BRIEF REPORT

Influence of Body Weight on Patients' Satisfaction with Ambulatory Care

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Patients with obesity experience psychosocial consequences because of their weight and report physician bias. We examined whether obesity is associated with lower patient satisfaction with ambulatory care among 2,858 patients seen at 11 academically affiliated primary care practices in Boston. Compared with normal weight patients (body mass index [BMI], 19.0 to 24.9 kg/M^2), overweight (BMI, 25.0 to 29.9 kg/M^2) and obese patients (BMI $\geq$30 kg/M^2) reported lower overall satisfaction scores at their most recent visit; the scores were 85.5, 85.0, and 82.6 out a possible 100, respectively (P = .05). After adjustment for potential confounders including illness burden, obese patients reported lower scores but the difference was not statistically significant (mean difference, 1.23 [95% confidence interval −0.67 to 3.12]). Patient satisfaction with their usual provider and their practice did not vary by BMI group. Obesity is associated with only modest decreases in satisfaction scores with the most recent visit, which were explained largely by higher illness burden among obese patients.
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Obesity is a major public health problem in the United States, contributing to almost 300,000 deaths each year.[1] Patients who are overweight and obese account for a substantial proportion of health care expenditures and physician visits.[2,3] Yet, patients with obesity often perceive that physicians are biased against them,[4] and some of these perceptions appear to be well-founded.[3–8] Whether negative physician attitudes toward obese patients or patients' perception of these attitudes affects satisfaction with care is unknown. We examined the relationship between patient body weight and satisfaction with ambulatory care.

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METHODS

Study Setting

The Ambulatory Medicine Quality Improvement Project was designed to examine factors associated with variation in the quality of care at 11 diverse internal medicine primary care practices affiliated with Harvard teaching hospitals in metropolitan Boston. Details of the study have been described previously.[9] The Institutional Review Board of each participating institution approved the study.

Patients

From 10 sites, we randomly selected 600 patients 20 to 75 years old who had at least 1 visit to an attending physician during the preceding year; from the smallest site, we selected 250 patients. Patients were given the opportunity to decline participation by mail. Trained research nurses reviewed the medical records of interested patients. We then contacted patients to complete a telephone survey between August 1996 and October 1997. We excluded patients from the survey who did not speak either English or Spanish, who had difficulty hearing, who had died, or for whom we did not have an accurate telephone number.

Data Collection

We abstracted information such as age, sex, and comorbid conditions from patients' medical records. The telephone survey included questions about sociodemographic characteristics, health status, height and weight, and satisfaction with medical care.

Factors and Outcomes of Interest

We calculated patients' body mass index (BMI) by dividing their body weight in kilograms by the square of their height in meters. On the basis of national guidelines,[10] we defined patients as underweight (BMI $<$18.5), normal weight (BMI, 18.5 to 24.9), overweight (BMI, 25 to 29.9), and obese (BMI $\geq$30.0).

We asked patients about their ratings and reports of care using 23 questions adapted from the Medical Outcomes Study[11] and the Picker Institute Ambulatory Care

Satisfaction Survey.[12] Using factor analysis, we identified 5 summary variables. We hypothesized that obesity would influence 2 of these variables: 1) overall patient satisfaction with their provider and practice, and 2) satisfaction with their most recent visit. Four items contributed equally to the satisfaction score for the provider and practice overall: 1) "How satisfied are you with your health care provider?" 2) "How satisfied are you with the quality of the practice?" 3) "Would you recommend this practice to your family or friends?" and 4) "Do you plan to come back to this practice?" For the first 2 questions, we assigned 2 points to patients who responded "very satisfied" or "satisfied" and 1 point to those who responded "not sure," "dissatisfied," or "very dissatisfied." For questions 3 and 4, we assigned 2 points to patients who answered "yes" and 1 point if they answered "no." To arrive at a summary score (50 to 100), each patient's mean score for all 4 items was then multiplied by 50. A higher score indicated higher satisfaction. The internal consistency (Cronbach's α) for these items was 0.75.

