

**RESEARCH: EDUCATIONAL AND
PSYCHOLOGICAL ASPECTS**

At multiple fronts: Diabetes stigma and weight stigma in adults with type 2 diabetes

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Abstract

Aim: The diabetes and obesity fields have called for attention to the harmful role of stigma in obesity and diabetes, especially given that little is known about the extent and nature of diabetes stigma facing adults with type 2 diabetes, or the experience of weight stigma in this population. This study addresses this research gap by examining the prevalence and demographic correlates of weight stigma and diabetes stigma in individuals with type 2 diabetes.

Methods: Adults ($N = 1212$, $M_{\text{age}} = 52$) with type 2 diabetes living in the USA were recruited by a healthcare-oriented market research firm, and completed online questionnaires to assess their experiences with weight stigma and diabetes stigma, as well as their internalization of both forms of stigma. Rates of stigma and sociodemographic correlates (years with type 2 diabetes, age, education, income, gender, race and BMI) were examined.

Results: More than half of participants reported prior experiences of weight stigma, and 40–60% reported experiencing weight stigma in a healthcare context. Participants reported frequent experiences with diabetes-related stigma including blame and judgement, self-stigma and differential treatment. Women reported more weight stigma than men, and White women appeared particularly at risk for experiencing weight and diabetes related stigma relative to Black women.

Conclusions: Individuals with type 2 diabetes reported higher rates of weight stigma than the general population, experienced high rates of diabetes-related stigma, and many internalized these forms of stigma. Increased attention to stigma reduction is essential to ensuring equitable care for individuals with type 2 diabetes.

1 | INTRODUCTION

People with obesity are vulnerable to societal stigma because of their body weight. In the USA, as many as 44% of adults have reported experiencing weight stigma¹ with the highest rates among those with the highest weight.² Research has demonstrated consistent links between weight stigma and risk factors for cardiometabolic diseases, including

overeating,² suboptimal glycaemic levels,³ metabolic syndrome,⁴ increased weight gain⁵ and increased odds of a cardiometabolic diagnosis.⁶ Evidence of heightened physiological reactivity in response to experiences of weight stigmatization, including cortisol⁷ and C-reactive protein⁸ have important implications for people with diabetes, especially given research showing that weight discrimination exacerbates the harmful effects of waist-to-hip ratio on HbA_{1c}.³ Moreover, many people who report weight stigma also internalize these

experiences, turning stigma inwards and blaming themselves, which itself is independently associated with negative health consequences.⁹

These stigma-induced health consequences impair quality of life, can reinforce behaviours that contribute to obesity, interfere with weight as well as diabetes management, and ultimately increase cardiometabolic risk factors that can contribute to the development of type 2 diabetes. Given this evidence, and the well-documented high rates of comorbidity between obesity and type 2 diabetes,¹⁰ it is surprising that weight stigma has received almost no research attention in people with type 2 diabetes.¹¹

Similarly, relatively little attention has been given to the stigma that people with type 2 diabetes face because of their diabetes status. Several Australian studies have documented multiple forms of diabetes stigma among adults with type 2 diabetes, such as being stereotyped or treated unfairly because of their diabetes, blamed by others for their diabetes and engaging in self-stigma.^{12,13} These experiences have negative implications for treatment including insulin appraisals.¹⁴ One US study reported that 52% of adults with type 2 diabetes perceived that having diabetes incurs social stigma, and ~ 20% said that others' views of their diabetes negatively affected their diabetes management.¹⁵ Beyond this small body of research, little is known about the extent and nature of diabetes stigma facing adults with type 2 diabetes.

In addition to gaps identifying the prevalence of diabetes stigma and documenting weight stigma among individuals with type 2 diabetes, there is a need for research to examine patterns of weight stigma and diabetes stigma in racial minorities, particularly among women, given clear health disparities in these populations. More than half of Black women and 44% of Hispanic women have obesity, compared to approximately one-third of White women.¹⁰ There are similarly well-documented health disparities as a function of race and gender in type 2 diabetes, with higher rates of diagnosis, diabetes-related complications, treatment and outcomes among Black and Hispanic women relative to White and Asian women.¹⁶ Identifying demographic differences in stigma experiences for both weight and diabetes is critical to understanding and reducing health disparities in type 2 diabetes.

