RESEARCH AND PRACTICE

Weight status and satisfaction with healthcare received in the U.S. and Georgia

Saswat Panda, MPH Student, Koichiro Otani, PhD, Janani R. Thapa, PhD

Department of Health Policy and Management, College of Public Health, University of Georgia, Athens, GA

ABSTRACT

Background: Two-thirds of the U.S. population is overweight or obese, and, in Georgia, adult obesity rates are among the highest. Obesity is a risk factor for diabetes, heart disease, stroke, and some types of cancer, and adherence to treatment of such disease conditions is affected by patients' perception of healthcare received. The present study examined the association between weight status and satisfaction with healthcare received in the U.S. and in Georgia.

Methods: The association between weight status and satisfaction with healthcare received in the U.S. and Georgia was examined using multiple logistic regression analyses, controlling for demographic and other healthcare-related variables. The data used were from the 2013 Behavioral Risk Factor Surveillance System (BRFSS) dataset.

Results: There were 265,468 complete cases for the U.S., 66% (181,911) were overweight or obese. The odds of being very satisfied with healthcare received was lower for the underweight, overweight, and obese groups by 11.8% ($p < 0.001$), 2.4% ($p = 0.022$), and 10.1% ($p < 0.001$), respectively, compared to the normal group. Of the 5,947 complete cases for Georgia, 62% (3698) were overweight or obese. The odds of being very satisfied with healthcare received was lower for the overweight and obese groups by 15.1% ($p = 0.023$) and 18.3% ($p = 0.006$), respectively, compared to the normal group.

Conclusions: The probability of being very satisfied with healthcare received is lower for obese and overweight patients. Improvements in healthcare services provided to these individuals are needed to ensure satisfaction and adherence to treatment of chronic diseases, including weight loss treatment and management.

Keywords: Satisfaction with healthcare, obesity, overweight, BRFSS

INTRODUCTION

The overweight and obese population accounts for two-thirds of the U.S. population (Bastien et al., 2014; Bray and Bouchard, 2008; Ogden et al., 2014). Obesity increases the risk for diabetes, heart disease, infections, and other comorbid conditions, which require healthcare use (Bastien et al., 2014; Guh et al., 2009; Morgan et al., 2010; Schelbert, 2009). Thus, it is necessary to understand how overweight and obese patients assess the healthcare they receive. The literature on perception of healthcare by weight status, however, is limited. Although some studies on the role of weight status on patient satisfaction have been conducted, there have been no large studies accomplished with data that represent the U.S. population and no related studies for the state of Georgia. The adult obesity rates in Georgia are among the highest compared to other states. According to the latest estimates, Georgia is expected to pay $10.8 billion annually in obesity-related healthcare spending by 2018 if the current obesity trend continues (Thorpe, 2009).

An assessment of patients' perception of healthcare services can be made by use of satisfaction surveys (Shirley and Sanders, 2013). Such surveys provide answers to questions regarding their perception of healthcare services received. Many healthcare and public health organizations conduct these surveys, which allow them to gauge patients' appraisals of the services they receive; they can determine which hospital a patient might visit if given the choice (Shirley and Sanders, 2013; Wolosin et al., 2012). Patient perceptions of how they are treated by healthcare providers can also affect their adherence to treatment regimens and thus affect their health outcomes (Mira and Aranaz, 2000; Roborel de Climens et al., 2015; Stewart, 1995). Satisfied patients generally adhere to treatments (DiMatteo et al., 1993; Phelan et al., 2015; Puhl et al., 2013). Nevertheless, efficacious treatments have little value if patients do not adhere to the treatment plan. This is particularly relevant for overweight and obese patients who often suffer from additional chronic diseases (Schelbert, 2009; Wake et al., 2010). Therefore, in addition to its importance to healthcare services management, understanding patient satisfaction is a public health concern. Treatment adherence is particularly important to obese and overweight patients, who are exposed to various health risk factors due to their weight status. Treatment adherence is also necessary for management of weight loss.

