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Weight Stigma Among Pregnant and Postpartum Women: A New Context of Stigmatization

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Weight stigma is now well studied, but very little research has examined it in the context of pregnancy. This gap is problematic because weight gain is necessary for healthy pregnancies, and many women begin pregnancy already considered overweight or obese. Social responses to weight gain during pregnancy may not always be positive, and stigmatization may therefore be common during this time. A sample of 501 pregnant and postpartum women reported on pregnancy-related weight stigma, including on sources of weight-stigmatizing experiences, frequency of experiences, and examples. Results include basic findings along with associations of body mass index (BMI) and self-perceived weight with weight-stigmatizing experiences. Nearly two thirds of participants reported experiencing weight stigma from at least one source. Experiences occurred, on average, between "a few times a month" and "at least once a week." Participants reported experiencing weight stigma from the media multiple times a week, making it the most frequently occurring source. Additionally, women of all prepregnancy BMIs reported experiencing weight stigma. Self-perceived weight mediated the relationship between prepregnancy BMI and weight stigma. These findings reveal that pregnant and postpartum women experience weight stigma from multiple sources. Moreover, experiencing weight stigma is not limited to those with prepregnancy obesity. Considering that sources of stigma vary, intervening to reduce weight stigma targeted at pregnant and postpartum women may require focusing both on perpetrators and on building resilience among targets. This work lays a foundation for future work investigating pregnancy-related weight stigma.

Keywords: maternal obesity, perceived weight, postpartum, pregnancy, weight stigma

Over the past two decades, weight-based stigma has become a heavily researched phenomenon in many contexts. Research demonstrates that experiencing stigma due to weight is frequent and prevalent. For example, women with overweight and obesity experience weight stigma three times daily, on average (Seacat, Dougal, & Roy, 2016). Moreover, weight-based stigma occurs in practically all societal domains including employment, education, health care, close relationships, and media (Puhl & Heuer, 2009), and it carries with it serious consequences for psychological and physical health, aside from the effect of obesity or weight status alone (Puhl & Suh, 2015). For instance, weight stigma adversely affects exercise and eating behavior, physiological health markers such as blood pressure and cortisol reactivity, and indices of psychological well-being such as depression and disordered eating (Hatzenbuehler, Keyes, & Hasin, 2009; Hayward, Vartanian, & Pinkus, 2018; Papadopoulos & Brennan, 2015; Puhl & Suh, 2015). Such negative consequences are likely to contribute to a prospective association between weight stigma and mortality risk that has been reported in two large, nationally representative samples (Sutin, Stephan, & Terracciano, 2015). Despite the field's focus on weight stigma in general, one important context that has been largely ignored in the literature is pregnancy.

Pregnancy is a context that is relevant to weight stigma research for several reasons. To begin, recent estimates suggest that nearly a quarter of women in the United States are obese before becoming pregnant, and rates of prepregnancy obesity have steadily increased over the past several decades (Kim, Dietz, England, Morrow, & Callaghan, 2007). As such, many pregnant and postpartum women are likely to be targets of weight stigma during and immediately after their pregnancy. Moreover, regardless of prepregnancy obesity status, virtually all women gain some amount of weight over the course of pregnancy, which may increase vulnerability to weight stigmatization. This may be especially so considering that anyone can experience weight stigma so long as they perceive their bodies to be heavy (e.g., Himmelstein, Incollingo Belsky, & Tomiyama, 2015), and women tend to perceive themselves as overweight even with a

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body mass index (BMI) in the *normal weight* range (Crawford & Campbell, 1999). Furthermore, understanding weight stigma's effects in the context of pregnancy is necessary as many of the consequences of experiencing weight stigma are especially deleterious for pregnant women. For instance, recent findings suggests that experiencing weight-related discrimination during pregnancy is associated with excess pregnancy weight gain, retention of that weight gain, and postpartum depressive symptomatology (Incollingo Rodriguez, Tomiyama, Guardino, & Dunkel Schetter, 2019).

