foster GD, Wadden TA, Makris AP, et al. Primary care physicians' attitudes about obesity and its treatment. *Obes Res* 2003;11:1168–1177
57. Persky S, Eccleston CP. Medical student bias and care recommendations for an obese versus non-obese virtual patient. *Int J Obes (Lond)* 2010;35:728–735
58. Street RL Jr, Gordon H, Haidet P. Physicians' communication and perceptions of patients: is it how they look, how they talk, or is it just the doctor? *Soc Sci Med* 2007;65:586–598
59. Armstrong MJ, Mottershead TA, Ronksley PE, Sigal RJ, Campbell TS, Hemmelgarn BR. Motivational interviewing to improve weight loss in overweight and/or obese patients: a systematic review and meta-analysis of randomized controlled trials. *Obes Rev* 2011;12:709–723
60. Zolnierak KB, Dimatteo MR. Physician communication and patient adherence to treatment: a meta-analysis. *Med Care* 2009;47:826–834
61. Stewart M, Brown JB, Donner A, et al. The impact of patient-centered care on outcomes. *J Fam Pract* 2000;49:796–804
62. Gudzone KA, Bennett WL, Cooper LA, Bleich SN. Perceived judgment about weight can negatively influence weight loss: a cross-sectional study of overweight and obese patients. *Prev Med* 2014;62:103–107
63. Penner LA, Dovidio JF, West TV, et al. Aversive racism and medical interactions with black patients: a field study. *J Exp Soc Psychol* 2010;46:436–440
64. Hatzenbuehler ML. How does sexual minority stigma “get under the skin”? A psychological mediation framework. *Psychol Bull* 2009;135:707–730
65. Link BG, Phelan JC. Stigma and its public health implications. *Lancet* 2006;367:528–529
66. Schmader T, Johns M, Forbes C. An integrated process model of stereotype threat effects on performance. *Psychol Rev* 2008;115:336–356
67. Burgess DJ, Warren J, Phelan S, Dovidio J, van Ryn M. Stereotype threat and health disparities: what medical educators and future physicians need to know. *J Gen Intern Med* 2010;25(Suppl. 2):S169–S177
68. Chandola T, Brunner E, Marmot M. Chronic stress at work and the metabolic syndrome: prospective study. *BMJ* 2006;332:521–525
69. DeLongis A, Folkman S, Lazarus RS. The impact of daily stress on health and mood: psychological and social resources as mediators. *J Pers Soc Psychol* 1988;54:486–495
70. Wott CB, Carels RA. Overt weight stigma, psychological distress and weight loss treatment outcomes. *J Health Psychol* 2010;15:608–614
71. Carels RA, Hinman NG, Hoffmann DA. Implicit bias about weight and weight loss treatment outcomes. *Eat Behav* 2014;15:648–653
72. Carels RA, Young KM, Wott CB, et al. Weight bias and weight loss treatment outcomes in treatment-seeking adults. *Ann Behav Med* 2009;37:350–355
73. Tomiyama AJ, Schamarek I, Lustig RH, et al. Leptin concentrations in response to acute stress predict subsequent intake of comfort foods. *Physiol Behav* 2012;107:34–39
74. Latner JD, O'Brien KS, Durso LE, Brinkman LA, MacDonald T. Weighing obesity stigma: the relative strength of different forms of bias. *Int J Obes* 2008;32:1145–1152
75. Hofmann W, Gawronski B, Gschwendner T, Le H, Schmitt M. A meta-analysis on the correlation between the implicit association test and explicit self-report measures. *Pers Soc Psychol Bull* 2005;31:1369–1385
76. Greenwald AG, Poehlman TA, Uhlmann EL, Banaji MR. Understanding and using the Implicit Association Test: III. Meta-analysis of predictive validity. *J Pers Soc Psychol* 2009;97:17–41
77. Wright SM, Aronne LJ. Causes of obesity. *Abdom Imaging* 2012;37:730–732
78. Keith SW, Redden DT, Katzmarzyk PT, et al. Putative contributors to the secular increase in obesity: exploring the roads less traveled. *Int J Obes* 2006;30:1585–1594
79. Phelan SM, Burgess D, Burke SE, et al. Beliefs about the causes of obesity in a national sample of 4th year medical students. *Patient Educ Couns* 2015;98:1446–1449