Research on patient satisfaction by weight status has been conducted for specific populations: patients who had visited primary care practices in Boston (Wee et al., 2002) and adult patients who had completed the 2000 Medical Expenditure Panel Survey (MEPS) and had visited their health care provider within 12 months of the survey (Fong et al., 2006). These studies found mixed results on the association of body mass index (BMI) with patient satisfaction (Fong et al., 2006; Wee et al., 2002). The study

based on MEPS survey data included 9,914 cases and showed a positive correlation between obesity and satisfaction (Fong et al., 2006). However, the result conflicts with those for the study in Boston, accomplished with 2,858 participants (Wee et al., 2002), which showed a negative correlation between obesity and satisfaction. The results of a recent, larger study in this field was published in 2014; however, the study population was limited to older adults (Bottone et al., 2014). The finding was that obese older adults reported higher patient satisfaction (Bottone et al., 2014). In order to fill the gap in available studies on weight status and satisfaction with healthcare received, the present study aimed to determine if there is a relationship between weight status and satisfaction with healthcare received in the general U.S. population and also in the state of Georgia.

METHODS

Data

This quantitative study used cross-sectional data from the 2013 Behavioral Risk Factor Surveillance System Survey (BRFSS), a dataset on health-related risk factors, including weight status. The BRFSS is a state-based telephone survey conducted by the Centers for Disease Control and Prevention (CDC); the dataset is made publicly available on their website at www.cdc.gov. The survey collects data on U.S. residents regarding their health-related behaviors, health conditions, and their use of healthcare. The 2013 BRFSS was one of the largest telephone surveys, with over 400,000 people completing the survey (Pierannunzi et al., 2013). The dataset included satisfaction with healthcare received for the first time, making it ideal for this study. In addition, the dataset had information on weight status and included state identifiers. It allowed adjustment for confounding demographic variables as well as other healthcare variables that could affect patients' satisfaction with healthcare received, such as having a personal healthcare provider, having access to healthcare, having enrollment in some type of healthcare plan, and checkup history. The BRFSS is a reliable source for data (Li et al., 2012; Nelson et al., 2001; Nelson et al., 2003; Pierannunzi et al., 2013).

The data used from the 2013 BRFSS dataset are summarized in Table 1, along with corresponding BRFSS questions for each measure used in this study. The BRFSS question on satisfaction with healthcare received is similar to those asked in traditional patient satisfaction surveys (such as the Consumer Assessment of Healthcare Providers and Systems surveys, available on cahps.ahrq.gov), except that it does not permit a broader scale, such as the satisfaction ratings response range from 0-10 in similar studies (Bottone et al., 2014). In a patient satisfaction scale, the top-rated satisfaction is the aspired level of satisfaction that healthcare services are expected to provide (Otani et al., 2009). As such, the responses received (very/ somewhat/ not at all satisfied) on satisfaction with healthcare were recoded to form a binary response: 1) very satisfied with healthcare received and 2) somewhat or not at all satisfied with healthcare received.

Weight status is based on self-reported height and weight data used to compute BMI, a measure of weight status. BMI is a person's weight in kilograms divided by the square of height in meters. This study followed the BMI categories in the BRFSS dataset. These are: a BMI > 30 for obese, a BMI 25 - <30 for overweight, a BMI 18.5 - <25 for normal weight, and a BMI of < 18.5 for underweight.

Table 1: Data from the 2013 BRFSS used for this study

Data	BRFSS question
Satisfaction with healthcare received	In general, how satisfied are you with the healthcare you received? Would you say very/somewhat/not at all satisfied?
Weight status	As reported in BRFSS as four BMI categories: underweight (BMI <18.5), normal (BMI 18.5 - <25), overweight (BMI 25 - <30), and obese BMI>30)
Personal healthcare provider	Do you have one person you think of as your personal doctor or healthcare provider? If no: Is there more than one, or is there no person who you think of as your personal doctor or health care provider?" BRFSS dataset had responses grouped into three categories: No Provider, 1 Provider, and 2+ Providers
Checkup history	About how long has it been since you last visited a doctor for a routine checkup? Within the past year (anytime less than 12 months ago)/ Within the past 2 years (1 year but less than 2 years ago)/ Within the past 5 years (2 years but less than 5 years ago)/ 5 or more years ago/ Never
Access to healthcare	Do you have any kind of health coverage, including health insurance, prepaid plans such as HMOs, or government plans such as Medicare, or Indian Health Service? Yes/No
Gender	Male/ Female
Age	18-24/ 25-34/ 35-44/ 45-54/ 55-65/ 65 and above
Race	White/ Black/ American Indian or Alaskan Native (Native)/ Asian/ Native Hawaiian or Pacific Islander (Hawaiian) / Other race