A limited body of research demonstrates that heavy pregnant women do experience weight stigma, specifically in health care settings. For instance, in one qualitative study, 19 British mothers with prepregnancy obesity reported a high prevalence of feelings of humiliation associated with being obese during pregnancy (Furber & McGowan, 2011). They further reported feeling an increased medicalization of their pregnancy (e.g., being labeled *high-risk*, undergoing extra tests and screenings); distressing and embarrassing ultrasound experiences; and worse interactions with doctors, other health care professionals, and even the general public. Another recent qualitative study of 24 Canadian women with overweight and obesity examined weight-stigmatizing experiences in preconception and prenatal health care. Two papers coming from this study reported that some women actually equated their preconception medical care with eugenics, referencing how it seemed their physicians wanted to prevent them from conceiving (Bombak, McPhail, & Ward, 2016; McPhail, Bombak, Ward, & Allison, 2016). Furthermore, they were often made to feel vilified, being told they were putting their unborn child at risk for serious developmental conditions because of their weight. Finally, another study examined a sample of 627 pregnant Australian women responding to a survey about their experiences with maternity health care and 248 maternity health care providers reporting on their perceptions of patients of different body sizes. This study found that women with a higher BMI were more likely than those with a lower BMI to report negative experiences with maternity health care over pregnancy and the postpartum period (Mulherin, Miller, Barlow, Diedrichs, & Thompson, 2013). These included not being treated with care, understanding, honesty, or respect. Perhaps of the greatest concern, this study also reported that maternity health care providers held more negative beliefs about their patients with overweight and obesity.

Although this preliminary evidence suggests that weight stigma is present in prenatal health care, there is no evidence, as yet, of pregnancy-related weight stigma from other sources such as family and close others, faith community members, strangers, or media sources. In fact, even basic data are lacking on the frequency of weight stigma experiences in pregnancy and postpartum. There are also important individual differences that may exist based on a woman's weight or how she perceives her weight. Heavier women generally experience more weight stigma than thinner women (Seacat et al., 2016), and thus we would expect that women of various prepregnancy BMIs experience weight stigma differently. As mentioned above, research also shows that women of all weights, even those not objectively overweight or obese by BMI standards, can experience weight stigma provided they perceive themselves as heavy (Himmelstein et al., 2015). Therefore, a woman's self-perceived weight could also influence her experiences of weight stigma during pregnancy and postpartum. This study employed a survey research design with the goal of collecting empirical data on the phenomenon of weight stigma experienced by pregnant and postpartum women. This relatively novel area of study was justified by the abovementioned small body of work pointing to a possibility that weight stigma may also be prevalent in this population.

Method

Participants

Recruitment targeted women who were at least 13 weeks pregnant or in their second or third trimester of pregnancy, or within the first year after birth. Potential participants in their first trimester were excluded as most women do not gain weight during this time. Other exclusion criteria included the following: less than 18 years of age, residence outside the United States, and being or having been pregnant with multiples (e.g., twins). The final sample consisted of 501 women (28.5%, $n = 143$ pregnant; 71.5%, $n = 358$ postpartum) from 48 states around the United States. California was the most represented state, with 16.8% of the sample residing there. See Table 1 for characteristics of the overall sample and by pregnant or postpartum status.

Procedure

The university's Institutional Review Board approved all procedures. Participants were recruited via flyers that were posted and/or distributed in health care offices, cafés, childcare centers, and baby retail locations in the wider Los Angeles, California, United States area. The drive to be thin is a well-established and widely recognized norm in the social context of Southern California (Greenhalgh, 2012), which made this locale appropriate for concentrating in-person recruitment efforts. To broaden the reach of the study, participants were also recruited online via advertisements shared on Internet forums for pregnant women and new mothers, such as groups on Facebook, Yahoo!, and Instagram. Online advertisements described the study as investigating "your experiences while being pregnant or since having your baby." Participation was incentivized with entry into a raffle for five prizes of $100. Participants were given a link to complete the survey online, and all participation was anonymous. They had the option of providing their e-mail addresses strictly for the purposes of entry into the raffle, and all data were stripped of this information prior to analyses.

Measures

Measures for this study were selected to obtain a range of experiences of weight stigma and potential correlates of these experiences. To do so, we chose measures from the weight stigma and pregnancy/postpartum literatures, consulted experts, and designed new measures specifically for this study.