Thus, diabetes and weight stigma reflect important challenges facing people with type 2 diabetes that warrant research attention. There have been calls for increased responsiveness to these issues,^{14,17,18} including recognition by the International Diabetes Federation (IDF) that diabetes stigma is a problem in need of attention in the diabetes field,¹⁹ and a 2020 joint international consensus statement calling upon the medical community to eliminate weight stigma towards individuals with obesity.²⁰ To address these research gaps, the current study aimed to identify the nature and extent of weight stigma and diabetes stigma among US adults with type 2 diabetes. Given evidence that both experienced and

What's new?

- Obesity and type 2 diabetes are highly comorbid. Individuals with obesity are vulnerable to weight stigma which compounds cardiometabolic risk.
- Adults with type 2 diabetes reported high rates of weight stigma.
- Adults with type 2 diabetes also reported considerable diabetes-related stigma.
- Young adults with high BMI and White women reported the highest levels of weight stigma and diabetes stigma.
- Diabetes stigma and weight stigma are common among individuals with type 2 diabetes. Practitioners have an important role to play in providing stigma-free care and helping to reduce stigma-related disparities.

internalized stigma have negative implications for health, we assessed multiple components of weight stigma and diabetes stigma and their demographic correlates, including general as well as healthcare-specific experiences, and internalization or self-stigma for one's weight and diabetes. Based on prior literature, we expected a substantial number of participants to report prior general experiences with weight stigma.¹ We expected participants to endorse similar rates of stigma in health care (~ 20%) relative to women with high body weight,²¹ and we expected participants to have high (i.e. above 4) scores on weight bias internalization similar to those observed in populations seeking treatment for obesity.⁹ We expected participants to report frequent experiences with diabetes stigma similar to rates found in the Australian samples.¹² Given high rates of comorbidity between obesity and type 2 diabetes, we predicted that reports of weight stigma and diabetes stigma would be moderately related, indicating some but not complete overlap in these constructs. We made no hypotheses about demographic associations with diabetes stigma, but based on prior literature,¹ we expected women to report more weight stigma relative to men, Black women to report less weight bias internalization than White women, but no differences between race and gender in general experiences with weight stigma.

2 | METHODS

2.1 | Participants and procedure

Participants with type 2 diabetes were recruited by a healthcare-oriented market research firm, Interviewing Services

of America (ISA). ISA maintains an internet research survey panel of over 2 million participants with more than 150 medical conditions; ~ 200 000 individuals in the panel self-reported a previous diagnosis of type 2 diabetes when they joined the panel. ISA panellists must be 18 years or older and provide validated geographic and demographic information in order to maintain membership; panellists receive incentives for participating in research studies which may include gift certificates or charitable donations. When recruiting, ISA uses telephone, online intercept and media postings to invite panellists to complete studies. Because recruiting involves media postings it is impossible to calculate an exact response rate for this survey, but ISA surveys have a general response rate of 5–7%.

This study aimed to collect survey data from ~ 1200 adults with type 2 diabetes, who were at least 18 years of age, and currently residing in the USA. Sample size was determined based on available funding and the desired ability to examine differences across race and gender groups. All participants were invited to complete an anonymous online survey hosted by Qualtrics (www.qualtrics.com), containing self-report questionnaires to assess their experiences with weight stigma and diabetes stigma. In total, 1458 individuals clicked on the survey link; 231 were excluded from analyses for completing less than half of the survey ($n = 164$) or not providing height and weight ($n = 67$).^{*} An additional 15 individuals were excluded from analyses because the demographic subsamples were too small to assess meaningful statistical comparisons (two non-binary gender identity, ten multiracial identity, three Native American). The final sample consisted of 1212 individuals. Individuals who were excluded were slightly younger (49.70 vs. 52.04) than individuals who were not excluded, but no other systematic demographic differences emerged. All participants completed an informed consent before participating, and the study protocol received ethics approval from the Institutional Review Board at the University of Connecticut (record number: X17-082).

2.2 | Measures

2.2.1 | Participant characteristics

Participants used multiple choice questions to indicate their age, gender identity, race/ethnicity, education, height in inches and weight in pounds. Height and weight were converted to kg/cm and used to calculate BMI according to CDC

^{*}These individuals were excluded because BMI was considered an essential covariate in all regression models. As a supplementary analysis, BMI for these individuals was imputed using linear point estimates in order to run regression models including these individuals. These additional analyses can be found in Table S1.

guidelines. Participants indicated how long they had been diagnosed with type 2 diabetes.

2.2.2 | Experienced weight stigma

Participants indicated whether they had ever been teased, treated unfairly or discriminated against because of their body weight, using three yes/no items from prior national studies.¹⁴ Participants who indicated ‘no’ to all three items were considered not to have experienced weight stigma, whereas participants who indicated ‘yes’ on at least one item were coded as having experienced stigma.