Data	BRFSS question
Education	Never attended or kindergarten only (no school)/ Elementary school only/ Some high school/ High school (HS) graduate or GED/ Some college/ College graduate and above
Income	$0-$14,999/ $15,000-$24,999/ $25,000-$34,999/ $35,000-$49,999/ $50,000-$74,999/ more than $75,000
State code identifier	Georgia=13

Data analysis

Multiple logistic regression analyses were conducted using IBM SPSS Statistics 23 to determine the odds of being very satisfied with healthcare received by weight status. Separate analyses were conducted for the U.S. and for the State of Georgia.

Satisfaction with healthcare received (1 if very satisfied with healthcare received, 0 otherwise) was selected as the dependent variable. The independent variables were weight status, demographic variables, and healthcare variables. The independent variable of interest was weight status. Demographic variables (gender, age, race, education and income), and variables regarding healthcare (has a personal healthcare provider, has access to healthcare/enrolled in some type of healthcare plan, and checkup history) were confounding variables.

Results

There were a total of 265,468 complete cases in the U.S. and 5,947 complete cases in the State of Georgia that were analyzed. Distribution of satisfaction with healthcare received by BMI categories is shown in Table 2 for the U.S. and Georgia. Of the total cases in the U.S., 30% (n=79,386) were obese, 36% (n=96,412) were overweight, 32% (n=85,499) were normal, and 2% (n=4,171) were underweight. Sixty-eight percent were very satisfied with healthcare received, and 32% were somewhat or not at all satisfied with healthcare received. Of the total 5,947 cases in the State of Georgia, 30% (n=1,763) were obese, 33% (n=1935) were overweight, 36% (n=2,148) were normal, and 2% (n=101) were underweight. Sixty-five percent were very satisfied with healthcare received, and 35% were somewhat or not at all satisfied with healthcare received. The distribution by weight status and satisfaction with healthcare received in the state of Georgia are similar to the national figures.

Table 2: Satisfaction with healthcare received by BMI categories (%) in the U.S. and Georgia

Satisfaction with healthcare received	Total	BMI			
		<18.5	18.5 - <25	25 - <30	>30
For U.S.	265,468	n=4,171	n=85,499	n=96,412	n=79,386
Very satisfied	68	64	69	69	65
Somewhat or not at all	32	36	31	31	35
For Georgia	5,947	n=101	n=2,148	n=1,935	n=1,763
Very satisfied	65	64	68	65	62
Somewhat or not at all	35	36	32	35	38

The demographic distributions by BMI category for the U.S and the State of Georgia are shown in Table 3. In total (not shown) for the U.S., 57% were female, 83% were 45 or older, 85% were white, and all but 7% had graduated high school. In Georgia, 61% were female, 71% were 45 or older, 68% were white, and 90% had graduated high school.

Table 3: Demographics of respondents in the U.S. (265,468) and Georgia (5,947) by BMI categories (%)

	U.S.				Georgia			
BMI	<18.5	18.5 - <25	25 - <30	>30	<18.5	18.5 - <25	25 - <30	>30
Gender								
Male	25	34	51	43	34	33	46	37
Female	75	66	49	57	66	67	54	63
Age								
18 – 24	12	7	3	2	14	9	3	3
25 – 34	11	12	9	9	9	13	9	9
35 – 44	10	13	13	14	8	13	13	16
45 – 54	14	17	18	20	15	16	20	23
55 – 64	17	20	23	26	17	21	25	27