Sources and frequency of weight-stigmatizing experiences. To measure sources of weight stigma, participants read the following prompt: "Since becoming pregnant, have you ever been treated differently because of your weight or has something or someone made you feel bad or uncomfortable because of your weight? Please indicate who or what the source of this experience was. Select all that apply." The present study adapted and ex-

Table 1
Characteristics of the Study Sample

Variable	Overall (N = 501)	Pregnant (N = 143)	Postpartum (N = 358)
Status			
Pregnant	28.5%	—	—
Postpartum	71.5%	—	—
Age (years)	28.31 (5.15)	28.86 (5.03)	28.07 (5.19)
Education			
None	.3%	—	.6%
Middle school or less	.8%	—	1.1%
High school or GED	25.7%	25.2%	26%
Technical or vocational school	10%	5.6%	11.7%
Associate's degree	12.4%	14%	11.7%
Bachelor's degree	22.2%	23.8%	21.5%
Graduate degree	15%	20.3%	12.8%
Other or not reported	13.6%	11.2%	14.5%
Employment status			
On paid/maternity leave	6.8%	1.4%	8.9%
On unpaid leave	3.8%	1.4%	4.7%
Working part time	12.6%	12.6%	12.6%
Working full time	25.5%	32.9%	22.6%
Unemployed	6.2%	8.4%	5.3%
Full time homemaker	25.9%	26.6%	25.7%
Student	3%	3.5%	2.8%
On disability	.4%	.7%	.3%
Other or not reported	15.8%	12.6%	17%
Race/Ethnicity			
White	67.3%	65.7%	67.9%
Black	2.8%	2.8%	2.8%
Latina	10.2%	11.2%	9.8%
Asian/Pacific Islander	2.8%	4.9%	2.0%
Other or multiracial	2.2%	2.8%	2.0%
Not reported	14.8	12.6%	15.6%
Income per capita (in thousands of dollars)	70.53 (61.92)	75.17 (73.62)	68.54 (56.18)
Household size	3.67 (1.34)	2.84 (1.03)	4.01 (1.31)
Poverty status			
At or below federal poverty line	12%	9.8%	12.8%
100%-200% of the federal poverty line	19.2%	18.9%	19.3%
>200% of the federal poverty line	50.5%	57.3%	47.8%
Not reported	18.4%	14%	20.1%
Pregnant with/delivered first child	52.9%	55.3%	46.9%
Weeks of gestation	—	25.75 (8.56)	—
Age of baby (months)	—	—	5.59 (3.69)
Pre-pregnancy BMI	33.66 (11.19)	36.11 (12.21)	32.68 (10.61)
Pre-pregnancy BMI categories			
"Underweight"	2.6%	2.8%	2.5%
"Normal weight"	26.1%	22.4%	27.7%
"Overweight"	17.2%	11.2%	19.6%
"Obese"	54.1%	63.6%	50.3%

Note. Numbers in parentheses are standard deviations.

panded this characterization of a weight-stigmatizing experience based on previous work (Vartanian, Pinkus, & Smyth, 2014, 2018). The verbiage "has something or someone made you feel bad or uncomfortable because of your weight" was added to capture the negative affective component of experiencing weight stigma. To respond to this prompt, participants were given the following 12-item list, and they selected all applicable sources: work, family (immediate and extended), friends, community members, partners, health care providers, strangers, media, other mothers, and society (Cronbach's alpha = .73). Participants could fill in the blank to identify a source not on the list, and they could also indicate that they had not experienced weight stigma at all. This list of sources was generated based on common sources of weight stigma (Puhl & Brownell, 2006) and sources mentioned by six pregnant and postpartum women who participated in semistructured pilot interviews. During these interviews, women provided open-ended responses to the following prompt: "Sometimes a woman might experience being treated differently from before she was pregnant, especially regarding her appearance, weight, or weight gain . . . Have you experienced anything like this?"

Participants in the current study were then asked, "So that we can fully understand what happened, for each of the people or situations you selected above, please provide an example of one of these experiences. Make sure to describe who/what made you feel bad or treated you differently and how it happened." Participants

provided their example in open-response format for each source they had endorsed in the previous question.

Finally, regarding the frequency of such events, participants were asked: "For each of the people or situations you selected above: How often have you been treated differently or been made you feel bad or uncomfortable about your weight since you became pregnant?" For each source they had endorsed, participants responded to this question using the following response options: less than once a month, a few times a month, at least once a week, almost every day, 1 or 2 times a day, 3 or more times a day.

