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## Impact of patient obesity on the patient-provider relationship

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### Abstract

**Objective**—Health professionals' weight bias may impair obese patients' interactions with providers. However, few studies have examined how negative provider attitudes affect the patient-provider relationship for obese patients. We hypothesized that higher patient body mass index (BMI) would be negatively associated with patient-provider relationship quality.

**Methods**—We analyzed data from the 2007 Health Tracking Household Survey. BMI was the independent variable, and patient-perceived quality of the patient-provider relationship was the outcome. We performed log-binominal regression analyses accounting for complex survey design to examine the association of BMI with the patient-provider relationship.

**Results**—Of the 15,197 adult survey respondents, the 6,427 who answered the quality of care questions were eligible for analysis. Overall, 29% had a normal range BMI, 34% were overweight, and 37% were obese. We found few differences in ratings of the patient-provider relationship for overweight and obese respondents when compared to respondents with a normal range BMI.

**Conclusion**—These unexpected findings may have occurred due to patients' inability to perceive providers' weight bias, measurement error in questionnaire items, or decreasing weight bias among health professionals.

**Practice implications**—Patient's positive perceptions of providers may indicate promise for health professionals acting as motivators of behavior change in obese patients.

### Keywords

Patient Satisfaction; Patient Provider; Obesity; Adults

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## 1. Introduction

In the U.S., obese people are highly stigmatized [1]. Widespread negative attitudes result in educational and employment discrimination [1–2]. These stereotypes also exist within the medical field. Studies show that healthcare providers have a negative bias towards obese patients [3–4] and hold a “victim blaming” model of obesity [5–6]. These attitudes may create impaired patient-provider relationships.

While evidence of providers’ weight stereotyping exists, there has been limited examination of obese patients’ perceptions of the patient-provider relationship. In one study, patients identified physicians as a primary source of weight stigma [7]. However, research evaluating patient satisfaction with providers has produced mixed results [8–10]. Additional clarification is needed to characterize how obesity impacts the patient-provider relationship.

In this study, we used a nationally representative sample to examine the relationship between patient obesity and patient perception of healthcare provider interaction quality. We hypothesized that higher patient body mass index (BMI) would be negatively associated with patient-reported quality of the patient-provider relationship.

## 2. Methods

### 2.1 Study design and setting

The data source was the 2007 Health Tracking Household Survey (HTHS)[11], a nationally representative, cross-sectional sample of the U.S. civilian non-institutionalized population. HTHS methodology has been published previously [12–13]. Telephone interviews of 15,197 adults and 2600 children were completed between April 2007–January 2008. Each adult completed a self-response module (SRM) including height and weight for BMI calculation. Survey response rate was 43.5% [12]. The Johns Hopkins University School of Medicine IRB acknowledged this study as “not human subjects research,” because the investigators for this analysis had no access to identifying information for the respondents and did not interact with them.

### 2.2 Study sample eligibility criteria

Respondents were included if they were age $\geq$ 18 years, had a calculated BMI, and completed the SRM quality of care questions. Only individuals that reported visiting a doctor in the last two years for a chronic condition were eligible to answer these questions [12]. Due to small sample size (1.4%), we excluded underweight respondents (BMI $<$ 18.5kg/m<sup>2</sup>).

### 2.3 Measures

The primary outcome was patient perception of healthcare provider interaction quality assessed by evaluating elements of the patient-provider relationship. Respondents ranked their level of agreement on a 4-point Likert scale (strongly agree, agree, disagree, strongly disagree) to the following statements: “My healthcare provider explains things in a way I can understand;” “My healthcare provider spends enough time with me;” “My healthcare provider treats me with respect and dignity;” “I am confident I can tell my healthcare provider concerns I have even when he or she does not ask.” For analysis, the outcomes were dichotomized into “strongly agree” versus “less than strongly agree.” This dichotomization was chosen because the questions demonstrated positively skewed response distributions. Additionally, the items were combined into a scale to represent the overall quality of the patient-provider relationship by averaging the variables’ scores (four item Cronbach’s alpha=0.80). Respondents who failed to answer all four questions were ineligible for scale construction (1.3%). The scale was then dichotomized into “satisfactory