	U.S.				Georgia			
BMI	<18.5	18.5 - <25	25 - <30	>30	<18.5	18.5 - <25	25 - <30	>30
65 and older	36	32	34	29	38	29	30	23
Race								
White	86	87	86	81	76	75	69	59
Black	7	6	9	13	18	20	27	37
Others	7	7	5	6	6	5	4	3
Education level								
No school	0	0	0	0	2	0	0	0
Elementary only	3	2	2	3	11	2	3	3
Some high school	7	5	5	6	29	6	8	9
HS graduate	29	25	28	31	34	25	27	30
Some college	28	26	27	30	25	26	25	28
College graduate	33	43	38	29	2	41	38	31
Income								
Less than $10,000	11	5	5	7	10	5	6	8
$10,000 - $14,999	10	6	5	7	5	6	6	8
$15,000 - $19,999	11	7	7	9	10	8	8	10
$20,000 - $24,999	12	9	9	11	14	11	9	10
$25,000 - $34,999	12	11	11	12	17	12	11	14
$35,000 - $49,999	12	14	15	15	12	14	15	15
$50,000 - $74,999	11	15	17	16	12	14	16	15
$75,000 or More	22	32	31	24	21	30	29	21

The distribution of healthcare measures by BMI categories is shown in Table 4 for the U.S. and the State of Georgia. In total (not shown), for the U.S., 91% had some kind of health plan, 87% had a physical or checkup in the past two years, and 86% had one provider as their personal healthcare provider. In total, for Georgia, 86% had some kind of health plan, 88% had a physical or checkup in the past two years, and 83% had one provider as their personal healthcare provider.

Table 4: Healthcare for respondents in the U.S. (265,468) and Georgia (5,947) by BMI categories (%)

	U.S.				Georgia			
BMI	<18.5	18.5 - <25	25 - <30	>30	<18.5	18.5 - <25	25 - <30	>30
Access to healthcare								
Yes	88	90	91	90	88	87	86	83
No	12	10	9	10	12	13	14	17
Checkup history								
Within the past year	71	72	75	78	81	77	80	81
Within 2 years	12	13	12	11	7	10	9	10
Within 5 years	8	8	7	6	5	7	5	4
5 or more years ago	8	6	6	5	7	6	6	4
Never	1	1	1	1	81	1	1	1
Personal healthcare provider								
1 provider	73	76	78	79	65	70	73	73
2+ providers	9	8	8	8	13	11	10	11
No provider	18	16	14	12	22	18	17	15

From multiple logistic regressions, the odds of being very satisfied with healthcare received for the U.S. and Georgia are shown in Table 5. The odds of being satisfied with healthcare received are lower for obese and overweight patients both in the U.S. and in Georgia. In the U.S., the odds of being very satisfied with care were 12% (p<0.001), 2% (p=0.022), and 10% (p<0.001) lower for the underweight, overweight, and obese groups, respectively, compared to patients in the normal weight group. In Georgia, the odds of being very satisfied with healthcare received was lower for the overweight and obese groups by 15% (p=0.023) and 18% (p=0.006), respectively, compared to patients in the normal group.

The odds for the demographic variables show significant effects on patient satisfaction for income and age in the U.S. and in Georgia. Education, race, and gender were significant effects in the U.S. but not in Georgia. In the U.S., males compared to females and all races compared to Whites had significantly lower odds of being satisfied. With respect to education, the odds of being satisfied with healthcare received decreased if the respondent had some high school education, had graduated high school, or had some college or technical school education compared to respondents who had graduated from college or had higher than college level education in the U.S. Income level was also associated with patient satisfaction. The odds by income level showed that, although the overall odds of being satisfied are lower in all income groups compared to those having an annual income of $75,000 or more, the odds of being satisfied increased with increase in income level. This relation is similar in the U.S. and Georgia. Age was also associated with patient satisfaction. All age categories had lower odds of being satisfied than the reference age category of 65 years old or greater, both in the U.S. and Georgia.

The data from the healthcare variables show that the odds for satisfaction with care received increased with a more recent checkup history compared to having no checkups within five years of the survey. An outcome of the analysis is that the odds of satisfaction with care increased for respondents with a health plan compared to respondents without a health plan. In addition, respondents having a personal healthcare provider had higher odds of being satisfied with healthcare received compared to respondents who had no personal healthcare provider. Moreover, the odds of being satisfied was highest for respondents who had one personal healthcare provider. The effects of healthcare variables on patient satisfaction in Georgia were similar to those in the U.S.