Concerns about weight stigma. To assess how concerned participants were about weight stigma directed at themselves, they completed the five-item Weight Stigma Concerns Scale (Hunger & Major, 2015). A sample item is, "I am concerned that other people's opinion of me will be based on my weight." In prior research, this measure has demonstrated good reliability (Cronbach's alpha = .94) and has been validated against other measures of rejection (Hunger & Major, 2015). In this sample, Cronbach's alpha was .96.

Pregnancy- and postpartum-related information. Pregnant participants reported whether the pregnancy was their first and how many weeks of gestation they were at the time when they completed the survey. Postpartum participants reported whether the birth had been their first and the age of the child at the time when they completed the survey.

Weight information. Participants reported their height in inches, prepregnancy weight in pounds, and current weight in pounds. They also indicated their perception of their body size, a measure used in previous research (Himmelstein et al., 2015). Prepregnancy weight and current weight were used to calculate pregnancy weight gain for pregnant women and weight retention for postpartum women. Prepregnancy and current BMI were calculated according to the standard formula: weight(lb)/[height(in)]^{2}*703. BMI values were categorized according to the Institute of Medicine's cutoffs for *underweight* (<18.5), *normal weight* (18.5–24.9), *overweight* (25.0–29.9), and *obese* (≥30.0).

Demographic information. Participants reported their age, highest level of completed education, employment status, race/ethnicity, household size (i.e., number of people living in their household), zip code, and household income. Household size and income were used to calculate household income per capita and federal poverty status based on the federal poverty line, which for 2017 was $12,060 for one person plus $4,180 for each additional person in the household according to the United States Department of Health and Human Services.

Data Analytic Plan

Stigma source. Descriptive statistics were used to evaluate the percentage of participants that endorsed each source of weight stigma, both in the overall sample and separately by categories of *normal weight*, *overweight*, and *obese* prepregnancy BMI. A correlation analysis tested the relationship between the number of sources endorsed and prepregnancy BMI. A series of chi-square goodness-of-fit analyses tested for differential rates of endorsement of each source based on prepregnancy BMI category. The first and last author reviewed all open-ended responses where participants provided examples of a weight-stigmatizing experience from each source they had endorsed. They then selected three representative examples of each source to report.

Stigma frequency. Descriptive statistics were also used to evaluate how frequently weight stigma was experienced, both overall and from each source individually. Correlation analyses tested the relationships between the average frequency of experiences and both the number of sources endorsed and prepregnancy BMI.

Weight stigma concerns. Correlation analyses tested the relationships between weight stigma concerns and the number of sources endorsed, the average frequency of experiences, and prepregnancy BMI.

Mediation. Finally, three hierarchical linear regression analyses tested self-perceived weight as a mediator of the relationships between prepregnancy BMI (continuous) and each of the following weight stigma variables: number of sources endorsed, average frequency of experiences, and weight stigma concerns.

Results

Sources of Weight Stigma

Overall, participants reported experiencing weight stigma from an average of 1.9 sources. Nearly two thirds (64.9%) reported experiencing weight stigma from at least one source. Participants with a *normal weight* prepregnancy BMI endorsed 1.3 sources on average, with 54.6% endorsing at least one source. Participants with an *overweight* prepregnancy BMI endorsed 1.9 sources on average, with 67.4% endorsing at least one source. Lastly, participants with an *obese* prepregnancy BMI endorsed 2.2 sources on average, with 70.5% endorsing at least once source. Consistent with this pattern, there was a significant positive correlation between the number of sources endorsed and prepregnancy BMI, $r(500) = .21$, $p < .001$.

The most commonly endorsed sources of weight stigma among all participants were *society in general*, *media*, *strangers*, and *immediate family*. For participants with an *obese* prepregnancy BMI, health care providers were another common source of weight stigma. See Table 2 for endorsement rates for each source in the overall sample and by prepregnancy BMI category.

The following sources were endorsed at significantly different rates based on prepregnancy BMI category: health care provider, media, and society (see Table 3 for chi-square analyses). Examining the rates of endorsement, participants with an *obese* prepregnancy BMI endorsed each of these sources at the highest rates, whereas participants with a *normal weight* prepregnancy BMI endorsed each source at the lowest rates.

The open-ended responses describing weight-stigmatizing experiences were generally varied, with reports of negative comments and overarching societal beliefs being commonly reported. For example, one woman reported that a stranger told her she looked "too fat to be pregnant" and that she should lose weight. Another woman reported that immediate family would comment that she must be "having multiples" because of her weight. See Table 4 for quotes of representative examples of weight-stigmatizing experiences from each source.

