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WEBINARS

Personalizing Obesity Mgmt

March 2, 2022
10 am - 1:30 pm Eastern
3.25 CMEs
Price: $150

This webinar will discuss the who, when, and how of obesity management with a focus on obtaining the patient history and narrative, considering psychological drivers and barriers, staging patients according to risk and comorbidities, and tailoring medical treatments to individual needs and expectations.
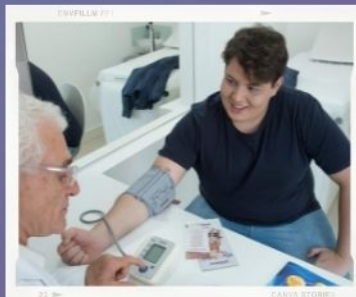
Medical Mgmt of Bariatric Patients

February 15, 2022
10 am - 5:20 pm Eastern
5.25 CMEs
Price: $200

Severe obesity and its complications are best managed by an interdisciplinary team including both surgical and medical providers. Topics will include optimizing pre-operative care as well as recognizing and developing approaches to the variability in post-operative weight loss and remission rates of obesity-related complications in both adult and pediatric patients.
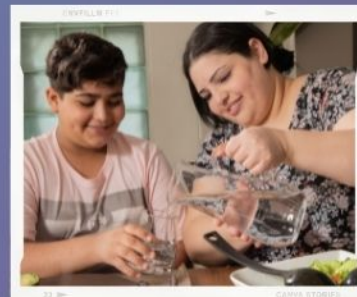
Pediatrics

March 17, 2022
10 am - 1:30 pm Eastern
3.25 CMEs
Price: $150

One in five adolescents in the United States have obesity and most will continue to have obesity in adulthood. Effective treatment and care of youth with obesity is urgently needed. Come join TOS Pediatric Obesity medicine experts share their experience and evidenced-based treatment approaches to caring for youth with obesity in this patient case-based webinar.

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BMI, Weight Discrimination, and Psychological, Behavioral, and Interpersonal Responses to the Coronavirus Pandemic

Angelina R. Sutin [iD] [1], *Eric Robinson[2], Michael Daly[3], Mary A. Gerend* [iD] [1], *Yannick Stephan[4], Martina Luchetti[1], Damaris Aschwanden[5], Jason E. Strickhouser[1], Ji Hyun Lee[1], Amanda A. Sesker[1], and Antonio Terracciano[5]*

Objective: This study aimed to examine whether BMI and weight discrimination are associated with psychological, behavioral, and interpersonal responses to the coronavirus pandemic.

Methods: Using a prospective design, participants ($N = 2,094$) were first assessed in early February 2020 before the coronavirus crisis in the United States and again in mid-March 2020 during the President's "15 Days to Slow the Spread" guidelines. Weight, height, and weight discrimination were assessed in the February survey. Psychological, behavioral, and interpersonal responses to the coronavirus were assessed in the March survey.

Results: Prepandemic experiences with weight discrimination were associated with greater concerns about the virus, engaging in more preventive behaviors, less trust in people and institutions to manage the outbreak, and greater perceived declines in connection to one's community. BMI tended to be unrelated to these responses.

Conclusions: Despite the risks of complications of coronavirus disease associated with obesity, individuals with higher BMI were neither more concerned about the virus nor taking more behavioral precautions than individuals in other weight categories. Weight discrimination, in contrast, may heighten vigilance to threat, which may have contributed to both positive (greater concern, more precautionary behavior) and negative (less trust, declines community connection) responses to the pandemic.

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Introduction

Obesity has been identified as one risk factor for complications of coronavirus disease 2019 (COVID-19), the disease caused by the novel coronavirus (1,2). Much of the work on obesity and COVID-19 has focused on epidemiological and biological aspects of the disease. Yet, there are also significant psychological (3), behavioral (4), and interpersonal (5) consequences of the current crisis. Such responses, including concerns about the virus, engagement in preventive behaviors, trust in institutions to manage the crisis, and maintaining strong interpersonal relationships will be key to both public health efforts to control the virus spread and to maintain mental health. Higher BMI may shape these responses to the pandemic, especially given the direct health risks associated with obesity for complications of COVID-19.

Study Importance

What is already known?

► Obesity is a risk factor for complications of coronavirus disease 2019, the respiratory disease caused by the novel coronavirus.

► Weight discrimination often has stronger associations with health outcomes than BMI.

► Effective responses to the pandemic are important for public health and mental health and may be shaped by both BMI and weight discrimination.

What does this study add?

► Weight discrimination is associated with greater concerns and precautionary behavior but also less trust and community connection.

► BMI is primarily unrelated to psychological, behavioral, and interpersonal responses to the coronavirus pandemic.

► Weight discrimination but not BMI predicts psychological, behavioral, and interpersonal responses to the pandemic.

How might these results change the direction of research?

► Messaging on the risk of complications associated with coronavirus disease 2019 for individuals with higher BMI may need to be improved to better communicate risks of the disease. At the same time, caution must be taken to not stigmatize individuals with higher BMI even further.

