



Published in final edited form as:

Obesity (Silver Spring). 2012 May ; 20(5): 999–1005. doi:10.1038/oby.2011.402.

Impact of Physician BMI on Obesity Care and Beliefs

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Abstract

Using a national cross-sectional survey of 500 primary care physicians conducted between 9 February and 1 March 2011, the objective of this study was to assess the impact of physician BMI on obesity care, physician self-efficacy, perceptions of role-modeling weight-related health behaviors, and perceptions of patient trust in weight loss advice. We found that physicians with normal BMI were more likely to engage their obese patients in weight loss discussions as compared to overweight/obese physicians (30% vs. 18%, $P = 0.010$). Physicians with normal BMI had greater confidence in their ability to provide diet (53% vs. 37%, $P = 0.002$) and exercise counseling (56% vs. 38%, $P = 0.001$) to their obese patients. A higher percentage of normal BMI physicians believed that overweight/obese patients would be less likely to trust weight loss advice from overweight/obese doctors (80% vs. 69%, $P = 0.02$). Physicians in the normal BMI category were more likely to believe that physicians should model healthy weight-related behaviors—maintaining a healthy weight (72% vs. 56%, $P = 0.002$) and exercising regularly (73% vs. 57%, $P = 0.001$). The probability of a physician recording an obesity diagnosis (93% vs. 7%, $P < 0.001$) or initiating a weight loss conversation (89% vs. 11%, $P = 0.001$) with their obese patients was higher when the physicians' perception of the patients' body weight met or exceeded their own personal body weight. These results suggest that more normal weight physicians provided recommended obesity care to their patients and felt confident doing so.

INTRODUCTION

Obesity (1) affects one-third of the US adult population (2) and is estimated to cost \$147 billion annually (3). Despite guidelines for physicians to counsel about and treat obesity (4) only one-third of obese patients report receiving an obesity diagnosis or weight-related counseling from their physicians (5).

Physicians have significant barriers to providing obesity care, including lack of time, inadequate training in weight counseling, and the need to place greater priority on comorbid conditions (6). Several studies have also documented negative physician attitudes (e.g.,

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DISCLOSURE

The authors declared no conflict of interest.

weight stigma (7–9), doubt that counseling will have an effect on patient behavior (10,11), and feeling that obesity is the responsibility of the patient (12). These negative attitudes may impact use and experiences of care among obese patients. Research among patients with obesity has documented health care avoidance (13–15) and decreased preventive services, especially cancer screenings (16–18).

Few studies have examined whether physicians' personal factors, such as body weight, impact their weight management practices. Increasingly, studies show that physician advice influences patients' self-efficacy (19,20), weight loss efforts (21–24), and their motivation (22,25,26). Understanding physician body weight as a possible barrier to obesity care is critical given the important role physicians can play in helping patients manage or lose weight. Our objective was to assess the impact of physician BMI on obesity care practices and beliefs. We examined differences by physician BMI for the following practices: recording an obesity diagnosis, initiating weight loss discussions, physician self-efficacy for providing weight-related counseling and prescribing weight loss medications to obese patients. We examined differences by physician BMI for the following beliefs: physicians as role models for weight-related health behaviors, and whether patients' trust weight loss advice differently if provided by an overweight/obese physician. Our secondary objective was to assess whether the relationship between physician and patient BMI (e.g., whether the patients' BMI met or exceeded that of the physician) was associated with when the doctor initiated obesity care.

METHODS AND PROCEDURES

Study design

National cross-sectional survey of primary care physicians in the United States.

Survey Development and Implementation

We consulted SSRS/Social Science Research Solutions to design and implement the survey. The survey instrument was reviewed for content by physicians and experts in the field of obesity, and was then pretested for length and comprehensibility. The survey was revised on the basis of these pilot tests and the final version included 49 questions. The field-work for this survey was conducted via the internet by The Epocrates Honors Web Panel Company, which consists of 145,000 physicians.