Table 2
Sources and Frequency of Weight-Stigmatizing Experiences

Source	Overall (N = 501)		Normal weight (n = 130)		Overweight (N = 86)		Obese (n = 271)	
	Percent endorsed	Frequency[a]	Percent endorsed	Frequency[a]	Percent endorsed	Frequency[a]	Percent endorsed	Frequency[a]
Overall		2.37 (1.17)		2.17 (1.24)		2.41 (1.15)		2.41 (1.12)
Work	13.8%	2.41 (1.55)	13.8%	2.33 (1.24)	17.4%	2.33 (1.59)	12.5%	2.24 (1.42)
Immediate family	21%	1.90 (.99)	23.1%	1.55 (.63)	19.8%	1.65 (1.06)	21%	2.16 (1.07)
Extended family	12.2%	1.67 (1.01)	9.2%	1.58 (.67)	14%	1.33 (.49)	13.3%	1.81 (1.22)
Friends	14%	1.94 (1.14)	13.1%	1.82 (1.02)	12.8%	1.82 (1.40)	15.1%	1.97 (1.10)
Church	4%	1.80 (1.00)	3.1%	1.75 (.96)	2.3%	2.50 (2.12)	4.8%	1.62 (.87)
Partner	11%	2.51 (1.45)	13.1%	2.35 (1.27)	16.3%	2.36 (1.69)	8.5%	2.70 (1.58)
Healthcare provider	18.4%	1.54 (.58)	3.1%	1.25 (.50)	11.6%	1.40 (.52)	28.4%	1.58 (.59)
Strangers	21.2%	2.26 (1.26)	16.2%	2.19 (1.29)	15.1%	2.23 (1.74)	25.8%	2.29 (1.19)
Media	24.6%	3.67 (1.76)	8.5%	3.82 (2.23)	26.7%	3.52 (1.53)	32.5%	3.69 (1.78)
Other moms	14.2%	2.51 (1.41)	11.5%	3.20 (1.70)	18.6%	2.25 (1.18)	14%	2.39 (1.35)
Society in general	33.9%	3.56 (1.78)	14.6%	2.95 (1.62)	32.6%	3.43 (1.50)	44.6%	3.70 (1.88)
Other	2.6%	3.50 (2.61)	3.1%	4.33 (3.06)	2.3%	4.50 (3.54)	2.2%	3.17 (2.56)
None	35.1%	—	45.4%	—	32.6%		29.5%	

Note. BMI categories refer to prepregnancy BMI. Numbers in parentheses are standard deviations.
[a] 1 = less than once a month; 2 = a few times a month; 3 = at least once a week; 4 = a few times a week; 5 = almost every day; 6 = one or two times a day; 7 = three or more times a day.

Frequency of Weight-Stigmatizing Experiences

On average, participants reported experiencing weight stigma between *a few times a month* and *at least once a week*, both in the overall sample and in each prepregnancy BMI category. Weight-stigmatizing experiences occurred particularly frequently from certain sources. For instance, all participants reported experiencing weight stigma from media between *at least once a week* and *a few times a week*. Participants with an *overweight* or *obese* prepregnancy BMI also experienced weight stigma from society in general at this same frequency. See Table 2 for the average frequency from each source in the overall sample and by prepregnancy BMI category.

The average frequency of weight-stigmatizing experiences was significantly positively correlated with the number of sources participants endorsed, $r(324) = .23$, $p < .001$, but not with prepregnancy BMI, $r(324) = .02$, $p = .736$.

Table 3
Comparison of Endorsement Rates of Each Source by Prepregnancy BMI Category

Source	Normal weight	Overweight	Obese	χ^2	*df*	*p* value
Work	13.8%	17.4%	12.5%	0.59	2	.744
Immediate family	23.1%	19.8%	21%	0.22	2	.896
Extended family	9.2%	14%	13.3%	1.17	2	.558
Friends	13.1%	12.8%	15.1%	0.20	2	.907
Church	3.1%	2.3%	4.8%	1.40	2	.497
Partner	13.1%	16.3%	8.5%	1.95	2	.378
Healthcare providers	3.1%	11.6%	28.4%	22.37	2	<.001
Strangers	16.2%	15.1%	25.8%	3.90	2	.143
Media	8.5%	26.7%	32.5%	13.57	2	.001
Other moms	11.5%	18.6%	14%	1.73	2	.420
Society in general	14.6%	32.6%	44.6%	14.71	2	.001
Other	3.1%	2.3%	2.2%	0.29	2	.867
None	45.4%	32.6%	29.5%	3.50	2	.174

Note. *df* = degrees of freedom.