score” versus “less than satisfactory score.” A satisfactory score corresponded to answers of “strongly agree” on all relationship elements. The independent variable of interest was BMI. BMI was categorized as follows: normal range (18.5–24.9 kg/m<sup>2</sup>), overweight (25.0–29.9 kg/m<sup>2</sup>), class I obesity (30.0–34.9 kg/m<sup>2</sup>), class II obesity (35.0–39.9 kg/m<sup>2</sup>), and class III obesity (≥40 kg/m<sup>2</sup>). Additional covariates of interest were age, sex, race, poverty and education. Race was dichotomized as “white” and “non-white.” Poverty was defined as reporting a family income below the 2007 Federal Poverty Line. Education was categorized into “<high school graduate,” “high school graduate-some college,” and “≥college graduate.”

## 2.4 Statistical analyses

Descriptive analyses of all variables were performed. P-values were calculated using Pearson  $\chi^2$  for dichotomous and categorical covariates, and Wald tests for continuous covariates. Multivariate log-binominal regression analyses were performed to calculate prevalence ratios (PrR) with 95% confidence intervals (95% CI). The regression models were adjusted for age, sex, race, poverty status, and education. In all analyses, we used sampling weights in order to account for the complexity of survey design and survey nonresponse [12,14]. Analyses were performed using Stata/IC 11.0 (College Park, TX).

## 3. Results

Of the 15,197 adults, 6,427 were eligible for inclusion in the study sample (42%). Table 1 shows the differences between the study sample and all adult respondents. The sample demonstrated characteristics associated with chronic conditions such as older age, insured status, and having a usual source of care ( $p < 0.0001$ ).

In the sample, the distribution of BMI was as follows: normal range BMI 29%, overweight 34%, class I obesity 22%, class II obesity 9%, and class III obesity 6%. The BMI groups differed in age, sex, race, poverty, and education ( $p \leq 0.0001$  for all variables). Higher BMI was associated with younger age, female gender, minority, poverty status and lower educational attainment. No significant differences existed in the proportions of rural inhabitants ( $p = 0.43$ ), uninsured ( $p = 0.12$ ), or reporting a usual source of care ( $p = 0.10$ ).

Table 2 demonstrates the relationship between BMI and the outcome measures. When compared to persons with normal range BMI, no overweight or obese group reported a difference in receipt of adequate explanation of medical conditions or respectful treatment. In examining the patients’ ability to share concerns with their providers, the class II obesity group reported a significantly decreased prevalence of sharing concerns as compared to persons with normal range BMI [PrR 0.86, 95% CI: 0.74–0.99,  $p = 0.04$ ]. The overweight group reported a significantly increased length of time spent with the provider as compared to the normal range group [PrR 1.09, 95% CI: 1.00–1.18,  $p = 0.04$ ]. The other groups reported no difference in ability to share concerns or length of time spent with the provider as compared to those of normal weight. When compared to persons with normal range BMI, no overweight or obese group showed a difference in achieving a satisfactory scale score.

## 4. Discussion and conclusion

### 4.1 Discussion

Because patients rank doctors as a frequent source of stigmatizing remarks regarding their weight [7], we hypothesized that provider weight bias would negatively impact obese patients’ perceptions of the quality of provider interactions. However, this study found few differences in patient-reported quality of the patient-provider relationship by weight status. There are several possible explanations for these unexpected findings. The HTHS survey

questions may not accurately measure patient-provider interaction quality. Perhaps obese patients do not perceive providers' weight bias, because they are accustomed to particular behaviors during interpersonal interactions. Weight-based discrimination is common in work, educational and social settings [1–2]; therefore, patients may not distinguish bias from normal treatment.

Alternatively, weight bias may not influence the patient-provider relationship. Weight stigma was thought to contribute to poor quality of care for obese patients given their previously documented health disparities [15–17]. However, a recent study found no evidence that obese patients receive poorer quality of care as compared to normal-weight patients within Veterans Health Administration and Medicare populations [18]. Finding no difference in performance measures [18] and our finding no difference in perceived quality of care, challenges the idea that provider weight bias impacts quality of care and the patient-provider relationship for obese patients. Given the increased media attention to weight stigma, providers may have adjusted their behavior in patient interactions. Also, provider attitudes may have changed, as overweight and obesity have become “the norm” [19]. Of note, both studies evaluated older populations with chronic conditions, and therefore, the results may not apply to younger populations where weight bias may have greater influence. Future work should evaluate how weight bias impacts quality of care and the patient-provider relationship for younger populations by examining performance measures, patient and provider perspectives, and communication behaviors.