Table 5: Logistic regression-association of being very satisfied with healthcare received and weight status in the U.S. and Georgia

		U.S.			Georgia		
		OR	95% CI	p-value	OR	95% CI	p-value
BMI	Normal	1.00			1.00		
	Underweight	0.88	0.82, 0.94	<0.001	0.88	0.57, 1.35	0.550
	Overweight	0.98	0.96, 1.00	0.022	0.85	0.74, 0.98	0.023
	Obese	0.90	0.88, 0.92	<0.001	0.82	0.71, 0.94	0.006
Gender	Female	1.00			1.00		
	Male	0.94	0.92, 0.95	<0.001	0.95	0.84, 1.07	0.386
Race	White	1.00			1.00		
	Black	0.88	0.85, 0.91	<0.001	0.99	0.87, 1.13	0.864
	Native	0.68	0.64, 0.72	<0.001	0.66	0.40, 1.07	0.090
	Asian	0.60	0.56, 0.64	<0.001	0.60	0.36, 1.02	0.060
	Hawaiian	0.79	0.67, 0.95	0.010	0.73	0.19, 2.82	0.650
	Other	0.97	0.92, 1.03	0.312	1.16	0.77, 1.74	0.479
Education	College graduate	1.00			1.00		
	No school	1.19	0.88, 1.60	0.252	0.86	0.18, 4.00	0.846
	Elementary only	1.01	0.95, 1.07	0.724	1.32	0.88, 1.97	0.181
	Some high school	0.82	0.79, 0.85	<0.001	0.89	0.70, 1.13	0.349
	HS graduate	0.88	0.86, 0.90	<0.001	0.92	0.79, 1.08	0.307
	Some college	0.88	0.86, 0.90	<0.001	0.95	0.82, 1.10	0.505
Income	$75,000 or more	1.00			1.00		
	Under $10,000	0.49	0.47, 0.51	<0.001	0.43	0.33, 0.56	<0.001
	$10,000 to $14,999	0.45	0.44, 0.47	<0.001	0.43	0.33, 0.56	<0.001
	$15,000 to $19,999	0.50	0.48, 0.52	<0.001	0.59	0.46, 0.75	<0.001
	$20,000 to $24,999	0.54	0.52, 0.55	<0.001	0.61	0.49, 0.77	<0.001
	$25,000 to $34,999	0.60	0.58, 0.62	<0.001	0.62	0.50, 0.76	<0.001
	$35,000 to $50,000	0.67	0.65, 0.69	<0.001	0.77	0.63, 0.93	0.008
	$50,000 to $74,999	0.78	0.76, 0.80	<0.001	0.72	0.60, 0.86	<0.001
Age	65 and more	1.00			1.00		
	18 to 24	0.59	0.56, 0.61	<0.001	0.64	0.98, 3.42	0.002

		U.S.			Georgia		
		OR	95% CI	p-value	OR	95% CI	p-value
Age (con't.)	25 to 34	0.47	0.46, 0.49	<0.001	0.56	0.73, 2.64	<0.001
	35 to 44	0.47	0.45, 0.48	<0.001	0.61	0.54, 2.00	<0.001
	45 to 54	0.51	0.50, 0.53	<0.001	0.56	0.79, 2.97	<0.001
	55 to 64	0.60	0.59, 0.62	<0.001	0.59	1.16, 1.65	<0.001
Checkup history	Never	1.00			1.00		
	Visited past year	1.43	1.30, 1.58	<0.001	1.83	1.32, 1.85	0.056
	Within 2 years	1.09	0.99, 1.20	0.084	1.39	1.05, 1.65	0.313
	Within 5 years	0.99	0.89, 1.09	0.797	1.04	0.48, 0.85	0.914
	5 or more years ago	0.97	0.87, 1.07	0.512	1.54	0.45, 0.70	0.201
Access to healthcare	Yes	1.00			1.00		
	No	1.27	1.23, 1.31	<0.001	1.38	0.50, 0.74	<0.001
Personal healthcare provider	No provider	1.00			1.00		
	1 provider	1.67	1.63, 1.71	<0.001	1.56	0.48, 0.69	<0.001
	2+ providers	1.29	1.24, 1.34	<0.001	1.32	0.50, 0.69	0.019