Weight Stigma Concerns

The mean value for weight stigma concerns was 22.03 (SD = 9.76, range = 5 to 35). This mean value falls above the midpoint of the scale, suggesting participants did endorse some degree of agreement with items indicating weight stigma concerns. Weight stigma concerns were significantly positively correlated with the number of sources a participant endorsed, $r(450) = .40$, $p < .001$, the average frequency of experiences, $r(289) = .21$, $p < .001$, and prepregnancy BMI, $r(450) = .49$, $p < .001$.

Self-Perceived Weight as a Mediator

Self-perceived weight significantly mediated the relationship between prepregnancy BMI and the number of sources of weight stigma that participants endorsed. Specifically, prepregnancy BMI significantly and positively predicted self-perceived weight, which in turn significantly and positively predicted the number of sources that participants endorsed. Moreover, the path from prepregnancy BMI to number of sources endorsed was no longer significant with the inclusion of self-perceived weight as a mediator.

Prepregnancy BMI did not significantly predict the average frequency of experiences. However, self-perceived weight was a marginally significant predictor of the average frequency of experiences after accounting for prepregnancy BMI.

Self-perceived weight also significantly mediated the relationship between prepregnancy BMI and weight stigma concerns. Specifically, prepregnancy BMI significantly predicted perceived weight, which in turn significantly predicted weight stigma concerns. However, in this case, after accounting for the effect of the mediator, prepregnancy BMI still uniquely predicted weight stigma concerns.

See Table 5 for regression coefficients for each model.

Discussion

This work provides the first clear documentation of the experience of weight stigma in pregnancy and postpartum across multi-

Table 4
Examples of Weight-Stigmatizing Experiences From Each Source

Source	Example
Work	"A coworker said I didn't look pregnant, just fat."
	"Coworkers point out how I am getting big and to be careful."
	"Supervisor kept telling me how fat my face was getting and that I would have a 10-lb baby because of how big I was."
Immediate family	"A good number of my family told me that I shouldn't 'trying' to get pregnant because I'm too heavy after they found out I was expecting."
	"Comments like, 'you're HUGE! Are you sure you're only having one?'"
	"Parent telling me that I should have lost weight before getting pregnant—that I was too big to have a healthy pregnancy."
Extended family	"People at your size shouldn't have kids."
	"Grandma makes comments about how my cousin lost baby weight almost immediately."
	"A few of my cousins made a point to say at Thanksgiving holy crap you are getting huge. They would also tell me I didn't need to be eating certain things because I was getting too big."
Friends	"Friend said I was huge multiple times, even after I lost weight from the baby."
	"Always assume I was having multiples."
	"Roommates say I'm fat on almost a daily basis. For this reason I try to avoid them because it makes me feel insecure."
Church	"You should put it up for adoption, you are going to make it fat."
	"I have been addressed about my weight in relation to 'keeping my body a temple.'"
	"Near the end of my pregnancy, people at church kept saying, 'Wow, you got big!' I didn't gain any weight with my pregnancy."
Partner	"He's said he prefers me skinnier; hopes I can lose all this weight shortly after delivering."
	"Shamed for everything I ate. Said it wasn't the baby—I was fat."
	"He always made comments about my weight gain. After I had her he would grab my stomach and ask when it was going back to 'normal'."
Health care providers	"One doctor told me I was terrible for getting pregnant at my weight . . . I was setting up my baby to fail . . . I was in tears and he told me I was being too sensitive."
	"Do you want a vaginal delivery or a donut? Your vagina gains weight, too."
	"I would want to miss appointments because of rude comments."
Strangers	"You look too fat to be pregnant. You need to lose weight."
	"Dirty looks, tsking sounds, pig noises."
	"Looks given also at a restaurant having to ask to move cause I couldn't fit in a booth with my belly. The guy was disgusted. I said I'm 8 months pregnant sorry, he looked at me as if he thought I was crazy."
Media	"Heavier pregnant women are never represented in media."
	"a lot of stigma regarding plus-sized pregnancy . . . that simply does not hold truth."
	"You never get to see the chubby mom with the apron belly, just these picture perfect tiny moms with their perfectly round bump."
Other moms	"I don't get how women can gain so much weight during pregnancy."
	"Making comments about how quick they lost and bragging."
	"Women in my online pregnancy groups are constantly posting pictures asking of they look pregnant enough and makes me scared to post anything because they are constantly judging each other."
Society in general	"Society expects you to (even during pregnancy) to remain slim and 'healthy.'"
	"Society treats overweight pregnant women as less than."
	"Plus size maternity clothes are nearly impossible to find, maternity pictures are all of pretty thin/average women."
Other	"I just get upset about my weight."
	"Called me fat."
	"Seeing myself at 145 is just very hard for me since I have always weighed 95 pounds, my pregnancy weight was 155 and I am holding onto all this weight, very discouraging."