We surveyed 500 General Practitioners, Family Practitioners, and General Internists between February 9 and 1 March 2011. These physicians were recruited from The Epocrates Honors panel. The Epocrates Honors panel is an opt-in panel of 145,000 physicians in the United States verified by the American Medical Association's (AMA's) master file. Physicians were verified by checking their first and last name, date of birth, medical school, and graduation date against the AMA's master file at the time of panel registration. A random sample of the panel was invited to participate in the survey. This sample was drawn to match AMA master file proportions for age, gender, and region. Each physician received a \$25 incentive for completing the survey.

This study was approved by the Johns Hopkins Bloomberg School of Public Health Institutional Review Board.

Measures

Independent variables—The primary independent variable of interest was physician BMI. Physicians were considered to be overweight or obese if their self-reported BMI was $\geq 25 \text{ kg/m}^2$ and normal BMI if their self-reported BMI was $<25 \text{ kg/m}^2$ ($1 = \text{BMI} < 25 \text{ kg/m}^2$;

0 = BMI was $<25 \text{ kg/m}^2$). Additional physician-level covariates of interest included gender, race/ethnicity, age, specialty, weight loss intention and, whether the physician received good or very good obesity-related training in medical school or residency. Physician practice-level characteristics included setting, location, whether the patient chart included BMI and type of health insurance accepted.

Outcome definitions—Our primary outcome was physician perception of the appropriate body weight to initiate weight loss discussion or to record an obesity diagnosis in the medical chart. The survey displayed pictures of five different body sizes that ranged from normal BMI to class III obese, where image 1 represented normal BMI and image 5 represented class III obese, and respondents were asked to select the patient size at which they typically initiate weight loss discussion and record an obesity diagnosis. We elected to use pictures rather than provide BMI categories so as not to bias physician responses.

We also evaluated physician perspectives on the following topics: (i) self-efficacy for providing weight-related counseling and prescribing weight loss medications to obese patients; (ii) attitudes toward personal health behaviors; and (iii) whether patients trust weight loss advice differently if provided by an overweight/obese physician. Physician self-efficacy questions assessed whether physicians felt confident providing diet, exercise counseling, or weight loss medications to their obese patients and the extent to which they perceived themselves as successful in helping their patients lose weight. Physicians' personal health behavior questions assessed whether physicians should serve as role models for their patients by maintaining a healthy weight or exercising regularly.

Our secondary outcome—physician belief about whether patients trust weight loss advice depending on physician body weight—was based on two survey questions: (i) “Do you think overweight/obese patients are more likely, less likely or as likely to trust weight loss advice from overweight/obese physicians?” and (ii) “Do you think overweight/obese patients are more likely, less likely or as likely to trust weight loss advice from healthy weight physicians?” We also explored the relationship between physician and patient BMI's (“physician-patient BMI”) and obesity care, using a dichotomous variable where 1 indicated that the hypothetical patient's BMI met or exceeded the physicians' BMI and 0 indicated the patient's BMI was lower than the physicians' BMI.

Statistical analyses

We performed descriptive analyses for all variables. χ^2 -tests and t -tests were used to test for unadjusted differences in the outcome variables by physician BMI. We conducted multivariate regression analyses (linear and logistic) adjusting for race/ethnicity, gender, age, region of the country, practice setting, physician weight loss intention, whether patient charts typically include BMI, whether the physician received good or very good obesity training in medical school or residency, and whether the type of health insurance accepted by the practice (i.e., private, Medicare, Medicaid/Children's Health Insurance Program (CHIP)/State Children's Health Insurance Program (SCHIP)) to determine whether the unadjusted relationships between physician BMI and the outcome variables persisted. All tables report unadjusted results, as there were minimal to no differences between unadjusted and adjusted results. Due to small numbers of obese physicians in our sample (14%), we combined overweight and obese physicians. In a sensitivity analysis, we compared responses using three weight categories (normal BMI, overweight, and obese). Given that physicians with additional knowledge/ training about obesity may differ from traditional primary care physicians, we also conducted a sensitivity analysis restricting the sample to those physicians responding “yes” to the survey question: “Have you received other training

either in-person or online (such as a lecture, seminar, workshop, conference, or other non-CME fellowship training) on how to care for your obese patients?" ($N = 300$).