2.2.3 | Internalized weight stigma

Internalized weight stigma was assessed using the 10-item modified version of the Weight Bias Internalization scale (WBIS-M).²² Using a seven-point scale (strongly disagree to strongly agree) participants indicated their agreement with items like ‘I hate myself for my weight.’ Items were averaged and higher scores indicate higher levels of weight bias internalization ($\alpha = 0.95$).

2.2.4 | Weight stigma in health care

Participants indicated whether they had experienced weight stigma specifically in a healthcare setting by responding to three questions. The first question²¹ (rated on a three-point scale: 1 = never, 2 = sometimes, 3 = often) asked ‘In the last 12 months, did you ever feel that a doctor judged you because of your weight?’ A second item (yes/no) asked participants whether their body weight had ever been a barrier in getting appropriate medical care. The third item (rated on a five-point scale, never to always) asked whether a doctor had ever recommended a diet to them during a medical appointment in which participants did not come in to discuss weight loss.²¹

2.2.5 | Diabetes stigma

Participants completed the 19-item Type 2 Diabetes Stigma Assessment Scale (DSAS-2),¹² which uses three subscales to assess differential treatment related to diabetes, being blamed by others for diabetes, and diabetes self-stigma. Participants indicated agreement with each item using a five-point scale (strongly disagree to strongly agree). The ‘treated differently’ subscale has six items ($\alpha = 0.94$, ‘Some people see me as a lesser person because I have type 2 diabetes’); the ‘blame and judgement’ subscale has seven items ($\alpha = 0.92$, ‘I have been

told that I brought my type 2 diabetes on myself);' and the 'self-stigma' subscale includes six items ($\alpha = 0.93$, 'Having type 2 diabetes makes me feel like a failure'). Scores were summed across each subscale with higher scores indicating greater stigma.

2.3 | Statistical analyses

Data were analysed using SPSS version 26. Stigma items were summarized using means, standard deviations (SD) and frequencies. Relationships between stigma variables were examined using point biserial (dichotomous variables) or Pearson correlations. Linear and logistic regressions (dichotomous variables: any history of weight stigma, weight as barrier to receiving health care) examined relationships between demographic variables (years diagnosed with type 2 diabetes, age, income, education, gender, race/ethnicity and BMI) and stigma variables. Gender was dummy coded to compare women and men (men as reference group). Race was dummy coded to compare Asian, Black, and Hispanic/Latino individuals to a White reference group. Interactions were computed by multiplying dummy variables for race and gender (e.g. female \times Black). Significant interactions were interpreted by examining simple effects of each of race by gender on the dependent variable (i.e. individual stigma variable being examined). Missing data was handled using list-wise deletion as outlined via the exclusion criteria; however, in a supplemental set of analyses, individuals who were excluded for missing data on BMI ($n = 67$) had BMI imputed using a linear trend. Results from these supplemental analyses are similar to those reported in the manuscript and may be found in Table S1. A post-hoc power analysis conducted using G*Power suggests a power level of 0.95 to detect small effects (i.e. $f^2 = 0.022$) with an alpha of 0.05 in a linear multiple regression with 13 predictors.

3 | RESULTS

3.1 | Sample characteristics

Participant characteristics are summarized in Table 1. Approximately half of participants identified as female (51%). The sample identified as non-Hispanic White (76%), non-Hispanic Black (13%), Hispanic White (7.5%), and Asian (4.1%). Education status was normally distributed with 66% of people indicating some college or a college degree. Approximately half of participants made less than \$49 999 per year (48%) and 80% made less than \$100 000 per year. The BMI distribution of the sample included 51%

TABLE 1 Sample characteristics

	N	%
Gender		
Male	590	49
Female	622	51
Race/ethnicity		
Asian	50	4.1
Black	152	12
Latino/Hispanic	90	7.5
White	920	76
Education		
High school, GED, or less	224	19
Some College or Vocational/ Technical School	415	34
College graduate	387	32
Postgraduate degree or higher	186	15
Income		
Under \$49 999	584	48
\$50 000 to \$99 999	386	32
\$100 000 to \$149 999	155	13
\$150 000 or more	87	7.2
BMI category (kg/m ²)		
< 18.5	34	2.7
18.5-24.9	238	19
25-29.9	326	27
≥ 30	629	51
	M	SD
Age	52.12	14.98
BMI (kg/m ²)	31.61	8.86
Years with type 2 diabetes	8.99	8.07

of participants with a BMI ≥ 30 kg/m², 27% with a BMI of 25–29.9 kg/m², 19% with a BMI of 18.5–24.9 kg/m², and 2.7% with a BMI < 18.5 kg/m².