Based on our factor analysis, our second outcome, satisfaction with the most recent visit, consisted of 5 items measuring different aspects of care (visit overall, technical skills of provider, personal manner of provider, the explanation of what was done at the visit, and time spent with the provider); the internal consistency of these items was 0.89. Patients rated these items using a 5-point Likert scale (1 = poor, 2 = fair, 3 = good, 4 = very good, and 5 = excellent). The mean score for the items was multiplied by 20 arrive at the summary score.

We were also interested in responses to the 5 items that comprise the summary satisfaction score for their most recent visit and 1 of the 4 items ("Overall, how satisfied are you with your health provider?") comprising the summary score for the provider and practice overall separately. For each item, patients were dichotomized into those giving the highest rating compared to all other ratings.

Data Analysis

Using descriptive statistics, we characterized study patients according to BMI. We developed multivariable models to examine the association between obesity and various measures of patient satisfaction. We used linear regression for continuous outcomes and logistic regression for dichotomous outcomes. Models were initially adjusted for patient age, sex, race, education, insurance type, whether the patient spoke English, and site of care. For outcomes related to care received at the most recent visit, we also adjusted for whether the patients saw their usual primary care provider. We then adjusted for the number of comorbid illnesses and self-reported health.

Because physician satisfaction has been shown to be associated with patient satisfaction,[9] we repeated our 2 primary analyses, adjusting for physician satisfaction with their work, collected in a physician survey described previously.[9] We also explored potential interactions between patient race and BMI, and patient sex and BMI.

We used the generalized estimating equation approach for all analyses to account for the lack of statistical independence between patients cared for by the same physician.[13] P values $<.05$ were considered statistically significant.

RESULTS

Of 4,167 patients eligible for survey, 2,858 (68.5%) patients responded. We included 2,340 who had complete height and weight data. The mean BMI was 25.3 ± 5.4 kg/M^2. Satisfaction scores were similar between patients who provided height and weight and those who did not. Table 1 presents the characteristics of patients overall and grouped by their BMI.

Table 2 demonstrates the unadjusted and adjusted relationship between BMI and measures of satisfaction. Obese patients reported lower satisfaction scores in reference to their most recent visit (P = .05; Table 2a). Satisfaction scores for the overall quality of their provider and practice, however, did not vary by BMI (Table 2a). When we adjusted for patient age, gender, race, primary language, whether they saw their usual provider, and site of care, the summary satisfaction scores for the most recent visit were significantly lower for patients who were obese (Table 2b). However, this difference was attenuated and no longer significant when we further adjusted for health status and comorbid illnesses. Results were similar after adjusting for provider satisfaction and interactions between race and BMI or gender and BMI. Consistent with the unadjusted results, satisfaction with the overall quality of the practice and provider did not vary significantly by BMI after adjustment (Table 2c).

When we examined the unadjusted relationship between BMI and the individual items that comprise the satisfaction summary scores separately, significant differences were noted for satisfaction with the technical skills of the provider and the explanation of what was done at the most recent visit (see Table 2d). These differences did not persist after full adjustment (Table 2e). Obese patients were significantly less likely to rate their most recent visit overall as "excellent" after adjusting for sociodemographic factors; however, this association was attenuated (0.82 [95% confidence interval, 0.63 to 1.07]), after additional adjustment for health status and comorbid illnesses, and lost statistical significance.