We used weighting to address systematic under- or over-representation of the physician subpopulations in the panel, account for systematic nonresponse along known demographic characteristics of the physicians, and adjust for sampling biases due to differences in nonresponse rates (27). Statistical analyses were performed using the STATA, version 9.2 software package (StataCorp LP, College Station, TX), using SVY functions to adjust for the complex survey design. The weighted margin of error for the survey was $\pm 5.3\%$.

RESULTS

Characteristics of the study sample

Table 1 reports the characteristics of the study sample. We excluded two underweight (BMI < 18.5) physicians yielding a final sample size for the study of 498 primary care physicians. The majority of physicians were male (67%), white (70%), age 40 or older (72%), overweight or obese (53%), and general internists (55%). Less than half reported that they were currently seriously trying to lose weight (41%). Thirty-six percent reported very good or good obesity-related medical training in medical school or residency.

Sixty-three percent practiced in an outpatient setting and their practice locations were evenly distributed throughout the country: Northeast—21%, North Central—23%, South—33%, West—23%. The majority of physicians reported that their patient charts included BMI (76%). Almost all physicians worked in practices accepting private health insurance (94%) or Medicare (92%), and two-thirds accepted Medicaid, the CHIP or the SCHIP (64%).

Differences by physician BMI in obesity care practices

Table 2 shows physician responses on the appropriate patient body weight to record an obesity diagnosis in the patient chart and to initiate a discussion about weight loss, by physician BMI. We observed no significant relationship between physician BMI category and recording an obesity diagnosis. Few physicians engaged patients in normal or overweight BMI categories in weight loss discussions; the majority of physicians initiated weight loss discussions once a patient was in the obese BMI category (93%).

The practice of initiating weight loss discussions differed significantly by physician BMI. Physicians with a normal BMI more frequently reported weight loss discussions with their patients with class II (BMI, 35.0–39.9 kg/m²) obesity compared with overweight/obese physicians (30% vs. 18%, $P = 0.010$). After adjustment for race/ethnicity, sex, age, region of the country, practice setting, physician weight loss intention, whether charts include BMI, quality of obesity training in medical school or residency, and type of accepted health insurance, the relationship persisted (27% vs. 16%, $P = 0.044$).

Differences by physician BMI in beliefs about personal health behaviors, self-efficacy, and attitudes

Table 3 shows physician personal health behaviors (weight loss, regular exercise), self-efficacy for weight loss counseling, and attitudes toward obese patients, by physician BMI category. As compared to physicians with a normal BMI, fewer overweight/obese physicians strongly agreed that “physicians should be role models by maintaining health weight” (56% vs. 72%, $P = 0.002$) and “physicians should be role models by exercising regularly” (57% vs. 73%, $P = 0.001$). Overweight/obese physicians had lower self-efficacy for providing lifestyle counseling compared with normal BMI physicians. Fewer overweight/obese physicians strongly agreed with the statements: “I feel competent giving

diet counseling to my obese patients” (37% vs. 53%, $P = 0.0021$) and “I feel confident giving exercise counseling to my obese patients” (38% vs. 56%, $P = 0.001$). Conversely, overweight/ obese physicians had higher self-efficacy for prescribing weight loss medications compared to physicians with normal BMI (26% vs. 18%, $P = 0.043$). Overall more overweight/obese physicians strongly agreed with the statement, “I am usually successful in helping my obese patients lose weight” (5% vs. 2%, $P = 0.034$). Multivariate regression analysis confirmed the differences in self-efficacy by physician BMI.

Quality of obesity-related training in medical school or residency moderated the relationship between physician BMI and self-efficacy. Among overweight/obese physicians, those with higher quality education more frequently reported feeling competent to provide diet counseling ($P < 0.001$) and exercise counseling ($P = 0.002$) to their obese patients.

Differences by physician BMI in beliefs about patient trust in physician weight loss advice

Table 4 shows physician beliefs of patient trust in weight loss advice by physician BMI. As compared to overweight/obese physicians, a higher percentage of normal BMI physicians believed that overweight/obese patients would be less likely to trust weight loss advice from overweight/obese doctors (79% vs. 69%, $P = 0.03$). After adjustment for covariates, physician BMI remained significantly related the physician perception that overweight/ obese patients would be less likely to trust weight loss advice from overweight/obese doctors (83% vs. 67%, $P = 0.005$).

