Impact of Physician BMI on Obesity Care and Beliefs

Sara N. Bleich1, Wendy L. Bennett2,3, Kimberly A. Gudzune2 and Lisa A. Cooper2,4

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%, \( P \leq 0.001 \)) 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., 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 fieldwork 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 (AMAs) master file. Physicians were verified by checking their first and last name, date of birth, medical school, and graduation date against the AMAs 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 ≥25 kg/m² and normal BMI if their self-reported BMI was <25 kg/m² (1 = BMI ≥25 kg/m²; 0 = BMI <25 kg/m²). 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. χ²-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 non-response 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 ±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 had higher self-efficacy for prescribing weight loss medications compared to physicians with normal BMI (26% vs. 18%, \( P = 0.043 \)). 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%, \( P = 0.005 \)).
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%, \( P \leq 0.001 \)) 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.

### Table 2: Physician perspective on the appropriate patient body weight for obesity diagnosis and weight loss counseling by personal body weight status, %

<table>
<thead>
<tr>
<th>Patient BMI threshold for...</th>
<th>Normal BMI (N = 230)</th>
<th>Overweight or obese (N = 267)</th>
<th>( P ) value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recording an obesity diagnosis</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physician BMI</td>
<td>1.6%</td>
<td>0.1%</td>
<td>36.0%</td>
</tr>
<tr>
<td>Overweight or obese</td>
<td>0.1%</td>
<td>1.5%</td>
<td>42.0%</td>
</tr>
<tr>
<td><strong>Initiating a weight loss conversation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physician BMI</td>
<td>Normal BMI (N = 230)</td>
<td>—</td>
<td>9.3%</td>
</tr>
<tr>
<td>Overweight or obese</td>
<td>—</td>
<td>5.1%</td>
<td>64.0%</td>
</tr>
</tbody>
</table>

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

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

\( P \) 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

<table>
<thead>
<tr>
<th>Likelihood overweight/obese patients will trust weight loss advice from...</th>
<th>Normal BMI</th>
<th>Overweight/obese</th>
<th>( N = 233 )</th>
<th>( N = 265 )</th>
<th>( P ) value</th>
</tr>
</thead>
<tbody>
<tr>
<td>( ^a )</td>
<td>More likely</td>
<td>4%</td>
<td>10%</td>
<td>0.029</td>
<td></td>
</tr>
<tr>
<td>As likely</td>
<td>17%</td>
<td>21%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less likely</td>
<td>79%</td>
<td>69%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( ^b )</td>
<td>More likely</td>
<td>75%</td>
<td>64%</td>
<td>0.063</td>
<td></td>
</tr>
<tr>
<td>As likely</td>
<td>19%</td>
<td>28%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less likely</td>
<td>6%</td>
<td>8%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\( P \) value based on \( \chi^2 \)-test.

\( ^a \)Survey question: “Do you think overweight/obese patients are more likely, less likely or as likely to trust weight loss advice from overweight/obese physicians?”.\n
\( ^b \)Survey question: “Do you think overweight/obese patients are more likely, less likely or as likely to trust weight loss advice from healthy weight physicians?”.

### 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%, \( P \leq 0.001 \)) 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 over time (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 PCPs 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 PCPs 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.

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DISCLOSURE
The authors declared no conflict of interest.

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