80. O'Brien KS, Puhl RM, Latner JD, Mir AS, Hunter JA. Reducing anti-fat prejudice in preservice health students: a randomized trial. *Obesity (Silver Spring)* 2010;18:2138–2144
81. Swift JA, Tischler V, Markham S, et al. Are anti-stigma films a useful strategy for reducing weight bias among trainee healthcare professionals? Results of a pilot randomized control trial. *Obesity Facts* 2013;6:91–102
82. Wiese HJ, Wilson JF, Jones RA, Neises M. Obesity stigma reduction in medical students. *Int J Obes* 1992;16:859–868
83. Kushner RF, Zeiss DM, Feinglass JM, Yelen M. An obesity educational intervention for medical students addressing weight bias and communication skills using standardized patients. *BMC Med Educ* 2014;14:53
84. Ramasubramanian S. The impact of stereotypical versus counterstereotypical media exemplars on racial attitudes, causal attributions, and support for affirmative action. *Communic Res* 2011;38:497–516
85. Lillis J, Hayes SC. Applying acceptance, mindfulness, and values to the reduction of prejudice: a pilot study. *Behav Modif* 2007;31:389–411
86. Kemeny ME, Foltz C, Cavanagh JF, et al. Contemplative/emotion training reduces negative emotional behavior and promotes prosocial responses. *Emotion* 2012;12:338–350
87. Pettigrew TF, Tropp LR. A meta-analytic test of intergroup contact theory. *J Pers Soc Psychol* 2006;90:751–783
88. Pettigrew T, Tropp L, Wagner U, Christ O. Recent advances in intergroup contact theory. *Int J Intercult Relat* 2011;35:271–280
89. Pettigrew TF, Tropp LR. How does intergroup contact reduce prejudice? Meta-analytic tests of three mediators. *Eur J Soc Psychol* 2008;38:922–934
90. Turner RN, Hewstone M, Voci A. Reducing explicit and implicit outgroup prejudice via direct and extended contact: the mediating role of self-disclosure and intergroup anxiety. *J Pers Soc Psychol* 2007;93:369–388
91. Phelan SM, Puhl RM, Burke SE, et al. The mixed impact of medical school on medical students' implicit and explicit weight bias. *Med Educ* 2015;49:983–992
92. Dovidio JF, Gaertner SL, Kawakami K. Intergroup contact: the past, present, and future. *Group Process Intergroup Relat* 2003;6:5–21
93. Batson CD, Lishner DA, Carpenter A, et al. “. . . As you would have them do unto you”: does imagining yourself in the other's place stimulate moral action? *Pers Soc Psychol Bull* 2003;29:1190–1201
94. Burke SE, Dovidio JF, Przedworski JM, et al. Do contact and empathy mitigate bias against gay and lesbian people among heterosexual first-year medical students? A report from the Medical Student CHANGE Study. *Acad Med* 2015;90:645–651

95. Lee M, Ata RN, Brannick MT. Malleability of weight-biased attitudes and beliefs: a meta-analysis of weight bias reduction interventions. *Body Image* 2014;11:251–259
96. Puhl R, Brownell K. Psychosocial origins of obesity stigma: toward changing a powerful and pervasive bias. *Obes Rev* 2003;4:213–227
97. Danielsdottir S, O'Brien KS, Ciao A. Anti-fat prejudice reduction: a review of published studies. *Obesity Facts* 2010;3:47–58
98. Puhl RM, Schwartz MB, Brownell KD. Impact of perceived consensus on stereotypes about obese people: a new approach for reducing bias. *Health Psychol* 2005;24:517–525
99. Phelan SM, Burgess DJ, Yeazel MW, et al. Impact of weight bias and stigma on quality of care and outcomes for patients with obesity. *Obes Rev* 2015;16:319–326
100. Puhl RM, Luedicke J, Grilo CM. Obesity bias in training: attitudes, beliefs, and observations among advanced trainees in professional health disciplines. *Obesity* 2014;22:1008–1015
101. Kyle TK, Puhl RM. Putting people first in obesity. *Obesity* 2014;22:1211
102. Dietz WH. The need for people-first language in our obesity journal. *Obesity* 2015;23:917
-