Influence of the relationship between physician BMI and patient BMI on obesity care

We examined the concordance of the physician and patient BMI and its relationship with physicians’ initiating a weight loss discussion or providing an obesity diagnosis. When the physicians’ perception of the patients’ body weight met or exceeded their own personal body weight, they more frequently recorded an obesity diagnosis (93% vs. 7%, $P < 0.001$) and discussed weight loss (89% vs. 11%, $P = 0.001$) as compared to when the patient’s body weight was less than their own body weight. After adjustment for covariates in the multivariate regression models, physician-patient BMI remained significantly related to the probability of a physician recording an obesity diagnosis (98% vs. 2%, $P < 0.001$) and the probability of discussing weight loss (95% vs. 5%, $P < 0.001$).

We conducted sensitivity analyses to determine whether responses differed between overweight and obese physicians as well as whether responses differed among those physicians with additional knowledge/training about obesity. In the sensitivity analysis comparing responses using three body weight categories (normal BMI, overweight, and obese), we observed differences between overweight and obese physicians for two outcomes: physician beliefs about weight loss and physician beliefs about regular exercise. Compared to overweight physicians, obese physicians were less likely to strongly agree with the statement that “physicians should be role models by maintaining health weight” (61% vs. 44%, $P = 0.000$) and “physicians should be role models by exercising regularly” (61% vs. 45%, $P = 0.001$). In the sensitivity analysis which restricted the sample to physicians reporting some additional knowledge/ training about obesity, we no longer observed a significant difference between normal BMI and overweight/obese physicians for two outcomes: self-efficacy in counseling about diet (54% vs. 43%, 0.106) and beliefs about success in helping obese patients lose weight (2% vs. 5%, 0.109). However, the results are not substantively different from the original analysis and may differ due to small numbers.

DISCUSSION

Our findings indicate that physicians with normal BMI more frequently report discussing weight loss at lower levels of BMI compared to overweight/obese physicians. Physicians with normal BMI also have greater confidence in their ability to provide diet and exercise counseling to their obese patients, and perceive their weight loss advice as trustworthy. However, overweight/obese physicians had greater confidence in prescribing weight loss medications and were more likely to report success in helping patients lose weight. Physicians in the normal BMI category more frequently reported that physicians should model healthy weight-related behaviors. Finally, recording an obesity diagnosis or discussing weight loss with obese patients was higher when the physicians' perception of the patients' body weight met or exceeded their own personal body weight.

To our knowledge, our study is the first to examine the association of physician BMI with obesity care practices. However, we observed interesting parallels between our findings and those in the smoking cessation literature. In particular, smoking as compared to nonsmoking physicians are more likely to disregard their educational role in helping patients to quit (28) and less likely to: initiate cessation interventions with their patients (29), believe that smoking poses a significant threat to patient health (29), identify smoking cessation as a high priority for intervention (29), discuss smoking with their patients at every visit (29), and provide consultation services to assist with smoking cessation. Our finding of higher self-efficacy among normal BMI physicians, as compared to overweight/ obese physicians, is also consistent with literature indicating that personal health promotion behavior in physicians is a strong predictor of attitudes toward obesity care (30). For example, physicians who exercise more and maintain a healthy diet are more likely to discuss exercise and weight with their patients (31).

While our results suggest that obesity practices and beliefs differ by physician BMI, the most appropriate clinical interventions may be to improve all physicians' practices related to obesity care. Isolating heavier physicians for intervention may increase obesity stigma, which has increased considerably overtime (32). Targeting all physicians may also be more effective, given our finding that obesity care (e.g., rates of diagnosis and weight-related counseling) was low among all physicians, which is similar to previous research (5).