This study has several limitations. The cross-sectional design eliminates evaluation of temporal factors that influence the patient-provider relationship. HTHS did not assess health provider perceptions about obesity or potential confounders such as number of co-morbidities. Because height and weight were self-reported, reporting bias may be present as obese patients often underestimate their weight [20]. BMI may also misclassify some patients as obese, because it does not account for body composition. Finally, patient satisfaction measures tend to have ceiling effects, which make subtle differences difficult to detect [21]. To account for this phenomenon, we compared “strongly agree” to “less than strongly agree” responses. Our negative findings may reflect residual ceiling effects.

## 4.2 Conclusion

In this nationally representative sample of adults with chronic conditions, perceived quality of the patient-provider relationship does not vary by weight status. These findings may suggest that obese patients do not perceive provider weight bias, providers conceal negative attitudes during patient interactions, or providers have lower levels of weight bias than previously described. Future work should evaluate how weight bias influences the patient-provider relationship in a younger population without chronic conditions by using valid measures of patient and provider attitudes with objective measures of communication.

## 4.3 Practice implications

Replication of these findings would suggest that patients perceive providers similarly positively, regardless of patient weight. These results hold promise for the provider's role in motivating obese patients to achieve behavior change and weight loss.

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**Table 1**

Comparison of all surveyed adults with adults in study sample

	All Adults (n=15,197)	Sample (n=6427)	p-value <sup>a</sup>
<b>BMI (%)</b>			
Normal range	30%	29%	
Overweight	30%	34%	
Class I obesity	15%	22%	<0.0001
Class II obesity	5%	9%	
Class III obesity	19%	6%	
<b>Age (Mean)</b>			
Years	45.8	53.9	<0.0001
<b>Sex (%)</b>			
Female	52%	58%	<0.0001
<b>Race (%)</b>			
Non-white	32%	27%	<0.0001
<b>Poverty (%)</b>			
Below FPL	14%	13%	0.15
<b>Education (%)</b>			
<HS grad	16%	14%	
HS grad-some college	59%	60%	0.01
≥College grad	26%	25%	
<b>Location (%)</b>			
Rural	17%	19%	0.001
<b>Insurance status (%)</b>			
Uninsured	16%	9%	<0.0001
<b>Usual source of care (%)</b>			
Has usual source	82%	91%	<0.0001

BMI body mass index; FPL federal poverty level; HS high school; grad graduate.

<sup>a</sup> p-values calculated using Pearson's  $\chi^2$  tests for dichotomous and categorical variables, and Wald tests for continuous variables.

Table 2

Prevalence ratios for patient-provider relationship elements by BMI category

Relationship Element	Normal Range (28.7%)	Overweight (34.1%)	Class I Obesity (22.3%)	Class II Obesity (8.7%)	Class III Obesity (6.3%)
<i>Adjusted Prevalence Ratio (95% CI)<sup>d</sup></i>					
Adequate explanation	1.00	1.07 (1.00–1.14)	1.04 (0.96–1.13)	1.01 (0.91–1.13)	1.10 (0.97–1.25)
Adequate time spent	1.00	1.09 <sup>b</sup> (1.00–1.18)	1.03 (0.93–1.13)	0.95 (0.83–1.09)	1.14 (0.99–1.32)
Respectful treatment	1.00	1.06 (1.00–1.13)	1.07 (1.00–1.14)	0.95 (0.85–1.05)	1.05 (0.94–1.18)
Able to share concerns	1.00	1.02 (0.94–1.10)	0.98 (0.89–1.08)	0.86 <sup>b</sup> (0.74–0.99)	1.07 (0.93–1.25)
<b>Satisfactory scale score</b>	<b>1.00</b>	<b>1.09 (0.96–1.22)</b>	<b>1.05 (0.91–1.20)</b>	<b>0.87 (0.71–1.07)</b>	<b>1.10 (0.88–1.37)</b>

BMI, body mass index; CI, confidence interval.

<sup>a</sup>Log-binominal regression analyses adjusted for age, sex, race, poverty and education.<sup>b</sup>p-value<0.05.