3.2 | Weight and diabetes stigma

More than half of participants (53%) indicated a previous history of experiencing weight stigma, and 26% reported their weight was a barrier to getting appropriate health care. The mean score on the WBIS-M was 3.90 (SD = 1.67). With respect to experiences of weight stigma in health care, participants indicated they had sometimes or often (44%) felt judged by their doctor because of their weight in the last 12 months ($M = 1.53$, $SD = 0.65$), and 61% had sometimes, often or always had a doctor recommend diet to

TABLE 2 Correlations among weight stigma and diabetes stigma variables

	1	2	3	4	5	7	7	8
Weight stigma (general)								
1. Any weight stigma	0.53 (0.50)							
2. Internalised	0.55	3.90 (1.67)						
Weight stigma in health care								
3. Judged about weight by a doctor	0.44	0.49	1.53 (0.65)					
4. Weight as a barrier to medical care	0.43	0.42	0.54	0.24 (0.44)				
5. Doctor recommended a diet when weight was visit focus	0.49	0.55	0.5	0.42	1.76 (1.30)			
Diabetes stigma								
6. Treated differently	0.47	0.58	0.53	0.53	0.47	14.33 (6.89)		
7. Blame and judgement	0.52	0.65	0.56	0.48	0.55	0.79	20.63 (7.50)	
8. Self-stigma	0.51	0.72	0.52	0.49	0.49	0.75	0.78	15.50 (7.15)

Note: Means and SD are displayed on the diagonal. All correlations $P < 0.001$. Two items represent dichotomous variables (any weight stigma weight as a barrier in health care).

them even when they did not come to a medical appointment to discuss their weight ($M = 1.76$, $SD = 1.30$). Weight stigma variables were all moderately correlated ($r = 0.42$ to 0.55) with one another (see Table 2). The three diabetes stigma subscales were strongly correlated with one another ($r = 0.75$ to 0.78). The highest subscale score on the DSAS was 'blame and judgement' ($M = 20.63$, $SD = 7.50$), followed by 'self-stigma' ($M = 15.50$, $SD = 7.15$) and 'treated differently' ($M = 14.31$, $SD = 6.89$). Correlations between weight stigma and diabetes stigma variables were all moderate to strong ($r = 0.42$ to 0.79) with the strongest relationship observed between weight bias internalization and diabetes self-stigma.

3.3 | Weight stigma and diabetes stigma across demographics and BMI

Demographic variables (years with type 2 diabetes, age, education, income, gender, race/ethnicity race by gender interactions) and BMI accounted for 18–23% of the variance in diabetes stigma, 26–28% of the variance in general weight stigma and 18–22% of the variance in weight stigma in health care (see Table 3).

3.3.1 | Age, income, education

Age was negatively associated with all forms of diabetes stigma ('treated differently,' 'blame and judgement' and 'self-stigma'), general weight stigma (any history of weight stigma, WBIS-M), and weight stigma in health care (feeling judged by a doctor because of weight, having a doctor recommend a diet and weight as a barrier to health care): $\beta = -0.40$ to -0.45 ; income was positively related to these variables: $\beta = 0.08$ to 0.17 . Education was related to blame and judgement for diabetes ($\beta = 0.07$), higher odds of reporting any form of general weight stigma (1.16 odds increase) and higher odds of weight as a barrier to health care (1.17 odds increase).

3.3.2 | BMI

BMI was positively associated with blame and judgement for diabetes stigma ($\beta = 0.12$), and with general weight stigma [WBIS-M $\beta = 0.30$; 1.10 increase in log odds of reporting any weight stigma for every 1 unit (kg/m^2) increase in BMI], feeling judged by a doctor because of weight ($\beta = 0.10$) having a doctor recommend a diet ($\beta = 0.27$). Additionally, every 1 unit increase in BMI was associated with a 1.04 increase in