Our results suggest several possible clinical interventions to improve physician weight management practices. First, clinical interventions that specifically target physician well-being could indirectly lead to an increase in the frequency with which physicians record an obesity diagnosis or initiate a weight loss conversation with their patients. An extensive body of literature has documented that physicians experience high stress, divorce rates, substance abuse, depression, and a host of other health-related problem (33). Interventions which target physician well-being are effective and have been shown to reduce emotional and work-related exhaustion (34). Improving physician well-being by encouraging healthy lifestyle and/or weight loss may have the secondary effect of improving physician care of obese patients. Our finding that high quality obesity-related training was associated with self-efficacy suggests that improved medical education, particularly in medical school or residency, may provide opportunities for future physicians to improve obesity care. Evidence suggests that physicians who are well trained in obesity screening and counseling practices during residency are more likely to report that they always discuss diet or exercise with obese patients (6). A third area of focus could be interventions which teach physicians motivational interviewing skills and patient-centered communication strategies (including rapport-building and facilitation/patient activation skills). Techniques of motivational interviewing are one of the most effective communication strategy to promote difficult behavior change (35). Motivational interviewing may be particularly important given that all

physicians in our study reported low rates of success in helping patients to lose weight. Finally, prompts in the medical chart or a list of key nutrition and diet recommendations for doctors to cover with all overweight/obese patients may help improve the frequency of obesity care. Interventions focused on reminder techniques will likely be most feasible in clinical settings which utilize electronic medical records.

Contrary to past research suggesting that physicians do not feel qualified to treat obese patients (36) as well as decrements in physician knowledge and attitudes about clinical obesity care (7,8,37), we found that a third of physicians reported very good/good obesity-related training in medical school or residency. More research is needed to understand if and how medical student and resident training have improved as well as what changes are most critical to the improved self-efficacy among physicians.

There are several limitations to this analysis. First, it is cross-sectional which only allows us to address associations rather than causal inferences. Second, we relied on physician self-report which likely led to an underestimation of overweight/ obese physicians (38). However, there is evidence to suggest that physician self-reports of weight and other personal health behaviors are valid and reliable (39). Third, our measures of physician attitudes were limited in that they do not represent the full spectrum of attitude measures in the literature (such as perceived skills (40) or comfort in caring for obese patients (41) which may bias our results toward the null. Fourth, some of the included PCP's may have had extensive additional training in obesity (considering themselves "obesity specialists"), which could have biased our results positively. Although we asked about additional training in obesity, we were unable to determine the extent of the training. The results from our sensitivity analysis restricting the sample to PCP's with additional training about obesity indicate differences for two outcomes (self-efficacy in counseling about diet and beliefs about success in helping obese patients lose weight) but these differences were not substantively different from the original analysis. Finally, our use of body images rather than BMI to solicit physician perspectives about appropriate patient body weights for weight loss conversations and obesity diagnosis may have been differentially interpreted by physicians.

In conclusion, this study suggests physician BMI impacts obesity care. Normal BMI physicians are more likely to provide obesity care to their patients and feel confident doing so. More research is needed to understand the impact of physician BMI on obesity care. Physician self-efficacy to care for obese patients—regardless of their BMI—may be improved by targeting physician well being and enhancing the quality of obesity- related training in medical school, residency or continuing medical education.

Acknowledgments

This work was supported by two grants from the National Heart, Lung, and Blood Institute (1K01HL096409 and K24HL083113) and one grant from the Health Resources and Services Administration (T32HP10025-17-00).

References

1. US Department of Health and Human Services. Healthy People 2010: Understanding and Improving Health. U.S. Government Printing Office; Washington, DC: Nov. 2000
2. Flegal KM, Carroll MD, Ogden CL, Curtin LR. Prevalence and trends in obesity among US adults, 1999–2008. *JAMA*. 2010; 303:235–241. [PubMed: 20071471]
3. Finkelstein EA, Trogon JG, Cohen JW, Dietz W. Annual medical spending attributable to obesity: payer-and service-specific estimates. *Health Aff (Millwood)*. 2009; 28:w822–w831. [PubMed: 19635784]
4. North American Association for the Study of Obesity (NAASO) and the National Heart Lung and Blood Institute. Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight

and Obesity in Adults –The Evidence Report. National Institutes of Health. *Obes Res.* 1998; 6 (Suppl 2):51S–209S. [PubMed: 9813653]