DISCUSSION

These results show that weight status is associated with satisfaction with healthcare received. Consistently, overweight and obese respondents have decreased odds of being satisfied with care relative to normal weight respondents in the U.S. and in Georgia. The results for obese respondents being less satisfied with healthcare are in accordance with reports that obese patients might be less satisfied with healthcare received due to stigma and/or bias against them by healthcare workers (Sabin et al., 2012). This finding should be evaluated in greater detail, seeking an understanding of why weight status leads to lower satisfaction with healthcare for the obese and overweight patients. Such work may aid in understanding whether decreased satisfaction with healthcare received is due to bias against obese individuals or to structural issues in relation to healthcare, such as not having appropriate infrastructure to treat obese and overweight patients (Phelan et al., 2015; Puhl et al., 2008; Sabin et al., 2012). The outcomes here present questions in regard to the reasons behind lower patient satisfaction among obese and overweight patients.

A better understanding of the reasons for lower patient satisfaction among obese and overweight patients will guide future interventions in providing adequate healthcare services to this group of patients. Because obese or overweight individuals are more likely to visit the hospital, there is a greater need to understand their perception towards healthcare services (Sabin et al., 2012). In essence, understanding obese and overweight patients' perception of healthcare services received is relevant because this group is more likely to use healthcare services for treatment of health conditions. Understanding of perceptions of obese and overweight patients towards healthcare received is relevant in achieving intended health service outcomes from treatment of obesity as a disease. The American Medical Association recently classified obesity as a disease, defining obesity as having a BMI > 30 (Pollack, 2013).

Other potential reasons for lower patient satisfaction among obese and overweight patients could be a carryover effect from receiving poor attention outside of healthcare settings. There is also an ongoing stigma against the obese and overweight population (Puhl and Heuer, 2010; Sabin et al., 2012). A stigma against this group by health service providers could be a reason for lower satisfaction with healthcare in these groups (Sabin et al., 2012; Wee et al., 2002). Since satisfaction with healthcare received is subjective, an in-depth study is necessary to understand the underlying causes of lower satisfaction. Such an understanding would guide targeting of either patients, healthcare workers, or both to address the gap in satisfaction and to achieve adherence to treatment. A higher satisfaction with healthcare received by this population may in turn lead to improved health outcomes or to an increased desire to adhere to treatment goals.

Previous studies have found that patient satisfaction with providers is affected by the provider's gender and race (Bertakis et al., 2003; Cooper-Patrick et al., 1999; Heins et al., 2010; Kao, 2001; Mast et al., 2008; Sabin et al., 2012; Schmittdiel et al., 2000). Additional information such as the healthcare provider's gender, weight status, and race, which could have been involved in overall satisfaction, was not available in the dataset. Studies that have assessed public perception of normal weight, overweight, or obese physicians found that providers perceived to be overweight or obese may be vulnerable to biased attitudes from patients (Puhl et al., 2013). Knowing the distribution of weight status among healthcare workers would be useful in understanding the relationship between weight status and satisfaction.

CONCLUSIONS

In this study, we examined the relationship between weight status and satisfaction with healthcare received for the U.S. and for the State of Georgia, using data from the 2013 BRFSS survey. The distribution of weight status and satisfaction with care received was similar for the U.S. and for Georgia. Overweight and obese patients in the U.S. and Georgia were less likely to be satisfied with healthcare received than patients of normal weight. This finding calls

for future research to understand the underlying causes of lower patient satisfaction among obese and overweight patients.

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There was no funding provided for this study. Corresponding author: Janani R. Thapa, Ph.D. Assistant Professor, Department of Health Policy and Management, College of Public Health, University of Georgia, 211B Wright Hall, Health Science Campus, Athens, GA 30602. Email: jrthapa@uga.edu.

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