TABLE 3 Regressions on stigma by demographics and anthropometrics

Diabetes stigma						
Being treated differently			Blame and judgement		Self-stigma	
$R^2 = 0.23, F(12, 1200) = 30.05, P < 0.001$						
<i>B</i>	β	<i>P</i>	<i>B</i>	β	<i>P</i>	<i>P</i>
Years with type 2 diabetes	0.01	0.798	0.00	0.00	0.950	0.122
Age	-0.21	< 0.001	-0.20	-0.40	< 0.001	< 0.001
Education	0.15	0.310	0.36	0.07	0.032	0.842
Income	0.43	< 0.001	0.40	0.09	0.003	< 0.001
Female (reference male)	0.38	0.366	1.49	0.10	0.001	0.019
Race/ethnicity (reference White)						
Asian	-2.21	0.092	-2.02	-0.05	0.168	0.371
Black	0.63	0.437	-0.06	0.00	0.946	0.320
Hispanic/Latino	-0.54	0.561	-1.58	-0.06	0.133	0.179
BMI (kg/m ²)	-0.02	0.407	0.10	0.12	< 0.001	0.099
Female × Asian	0.69	0.698	-0.91	-0.02	0.651	0.713
Female × Black	-2.50	0.020	-3.27	-0.11	0.007	0.036
Female × Hispanic/Latino	-0.52	0.703	-0.16	0.00	0.918	0.992
Having a doctor recommend a diet, even if you did not come in to discuss weight loss						
$R^2 = 0.22, F(12, 1200) = 28.55, P < 0.001$						
$R^2 = 0.18, F(12, 1200) = 22.25, P < 0.001$						
$R^2 = 0.22, F(12, 1199) = 26.85, P < 0.001$						
<i>B</i>	β	<i>P</i>	<i>B</i>	β	<i>P</i>	<i>P</i>
Years with type 2 diabetes	-0.01	0.085	0.00	-0.01	0.648	0.626
Age	-0.04	< 0.001	-0.02	-0.40	< 0.001	< 0.001
Education	-0.03	0.473	0.02	0.05	0.119	0.274
Income	0.12	< 0.001	0.03	0.08	0.012	< 0.001
Female (reference male)	0.58	< 0.001	0.14	0.10	0.001	0.001
Race/ethnicity (reference White)						
Asian	-0.32	0.296	-0.14	-0.04	0.276	0.082

(Continues)

TABLE 3 (Continued)

	Weight bias internalization			In the last 12 months, did you ever feel that a doctor judged you because of your weight?			Having a doctor recommend a diet, even if you did not come in to discuss weight loss		
	B	β	P	B	β	P	B	β	P
	$R^2 = 0.28, F(12, 1200) = 35.40, P < 0.001$			$R^2 = 0.19, F(12, 1199) = 22.58, P < 0.001$			$R^2 = 0.22, F(12, 1199) = 26.85, P < 0.001$		
Black	-0.48	-0.10	0.012	-0.06	-0.03	0.487	-0.18	-0.05	0.233
Hispanic	-0.17	-0.03	0.447	-0.08	-0.03	0.407	-0.45	-0.09	0.011
BMI (kg/m ²)	0.06	0.30	< 0.001	0.01	0.10	< 0.001	0.04	0.27	< 0.001
Female × Asian	-0.22	-0.02	0.609	-0.36	-0.08	0.040	-0.11	-0.01	0.748
Female × Black	-0.29	-0.05	0.252	-0.29	-0.12	0.005	-0.14	-0.03	0.496
Female × Hispanic/ Latino	-0.35	-0.04	0.285	-0.11	-0.03	0.393	0.08	0.01	0.773
History of any weight stigma									
	$R^2 = 0.26, \chi^2(12) = 354.53, P < 0.001$			Weight as barrier to health care			$R^2 = 0.18, \chi^2(12) = 247.86, P < 0.001$		
	B	(OR)	β	P	B	(OR)	β	P	
Years with type 2 diabetes	0.00	1.00	0.924	0.924	0.01	1.01	1.01	0.371	
Age	-0.08	0.93	< 0.001	< 0.001	-0.08	0.93	0.93	< 0.001	
Education	0.15	1.16	0.012	0.012	0.16	1.17	1.17	0.017	
Income	0.10	1.10	0.028	0.028	0.13	1.14	1.14	0.009	
Female (reference male)	0.51	1.67	0.001	0.001	0.08	1.08	1.08	0.658	
Race/ethnicity (reference White)									
Asian	-0.34	0.72	0.491	0.491	-0.28	0.76	0.76	0.601	
Black	-0.35	0.70	0.259	0.259	-0.14	0.87	0.87	0.675	
Hispanic	-0.68	0.50	0.054	0.054	-0.18	0.84	0.84	0.613	
BMI (kg/m ²)	0.09	1.10	< 0.001	< 0.001	0.04	1.04	1.04	< 0.001	
Female × Asian	-0.53	0.59	0.428	0.428	-0.30	0.74	0.74	0.682	
Female × Black	-0.40	0.67	0.348	0.348	-0.77	0.47	0.47	0.094	
Female × Hispanic/ Latino	-0.19	0.82	0.710	0.710	-0.75	0.48	0.48	0.157	

the odds of having experienced weight as barrier to getting health care.