5. Bleich SN, Pickett-Blakely O, Cooper LA. Physician practice patterns of obesity diagnosis and weight-related counseling. *Patient Educ Couns.* 2011; 82:123–129. [PubMed: 20303691]
6. Forman-Hoffman V, Little A, Wahls T. Barriers to obesity management: a pilot study of primary care clinicians. *BMC Fam Pract.* 2006; 7:35. [PubMed: 16756673]
7. Price JH, Desmond SM, Krol RA, Snyder FF, O’Connell JK. Family practice physicians’ beliefs, attitudes, and practices regarding obesity. *Am J Prev Med.* 1987; 3:339–345. [PubMed: 3452374]
8. Kristeller JL, Hoerr RA. Physician attitudes toward managing obesity: differences among six specialty groups. *Prev Med.* 1997; 26:542–549. [PubMed: 9245677]
9. Huizinga MM, Cooper LA, Bleich SN, Clark JM, Beach MC. Physician respect for patients with obesity. *J Gen Intern Med.* 2009; 24:1236–1239. [PubMed: 19763700]
10. Kushner RF. Barriers to providing nutrition counseling by physicians: a survey of primary care practitioners. *Prev Med.* 1995; 24:546–552. [PubMed: 8610076]
11. Laws RA, Jayasinghe UW, Harris MF, et al. Community Health SNAP Project Team. Explaining the variation in the management of lifestyle risk factors in primary health care: a multilevel cross sectional study. *BMC Public Health.* 2009; 9:165. [PubMed: 19480660]
12. Hash RB, Munna RK, Vogel RL, Bason JJ. Does physician weight affect perception of health advice? *Prev Med.* 2003; 36:41–44. [PubMed: 12473423]
13. Merrill E, Grassley J. Women’s stories of their experiences as overweight patients. *J Adv Nurs.* 2008; 64:139–146. [PubMed: 18764854]
14. Drury CA, Louis M. Exploring the association between body weight, stigma of obesity, and health care avoidance. *J Am Acad Nurse Pract.* 2002; 14:554–561. [PubMed: 12567923]
15. Olson CL, Schumaker HD, Yawn BP. Overweight women delay medical care. *Arch Fam Med.* 1994; 3:888–892. [PubMed: 8000560]
16. Amy NK, Aalborg A, Lyons P, Keranen L. Barriers to routine gynecological cancer screening for White and African-American obese women. *Int J Obes (Lond).* 2006; 30:147–155. [PubMed: 16231037]
17. Fontaine KR, Faith MS, Allison DB, Cheskin LJ. Body weight and health care among women in the general population. *Arch Fam Med.* 1998; 7:381–384. [PubMed: 9682694]
18. Wee CC, McCarthy EP, Davis RB, Phillips RS. Obesity and breast cancer screening. *J Gen Intern Med.* 2004; 19:324–331. [PubMed: 15061741]
19. Levy BT, Williamson PS. Patient perceptions and weight loss of obese adults. *J Fam Pract.* 1988; 27:285–290. [PubMed: 3418302]
20. Kant AK, Miner P. Physician advice about being overweight: association with self-reported weight loss, dietary, and physical activity behaviors of US adolescents in the National Health and Nutrition Examination Survey, 1999–2002. *Pediatrics.* 2007; 119:e142–e147. [PubMed: 17200241]
21. Calfas KJ, Sallis JF, Oldenburg B, Ffrench M. Mediators of change in physical activity following an intervention in primary care: PACE. *Prev Med.* 1997; 26:297–304. [PubMed: 9144753]
22. Galuska DA, Will JC, Serdula MK, Ford ES. Are health care professionals advising obese patients to lose weight? *JAMA.* 1999; 282:1576–1578. [PubMed: 10546698]
23. Sciamanna CN, Tate DF, Lang W, Wing RR. Who reports receiving advice to lose weight? Results from a multistate survey. *Arch Intern Med.* 2000; 160:2334–2339. [PubMed: 10927731]
24. Loureiro ML, Nayga RM Jr. Obesity, weight loss, and physician’s advice. *Soc Sci Med.* 2006; 62:2458–2468. [PubMed: 16376006]
25. Huang J, Yu H, Marin E, et al. Physicians’ weight loss counseling in two public hospital primary care clinics. *Acad Med.* 2004; 79:156–161. [PubMed: 14744717]
26. Kreuter MW, Chheda SG, Bull FC. How does physician advice influence patient behavior? Evidence for a priming effect. *Arch Fam Med.* 2000; 9:426–433. [PubMed: 10810947]
27. Keeter S, Miller C, Kohut A, Groves RM, Presser S. Consequences of reducing nonresponse in a national telephone survey. *Public Opin Q.* 2000; 64:125–148. [PubMed: 10984330]