DISCUSSION

Patients with obesity reported low levels of satisfaction with most aspects of care at their most recent visit compared to normal-weight patients; however, we found no significant differences overall in patient satisfaction scores with the most recent visit or with their provider and practice overall, after adjusting for potential confounders

Table 1. Baseline Characteristics of Study Patients Overall and by Body Mass Index

Characteristics	Overall, *N* = 2,340*	BMI <18.5, *n* = 106*	BMI 18.5 to 24.9, *n* = 1,180*	BMI 25 to 29.9, *n* = 675*	BMI ≥30, *n* = 379*	*P* Value
Mean age, y	45	41	43	47	48	<.001
Sex, %						.001
Male	33	10	28	45	33	
Race, %						.001
White	74	72	81	70	60	
African American	12	13	8	14	23	
Education, %						.001
≤High school	26	18	18	32	42	
College graduate	55	67	66	47	34	
Insurance type, %						.001
Managed care	61	69	63	58	59	
Private, nonmanaged care	19	15	20	21	13	
Medicare	6	10	4	8	11	
Medicaid	5	3	5	5	8	
Uninsured	8	3	8	9	8	
Primary language nonEnglish, %	12	7	9	15	16	.001
Health status, %						.001
Excellent	26	29	33	21	11	
Very good	31	30	34	30	25	
Good	27	26	24	31	34	
Fair	12	11	7	14	26	
Poor	3	3	2	4	6	
Medical conditions, *n*						.001
None	39	43	46	36	18	
1–2	49	50	47	49	58	
>3	12	7	7	15	24	

* *Numbers of patients (*n*) may vary depending on factor of interest. For gender and age,* n *= 2,340; for race,* n *= 2,299; for education,* n *= 2,311; for insurance type,* n *= 2,219; for primary language,* n *= 2,328; for health status,* n *= 2,331; for number of conditions,* n *= 2,318.*

such as sociodemographic factors, insurance status, practice site, and illness burden.

Several previous studies described the negative impact of obesity on physician-patient relationships.[4–7] One study found that physicians often describe their obese patients negatively.[6] Patients are frequently aware of these negative physician attitudes.[4] Although we did not anticipate that body weight would correlate with all domains of satisfaction, we hypothesized that obesity adversely affects the phyician-patient relationship and would negatively affect aspects of satisfaction related to this relationship such as the personal manner of the physician and the time spent with their provider. Although there was a suggestion that obese patients may be less satisfied with most aspects of care at their most recent visit, these differences were not statistically significant after full adjustment. Moreover, obesity appears to least affect satisfaction with the personal manner of the provider.

There are several possible explanations for our unexpected findings. First, the patient satisfaction instrument we used may not be sensitive to quality of care issues related to patient weight. We did not ask explicitly, for example, whether patients thought their body weight affected the way they were treated by health providers, whether health providers harbored negative opinions about them because of their weight, or whether their body weight resulted in inferior care. Second, satisfaction is influenced to some degree by patient expectations and their frame of reference.[14] Societal discrimination against obese persons has been demonstrated in hiring and promotion practices, in college acceptance and admission, in life insurance, and in everyday social situations.[15–17] Given this context, patients may not judge less-blatant forms of bias as important in their health care. Moreover, the physician-patient interaction is a private one and patients generally only have their own experiences as a frame of reference. Finally, one of the strongest correlates of lower patient satisfaction is poor health status,[14,18] which, in turn, is highly correlated with obesity. Studies suggest that patients' self-perceived health status predicts satisfaction.[18] Self-reported health status among obese patients, however, may be influenced not only by the illnesses associated with obesity but also by the adverse psychological and social consequences experienced by persons with obesity. The strong association between self-reported health status and patient satisfaction may have masked a weaker relationship between obesity and lower satisfaction in our study. Conversely, any suggested differences in satisfaction associated with BMI may be due to residual confounding from illness burden not captured by our surrogate markers.