3.3.3 | Race and gender

Black individuals had lower weight bias internalization scores than White individuals ($\beta = -0.10$), and Hispanic/Latino individuals were less likely than White individuals to report a doctor recommending a diet ($\beta = -0.09$). Compared with men, women had higher scores on weight bias internalization ($\beta = 0.17$) and were more likely to have a doctor recommend a diet ($\beta = 0.10$). All other effects of gender were qualified by interactions with race. Compared with White women, Black women scored lower on the 'treated differently' subscale for diabetes stigma (simple effects: Black/White women $\beta = -0.10$, $P = 0.009$; Black/White men: $\beta = 0.03$, $P = 0.383$), experienced less blame and judgement for diabetes (simple effects: Black/White women $\beta = -0.16$, $P < 0.001$; Black/White men: $\beta = -0.01$, $P = 0.859$), had lower scores on diabetes self-stigma (simple effects: Black/White women $\beta = -0.16$, $P < 0.001$; Black/White men: $\beta = -0.03$, $P = 0.375$), and experienced less judgement from doctors about their weight (simple effects: Black/White women $\beta = -0.18$, $P < 0.001$; Black/White men: $\beta = -0.03$, $P = 0.519$). No differences emerged between Black and White men. Asian women also experienced less judgement from doctors about their weight compared to White women (simple effects: Asian/White women $\beta = -0.14$, $P < 0.001$; Asian/White men: $\beta = -0.05$, $P = 0.151$), while no differences emerged between Asian and White men.

4 | DISCUSSION

This study addressed a key research gap by examining both weight and diabetes stigma in people with type 2 diabetes. More than half of individuals with type 2 diabetes reported experiencing weight stigma in this study, which is considerably higher than rates observed in the general population.¹ Similarly, nearly half of individuals reported feeling judged by a healthcare provider, which is double the rate observed in a general sample of women with high body weight.²¹ Despite higher reports of weight stigma, levels of internalized weight stigma among participants with type 2 diabetes appeared similar to rates previously documented in the general population,⁹ and lower than internalization scores observed in adults seeking treatment for obesity.⁹ Participants reported substantial rates of each form of diabetes stigma in line with those observed in Australian samples.¹²

Diabetes and weight stigma were moderately related to one another, which suggest these two forms of stigma appear

unique, and may have differential effects on health. Future research should examine relationships between each type of stigma and health outcomes in this population. In light of previous evidence documenting weight bias by healthcare professionals,²³ it is imperative for the medical community to promote compassionate, respectful care for individuals vulnerable to stigma because of their weight and/or diabetes status. These efforts should include sensitive and non-stigmatizing communication. For example, individuals with high body weight prefer the use of weight-neutral terminology to describe their weight (e.g. 'weight') rather than terms like 'obese' or 'fat' in conversations with their providers.²⁴ Providers can also reduce stigma by ensuring that health communication and images on signage in medical offices about obesity and diabetes use non-stigmatizing language and images rather than dehumanizing images of headless bodies with obesity consuming fast food.²⁵

Several sociodemographic markers were associated with both diabetes and weight stigma; younger individuals, individuals with higher income, and individuals with lower educational status reported high rates of both weight and diabetes stigma, suggesting higher socio-economic status may not act as a buffer in experiences of weight and diabetes stigma. Similar to other literature on weight stigma,² BMI was linearly associated with experiences of weight stigma, but BMI was only related to more frequent blame and judgement from others for diabetes, not diabetes self-stigma or differential treatment related to diabetes. Understanding nuances in the relationship between BMI and different forms of diabetes stigma will be an important avenue for future work. Although women reported higher rates of weight stigma relative to men, these findings suggest that race and gender may act as buffers to stigma among Black women who reported comparatively lower rates of diabetes-related stigma and weight stigma in health care than White women. However, Black women did not experience lower odds of general experiences with weight stigma relative to White women. Similar to these mixed findings, literature exploring differences in experiences with weight stigma between Black and White women have been mixed with some studies suggesting lower rates of weight stigma among Black women²⁶ and others showing no differences in experiences relative to White women.^{1,9} Other work has suggested that Black women may be buffered from negative consequences of weight stigma because they rate high body weight as more ideal and attractive²⁷ and score lower on measures of anti-fat attitudes.²⁸ Given that Black women face multiple discrimination (e.g. race and gender discrimination)²⁹ they may attribute blame and differential treatment related to their diabetes or weight stigma in health care to their racial background rather than their medical history or weight. Additionally, due to racial disparities in diabetes, Black women may experience less stigma because rates of diabetes are higher among Black women and thus may potentially seem more normative. Clearly, more research is