28. Nardini S, Bertolotti R, Rastelli V, Donner CF. The influence of personal tobacco smoking on the clinical practice of Italian chest physicians. *Eur Respir J*. 1998; 12:1450–1453. [PubMed: 9877508]
29. Pipe A, Sorensen M, Reid R. Physician smoking status, attitudes toward smoking, and cessation advice to patients: an international survey. *Patient Educ Couns*. 2009; 74:118–123. [PubMed: 18774670]
30. Spencer EH, Frank E, Elon LK, et al. Predictors of nutrition counseling behaviors and attitudes in US medical students. *Am J Clin Nutr*. 2006; 84:655–662. [PubMed: 16960182]
31. Abramson S, Stein J, Schaufele M, Frates E, Rogan S. Personal exercise habits and counseling practices of primary care physicians: a national survey. *Clin J Sport Med*. 2000; 10:40–48. [PubMed: 10695849]
32. Andreyeva T, Puhl RM, Brownell KD. Changes in perceived weight discrimination among Americans, 1995–1996 through 2004–2006. *Obesity (Silver Spring)*. 2008; 16:1129–1134. [PubMed: 18356847]
33. Rollman BL, Mead LA, Wang NY, Klag MJ. Medical specialty and the incidence of divorce. *N Engl J Med*. 1997; 336:800–803. [PubMed: 9052662]
34. Dunn PM, Arnetz BB, Christensen JF, Homer L. Meeting the imperative to improve physician well-being: assessment of an innovative program. *J Gen Intern Med*. 2007; 22:1544–1552. [PubMed: 17891503]
35. Rollnick, S.; Miller, WR.; Butler, CC. *Motivational Interviewing in Healthcare*. The Guilford Press; New York: 2008.
36. Block JP, DeSalvo KB, Fisher WP. Are physicians equipped to address the obesity epidemic? Knowledge and attitudes of internal medicine residents. *Prev Med*. 2003; 36:669–675. [PubMed: 12744909]
37. Harris JE, Hamaday V, Mochan E. Osteopathic family physicians' attitudes, knowledge, and self-reported practices regarding obesity. *J Am Osteopath Assoc*. 1999; 99:358–365. [PubMed: 10441934]
38. Ezzati M, Martin H, Skjold S, Vander Hoorn S, Murray CJ. Trends in national and state-level obesity in the USA after correction for self-report bias: analysis of health surveys. *J R Soc Med*. 2006; 99:250–257. [PubMed: 16672759]
39. Klag MJ, He J, Mead LA, et al. Validity of physicians' self-reports of cardiovascular disease risk factors. *Ann Epidemiol*. 1993; 3:442–447. [PubMed: 8275223]
40. Cheng TL, DeWitt TG, Savageau JA, O'Connor KG. Determinants of counseling in primary care pediatric practice: physician attitudes about time, money, and health issues. *Arch Pediatr Adolesc Med*. 1999; 153:629–635. [PubMed: 10357306]
41. Jelalian E, Boergers J, Alday CS, Frank R. Survey of physician attitudes and practices related to pediatric obesity. *Clin Pediatr (Phila)*. 2003; 42:235–245. [PubMed: 12739922]

Table 1Characteristics of the study sample ($N = 498$)