Note. Typos have been edited.

ple societal domains. In this survey of several hundred women who were at least 12 weeks pregnant or less than one year postpartum, roughly two thirds reported experiencing some form of weight stigma. More specifically, the most common sources of weight-stigmatizing experiences in the context of pregnancy were society, media, strangers, and immediate family. Health care providers were also a particularly common source for women with obesity. Additionally, there was a positive association between prepregnancy BMI and the number of sources endorsed, such that women who began pregnancy heavier experienced weight stigma from more sources. However, not all sources seemed to be related to a woman's weight. In fact, while women with prepregnancy obesity endorsed health care providers, media, and society at the highest rates, there were no differences in endorsement rates based on prepregnancy BMI for the other sources. Women of all prepregnancy BMIs appeared to experience weight stigma from sources such as family, friends, and work at equal rates. One possible explanation for this is that heavier women surround themselves with close others who do not have or express weight stigma at the same levels as society and media. Another possibility is that even women with a *normal weight* BMI are not immune from weight stigma from their close others.

The average frequency of weight-stigmatizing experiences was lower than in a study of a nonpregnant sample (Seacat et al., 2016). However, it is important to note that this prior study sampled only women with overweight and obesity while the present study examined women of all weights. Additionally, the frequency of stigmatizing experiences appears to be predicated upon the partic-

Table 5
Hierarchical Linear Regression Analyses Testing Mediation by Self-Perceived Weight

Path	*B*	*SE B*	β	*p* value
Number of sources endorsed ($n = 501$)				
Prepregnancy BMI to perceived weight	.09	.004	.73	<.001
Perceived weight to number of sources (accounting for pre-pregnancy BMI)	.45	.10	.29	<.001
Prepregnancy BMI to number of sources (controlling for perceived weight)	.00	.01	−.001	.990
Average frequency of weight stigma[a] ($n = 325$)				
Prepregnancy BMI to perceived weight	.09	.004	.73	<.001
Perceived weight to frequency (accounting for pre-pregnancy BMI)	.12	.07	.13	.088
Prepregnancy BMI to frequency (controlling for perceived weight)	−.01	.01	−.08	.332
Weight stigma concerns (n = 451)				
Prepregnancy BMI to perceived weight	.09	.004	.73	<.001
Perceived weight to weight stigma concerns (accounting for pre-pregnancy BMI)	2.69	.40	.38	<.001
Prepregnancy BMI to weight stigma concerns (controlling for perceived weight)	.18	.05	.21	<.001

[a] 1 = less than once a month; 2 = a few times a month; 3 = at least once a week; 4 = a few times a week; 5 = almost every day; 6 = one or two times a day; 7 = three or more times a day.

ular sources of weight stigma. For instance, low-risk prenatal care typically involves monthly interactions with health care providers throughout the majority of pregnancy, which is consistent with the relatively lower frequency of weight stigma observed from health care providers. Women are exposed to media and society in general, though, much more frequently. Accordingly, these were reported as the most frequently occurring sources of weight stigma; experiences occurred more than once a week on average in this sample. Prepregnancy BMI, though, was not associated with how frequently women experienced weight stigma. This suggests that although we might expect heavier women to experience weight stigma from more sources, weight-stigmatizing experiences may be equally frequent occurrences for women of all weights.