necessary to understand weight and diabetes stigma at the intersections of race and gender. Both weight and diabetes stigma have the potential to negatively impact diabetes management given associations between stigma and cardiometabolic risk³⁻⁶ as well as impaired treatment.^{14,15} Thus, our findings highlight the need for increased research to understand the role of both weight stigma and diabetes stigma in outcomes to ensure equitable care for all people with diabetes.

This study has several limitations. Participants self-reported all measures, including their height and weight. Although a sizable number of Asian, Black and Hispanic individuals completed this study, the sample was 75% White and overly representative of middle-income, college-educated individuals. It was necessary to exclude 15 individuals who identified with demographic groups that were not large enough to yield meaningful demographic comparisons. More research with lower income and racially diverse samples will be important for identifying the relationship between stigma and health outcomes among those disproportionately affected by type 2 diabetes. This study used a healthcare-oriented market research firm to collect participants who self-reported having type 2 diabetes. Although the panel is diverse and has a large number of members, they may not represent the broader population of individuals in the USA with type 2 diabetes.

The high rates and overlap of weight stigma and diabetes stigma highlight the need for work to understand how these forms of stigma may exacerbate care outcomes in the treatment of diabetes and obesity. Although considerable evidence demonstrates that weight stigma is harmful to health,² research on diabetes stigma is relatively new and more work is needed to understand how diabetes stigma may impact psychological as well as physiological health outcomes. Finally, although understanding health consequences of stigma is important, it is equally important for researchers to investigate effective ways to reduce weight and diabetes stigma in order to mitigate and ultimately eliminate these barriers to health and well-being.

The diabetes and obesity fields have called for increased attention to stigma among individuals with obesity and diabetes.^{18,30} This study reiterates the priority of these calls, showing that a substantial proportion of adults with type 2 diabetes reported both weight and diabetes stigma. Given that stigma has demonstrable health consequences independent of BMI² and implications for diabetes treatment,¹⁴ increased attention to the provision of compassionate, respectful care is essential to promote well-being of people with type 2 diabetes across diverse body weights. Practitioners have a vital role in providing stigma-free care to reduce stigma-related disparities.

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COMPETING INTERESTS

None declared.

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REFERENCES

- Himmelstein MS, Puhl RM, Quinn DM. Intersectionality: an understudied framework for addressing weight stigma. *Am J Prev Med.* 2017;53:421-431.
- Spahlholz J, Baer N, König HH, Riedel-Heller SG, Luck-Sikorski C. Obesity and discrimination – a systematic review and meta-analysis of observational studies. *Obes Rev.* 2016;17:43-55.
- Tsenkova VK, Carr D, Schoeller DA, Ryff CD. Perceived weight discrimination amplifies the link between central adiposity and nondiabetic glycemic control (HbA1c). *Ann Behav Med.* 2011;41:243-251.
- Pearl RL, Wadden TA, Hopkins CM, et al. Association between weight bias internalization and metabolic syndrome among treatment-seeking individuals with obesity. *Obesity.* 2017;25:317-322.
- Sutin AR, Terracciano A. Perceived weight discrimination and obesity. *PLoS One.* 2013;8:1-4.
- Udo T, Grilo CM. Cardiovascular disease and perceived weight, racial, and gender discrimination in U.S. adults. *J Psychosom Res.* 2017;100:83-88.
- Tomiya AJ, Epel ES, McClatchey TM, et al. Associations of weight stigma with cortisol and oxidative stress independent of adiposity. *Health Psychol.* 2014;33:862-867.
- Sutin AR, Stephan Y, Luchetti M, Terracciano A. Perceived weight discrimination and C-reactive protein. *Obesity.* 2014;22:1959-1961.
- Puhl RM, Himmelstein MS, Quinn DM. Internalizing weight stigma: prevalence and sociodemographic considerations in US adults. *Obesity.* 2018;26:167-175.
- Centers for Disease Control & Prevention. Prevalence of overweight and obesity among adults with diagnosed diabetes — United States, 1988–1994. *Morb Mortal Wkly Rep.* 2004;53:1066-1068.
- Potter L, Wallston K, Trief P, Ulbrecht J, Juth V, Smyth J. Attributing discrimination to weight: associations with well-being, self-care, and disease status in patients with type 2 diabetes mellitus. *J Behav Med.* 2015;38:863-875.
- Browne JL, Ventura AD, Mosely K, Speight J. Measuring the stigma surrounding type 2 diabetes: development and validation of the type 2 diabetes stigma assessment scale (DSAS-2). *Diabetes Care.* 2016;39:2141-2148.
- Browne JL, Ventura A, Mosely K, Speight J. 'I call it the blame and shame disease': a qualitative study about perceptions of social stigma surrounding type 2 diabetes. *BMJ Open.* 2013;3.
- Holmes-Truscott E, Browne JL, Ventura AD, Pouwer F, Speight J. Diabetes stigma is associated with negative treatment appraisals among adults with insulin-treated Type 2 diabetes: results from the second Diabetes MILES – Australia (MILES-2) survey. *Diabet Med.* 2018;35:658-662.
- Liu NF, Brown AS, Younge MF, Guzman SJ, Close KL, Wood R. Stigma in people with type 1 or type 2 diabetes. *Clin Diabetes.* 2017;35:27-34.
- Spanakis EK, Golden SH. Race/ethnic difference in diabetes and diabetic complications. *Curr Diab Rep.* 2013;13:814-823.