	<i>N</i>	<i>%</i>
<i>Physician characteristics</i>		
Gender		
Female	163	33
Male	334	67
Race/ethnicity		
White	350	70
Black	15	3
Asian	75	15
Hispanic	25	5
Other race	32	1
Age, years		
Under 40	140	28
Aged 40–54	205	41
Aged 55 and older	152	31
Specialty		
General practice/family medicine	273	55
General internal medicine	224	45
Body weight category		
Normal BMI	230	47
Overweight	191	38
Obese	76	15
Weight loss intention		
Trying	206	41
Not trying	291	59
Very good/good training in medical school or residency	179	36
<i>Practice characteristics</i>		
Practice setting		
Inpatient	49	10
Outpatient	313	63
Both inpatient and outpatient	136	27
Location of practice		
Northeast	104	21
North central	111	23
South	166	33
West	116	23
Patient chart		
Includes BMI	375	76
Health insurance accepted		
Private insurance	469	94

	<i>N</i>	%
Medicare	457	92
Medicaid/CHIP/SCHIP	316	64

Numbers may not add up to 100% because of rounding. The bodyweight categories are defined as follows: normal BMI (BMI: 18.5–24.9 kg/m²), overweight (BMI: 25.0–29.9 kg/m²), and obese (BMI: ≥30 kg/m²).

CHIP, Children's Health Insurance Program; SCHIP, State Children's Health Insurance Program.

Table 2

Physician perspective on the appropriate patient body weight for obesity diagnosis and weight loss counseling by personal body weight status, %

	Patient BMI image					P value
Patient BMI threshold for...						
<i>Recording an obesity diagnosis</i>						
Physician BMI						
Normal BMI (N = 230)	1.6%	0.1%	36.0%	55.0%	6.4%	0.506
Overweight or obese (N = 267)	0.1%	1.5%	42.0%	50.0%	5.6%	
<i>Initiating a weight loss conversation</i>						
Physician BMI						
Normal BMI (N = 230)	—	9.3%	72.0%	18.0%	1.1%	0.024
Overweight or obese (N = 267)	—	5.1%	64.0%	30.0%	1.4%	

The patient weights (from left to right) correspond to the following BMI categories: normal BMI (BMI: 18.5–24.9 kg/m²), overweight (BMI: 25.0–29.9 kg/m²), class I obese (BMI: 30.0–34.9 kg/m²), class II obese (BMI: 35.0–39.9 kg/m²), and class III obese (BMI: 40.0 kg/m²).

P value < 0.05.

Table 3

Physician beliefs about their participation in healthy behaviors, self-efficacy and attitudes toward obese patients, by personal body weight status

	Normal BMI	Overweight/obese	<i>P</i> value
	<i>N</i> = 233	<i>N</i> = 265	
<i>Physicians should be role models for their patients by...</i>			
Maintaining healthy weight	72%	56%	0.002
Exercising regularly	73%	57%	0.001
<i>I feel competent...</i>			
Counseling about diet	53%	37%	0.002
Counseling about exercise	56%	38%	0.001
Prescribing weight loss medications	18%	26%	0.043
I am usually successful in helping my obese patients lose weight	2%	5%	0.034

P value based on *t*-test. Percentages are based on respondents reporting that they “strongly agreed” with the statement.

Table 4

Physician perception of patients' trust in weight loss advice, by physician's body weight

	Normal BMI	Overweight/obese	
	N = 233	N = 265	P value
<i>Likelihood overweight/obese patients will trust weight loss advice from overweight/obese doctors^a</i>			
More likely	4%	10%	0.029
As likely	17%	21%	
Less likely	79%	69%	
<i>Likelihood overweight/obese patients will trust weight loss advice from normal weight doctors^b</i>			
More likely	75%	64%	0.063
As likely	19%	28%	
Less likely	6%	8%	

P value based on χ^2 -test.

^aSurvey question: "Do you think overweight/obese patients are more likely, less likely or as likely to trust weight loss advice from overweight/obese physicians?"

^bSurvey question: "Do you think overweight/obese patients are more likely, less likely or as likely to trust weight loss advice from healthy weight physicians?"