These results also demonstrate that in addition to the objective features of a woman's body (i.e., her BMI), how she perceives her body may influence her reported experiences of weight stigma. Specifically, self-perceived weight mediated the relationships between prepregnancy BMI and both the number of sources of stigma a woman endorsed and her level of weight stigma concerns. Thus, in addition to objective BMI, it may be just as important to take into account how women perceive their weight in identifying who may be at risk for experiencing weight stigma. This interpretation is consistent with prior research (Himmelstein et al., 2015). In fact, self-perceived weight may be a more sensitive predictor of weight stigma, as women of higher self-perceived weights are probably more attuned to weight-stigmatizing experiences than those with lower self-perceived weights. This aspect is very important to consider in the context of pregnancy and postpartum. For example, health care providers may not understand that how a woman perceives her weight and body may not be perfectly correlated with her actual weight. In this vein, even an apparently thin woman might feel stigmatized by insensitive comments about weight. Helping providers to recognize this fact can contribute to more sensitive care. These reported relationships between actual weight and self-perceived weight, therefore, potentially make a meaningful addition to our understanding of weight during and following pregnancy. Moreover, as women tend to perceive themselves as *overweight* even when their BMI is in the *normal weight* range (Crawford & Campbell, 1999), these findings indicate that objective BMI may not be the most accurate screening tool for future weight stigma reduction efforts in this population.

An interesting phenomenon also emerged from the qualitative comments describing weight-stigmatizing experiences with strangers, wherein women's pregnancies were not recognized as such and mistaken as obesity. Women described situations such as, "Mechanic said he thought I was just fat, not 9 months pregnant," "People treated me as if I was just really fat instead of pregnant and treated me as if I was lazy," and "Woman at the grocery store, when I told her I was 8 months pregnant, 'Oh I thought you were just fat.'" These examples highlight yet another reason why studying weight stigma in pregnancy is important—women who perhaps had never experienced weight stigma may, because of their pregnancy, be exposed to negative attitudes, discrimination, and prejudice based on their larger body size.

We do note that the generalizability of our findings is limited by a lack of diversity in this sample. Namely, the majority of these participants were White and of fairly high socioeconomic status. As racial/ethnic minority groups generally have the highest rates of overweight and obesity (Ogden, Carroll, Kit, & Flegal, 2014), future research should recruit representatively diverse samples to better understand the breadth of this phenomenon and any meaningful group differences that might exist across demographic variables, including among racial/ethnic minorities. More research is clearly needed to determine which women are affected and which sources are most common for these women. Additionally, participants self-reported their prepregnancy weight and their current weight, and they may not have been willing or able to give accurate weight reports. Although an objective measure of weight would be useful to confirm the patterns observed here, previous research does demonstrate that using self-reported prepregnancy weight typically results in a correct BMI categorization (Holland, Moore Simas, Doyle Curiale, Liao, & Waring, 2013). Moreover, when objective measures of pregnancy-related weight are not available, as was the case with this anonymous survey design, obtaining self-reported weight values has been recommended as a practical and cost-effective option given that the magnitude of reporting error is generally low (Headen, Cohen, Mujahid, & Abrams, 2017).

These findings overall offer a new understanding of weight stigma in the context of pregnancy and inform future programmatic work. The varied sources that participants endorsed demonstrate that reducing weight stigma targeted at pregnant and post-

partum women is likely not a simple task. This is especially so considering that the most commonly reported sources—media and society—are difficult to intervene upon and change directly. With this in mind, pregnancy-related weight stigma reduction initiatives likely should employ a two-pronged approach targeting both perpetrators and victims. For instance, health care providers can be trained to avoid stigmatizing their heavy patients when counseling them on their weight and gestational weight gain, especially those beginning pregnancy already heavy. This is both a feasible and potentially promising near-term goal. Similarly, family, friends, and partners can be informed about the issue of weight stigma and the importance of avoiding making comments about weight in a way that will be upsetting or offensive, including to women who are not objectively *overweight* or *obese*. Regarding the women themselves, even before pregnancy begins, preconception counseling can help women of all weights prepare for how their society or the media may make them feel about their weight or weight gain during pregnancy. Such counseling can also provide strategies to counteract weight stigma and help women build resilience. Finally, it is possible to raise public awareness of weight stigma in pregnancy and postpartum so as to avoid mistreatment of women during this significant time of life and assist them in pursuing healthy pregnancies.

In sum, researchers would be well-advised to continue investigating this important issue to achieve a comprehensive understanding of the phenomenon of weight stigma, its consequences, and how to reduce it in pregnancy and postpartum.

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