17. Schabert J, Browne JL, Mosely K, Speight J. Social stigma in diabetes: a framework to understand a growing problem for an increasing epidemic. *Patient*. 2013;6:1-10.
18. Speight J, Hendrieckx C, Pouwer F, Skinner TC, Snoek FJ. Back to the future: 25 years of 'Guidelines for encouraging psychological well-being' among people affected by diabetes. *Diabet Med*. 2019;37:1225-1229.
19. International Diabetes Federation. *Global Diabetes Plan 2011–2021*; 2011. Available at <https://idf.org/component/attachments/attachments.html?id=1307&task=download> Last accessed 1 March 2020.
20. Rubino F, Puhl RM, Cummings DE, et al. Joint international consensus statement for ending stigma of obesity. *Nat Med*. 2020;26:485-497.
21. Gudzone KA, Bennett WL, Cooper LA, Clark JM, Bleich SN. Prior doctor shopping resulting from differential treatment correlates with differences in current patient-provider relationships. *Obesity*. 2014;22:1952-1955.
22. Pearl RL, Puhl RM. Measuring internalized weight attitudes across body weight categories: validation of the modified weight bias internalization scale. *Body Image*. 2014;11:89-92.
23. Tomiyama AJ, Finch LE, Incollingo Belsky AC, et al. Comparison of implicit and explicit weight bias from 2001 to 2013: contradictory attitudes among obesity research and health professionals. *Obesity*. 2014;23:46–53.
24. Puhl RM. What words should we use to talk about weight ? A systematic review of quantitative and qualitative studies examining preferences for weight-related terminology. *Obes Rev*. 2020;21:e13008–e13008.
25. Puhl RM, Luedicke J, Heuer CA. The stigmatizing effect of visual media portrayals of obese persons on public attitudes: does race or gender matter? *J Health Commun*. 2013;18:805-826.
26. Dutton GR, Lewis TT, Durant N, et al. Perceived weight discrimination in the CARDIA study: differences by race, sex, and weight status. *Obesity*. 2014;22:530-536.
27. Fletcher JM. The interplay between gender, race and weight status: self perceptions and social consequences. *Econ Hum Biol*. 2014;14:79-91.
28. Perez-lopez MS, Lewis RJ, Cash TF. The relationship of antifat attitudes to other prejudicial and gender-related attitudes. *J Appl Soc Psychol*. 2001;31:683-697.
29. Burgess DJ, Ding Y, Hargreaves M, van Ryn M, Burgess DJ. The association between perceived discrimination and underutilization of needed medical and mental health care in a multi-ethnic community sample. *J Health Care Poor Underserved*. 2008;19:894-911.
30. Puhl RM, Phelan SM, Nadglowski J, Kyle TK. Overcoming weight bias in the management of patients with diabetes and obesity. *Clin Diabetes*. 2016;34:44-50.

SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

Supplementary Material

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