There are also more generic limitations to our study. First, results of satisfaction surveys are generally believed to overestimate patient satisfaction because of a tendency

Table 2. Patient Satisfaction Scores and Differences in Satisfaction by BMI

	Underweight (BMI <18.5)	Normal Weight (BMI 18.5 to 24.9)	Overweight (BMI 25.0 to 29.9)	Obese (BMI ≥30)
a) Unadjusted mean satisfaction scores				
Most recent visit	84.9	85.5	85.0	82.6
Overall quality of provider/practice	96.1	95.9	96.6	96.4
b) Adjusted mean differences in satisfaction scores (95% CI) for the most recent visit*				
Without adjustment for illness burden†	−0.21 (−3.20 to 2.78)	1.00	−0.92 (−2.69 to 0.85)	−2.20† (−4.15 to −0.26)
After adjustment for illness burden	0.35 (−2.65 to 1.32)	1.00	−0.42 (−2.15 to 1.32)	−1.23 (−3.12 to 0.67)
c) Adjusted mean differences in satisfaction scores (95% CI) for their provider and practice*				
Without adjustment for illness burden	−0.94 (−3.25 to 1.38)	1.00	−0.28 (−1.30 to 0.74)	−0.97 (−2.19 to 0.25)
After adjustment for illness burden	−0.77 (−3.10 to 1.55)	1.00	−0.14 (−1.20 to 0.91)	−0.71 (−1.95 to 0.53)
d) Unadjusted percentage of patients reporting the highest satisfaction rating for specific aspects of care				
Visit overall	49	49	51	43
Technical skill†	62	60	56	51
Personal manner	58	64	65	59
Explain what was done†	61	60	59	51
Time spent with provider	40	42	43	39
Satisfaction with provider	66	65	65	65
e) Adjusted odds ratio (95% CI) for reporting the highest satisfaction rating for specific aspects of care*				
Visit overall†	0.99 (0.66 to 1.48)	1.00	1.04 (0.83 to 1.29)	0.73† (0.56 to 0.96)
Technical skill	1.14 (0.77 to 1.68)	1.00	0.93 (0.74 to 1.16)	0.85 (0.65 to 1.10)
Personal manner	0.79 (0.52 to 1.21)	1.00	1.06 (0.86 to 1.31)	0.89 (0.71 to 1.13)
Explain what was done	1.20 (0.78 to 1.85)	1.00	0.97 (0.77 to 1.23)	0.78 (0.59 to 1.03)
Time spent with provider	0.98 (0.62 to 1.56)	1.00	1.05 (0.82 to 1.35)	0.91 (0.71 to 1.17)
Satisfaction with provider	1.08 (0.68 to 1.70)	1.00	0.93 (0.74 to 1.19)	1.05 (0.81 to 1.36)

* *Analyses adjusted for age, gender, race, education, insurance type, primary spoken language, whether patient saw their usual provider (for analyses pertaining to the last visit only), and site of care. Normal-weight respondents served as the reference group for all comparisons.*
† $P < .05$.
BMI, body mass index; CI, confidence interval.

to select patients more satisfied with care and exclude dissatisfied patients who are less likely to continue receiving care from the provider and practice under study. Moreover, satisfaction measures have a well-described ceiling effect in which baseline scores are high so that subtler differences in degree of satisfaction are undetectable among the majority of patients who are "satisfied."[19] Second, we did not document the date of the patients' most recent visit. Since patients with obesity have a greater number of visits annually,[2,3,8] and are more likely to have a shorter interval between the most recent visit and the day of interview, their recollection of the most recent visit may differ from that of thinner patients. Reporting bias may have also influenced our classification of patients by BMI since evidence suggests that respondents who are obese may underestimate their weight and overestimate their height to a larger degree than their normal-weight counterparts, hence biasing our study toward finding no difference.[20] Finally, because we sampled patients from academically affiliated and geographically homogeneous practices, our findings may not be generalizable.

Caring effectively for patients with obesity requires a partnership with the patient that is based on trust, mutual respect, and communication. Studies show that there is clearly room for improvement in this area.[5,6,8,9] We found that measuring patient satisfaction with care using generic measures may not be adequate for the study of physicians' relationships with patients who are obese. Future studies should examine this relationship using more specific and sensitive measures. Qualitative research methods may offer important advantages for studies designed to understand the impact of obesity on patients' care experiences and satisfaction.

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