For many health-related outcomes, the social experience of body weight in the form of unfair treatment because of weight (i.e., weight discrimination) has been found to be a stronger predictor than higher BMI itself (6,7). The same may be true of coronavirus-related responses. To that end, the present research uses a prospective design to examine how BMI and experiences with weight discrimination measured just prior to the crisis prospectively predict concerns about the coronavirus, behavioral precautions taken to protect the self and reduce the spread, trust in individuals and institutions to manage the crisis, and perceived changes in relationship quality during the acute phase of the coronavirus pandemic.

Methods

Participants and procedures

Participants were from an ongoing online study of health and well-being of adults living in the United States. Participants were recruited by Dynata (dyanata.com) and directed to a Qualtrics survey. Participants completed a questionnaire in early February 2020 that included items on weight and height and weight discrimination (Wave 1). Participants were invited to complete another survey in mid-March 2020 during the President's "15 Days to Slow the Spread" guidelines, which included several measures related to the coronavirus (Wave 2). The study was approved by the Institutional Review Board at the Florida State University College of Medicine (STUDY00000003). The overall project was preregistered prior to data collection (https://osf.io/q8cpd/); the analyses reported in this paper were not preregistered. A total of 2,094 participants with valid data at both waves were included in the analysis. See online Supporting Information for attrition analysis.

Measures

Wave 1. BMI was derived as kilograms per meter squared from reported weight and height and categorized into Centers for Disease Control and Prevention (CDC)-defined categories of underweight (BMI < 18.50), overweight (BMI between 25 and 29.99), and obesity (BMI ≥ 30) compared with normal weight (BMI between 18.50 and 24.99) (note that we used the CDC-defined BMI category of obesity and not the medical definition of obesity). Biologically implausible values (BMI < 12 or BMI > 70) were removed from the data set (*n* = 4). Weight discrimination was measured with the item, "Have you ever been treated unfairly because of your weight?" (yes/no) (8).

Wave 2. Participants were asked 13 items about their concerns about the coronavirus (e.g., "How concerned are you about becoming severely ill or dying from the disease caused by the coronavirus?") on a scale from 1 (not at all concerned) to 5 (extremely concerned) (alpha = 0.89). Participants reported the CDC-recommended behavioral precautions they were taking to avoid the coronavirus (e.g., wash hands often). The sum of eight behaviors was taken across items (alpha = 0.73). Participants rated their trust in 13 groups/institutions to manage the outbreak (e.g., "To manage the outbreak of the coronavirus in the United States, how much do you trust the following: Others in your community? State Government?") on a scale from 1 (strongly distrust) to 5 (strongly trust). The mean was taken across the 13 items (alpha = 0.86). Participants also reported on changes in their relationship quality. Specifically, for participants with a romantic partner, they reported on changes in satisfaction, irritation, and disagreements with their partner since the outbreak on

a scale from 1 (less than before) to 3 (more than before). Items were reverse scored when necessary and the mean taken in the direction of declines in relationship quality (alpha = 0.66). Participants also reported whether they felt emotionally closer to their partner and, for all participants, changes in their feelings of emotional closeness to their family, friends, and community since the outbreak began. Each item was rated on a scale from 1 (less than before) to 3 (more than before). See Supporting Information Table S1 for items for all outcome measures.

Covariates. Participants reported their age in years, gender identity, race, ethnicity, and level of education. Additional information included political affiliation and state location. The state data were coded in two ways. First, location was coded into a variable that compared 10 "hot spot" states that had the highest per capita deaths because of COVID-19 against all other states. Second, location was coded into the four Census-defined regions of the country (Northeast, Midwest, South, West).

Analytic strategy

Linear regression was used to examine the association between BMI categories and weight discrimination and each of the coronavirus responses, controlling for sociodemographic covariates (all predictors and covariates entered simultaneously).

Results

Descriptive statistics are shown in Table 1. Participants who reported weight discrimination at Wave 1 reported more concerns over the coronavirus, engaged in more preventive behaviors, and also had less trust in people and institutions to manage the outbreak at Wave 2 (Table 2). BMI category was unrelated to concerns, preventive behaviors, and trust, except for one negative association between underweight and precautionary behavior.

Across the sample, 66.3% (*n* = 1,389) of participants reported being in a romantic relationship. Weight discrimination was associated with greater perceived declines in relationship quality since the coronavirus outbreak (Table 2) but was unrelated to perceived changes in emotional closeness to partner (Table 3). In the full sample, weight discrimination was also associated with feeling less emotionally close to one's community; it was unrelated to changes in perceived emotional closeness to family or friends. BMI category was unrelated to changes in the quality of one's social relationships, except for one association between the overweight category and less relationship quality decline. The associations for weight discrimination in all analyses were similar if BMI as a continuous variable was used instead of BMI categories. There was no relation between continuous BMI and any of the coronavirus responses (Supporting Information Table S2). The pattern of associations was the same if either political affiliation or state location (either as hot-spot states or Census-defined regions) was included as an additional covariate (Supporting Information Tables S3-S5).

Discussion

The present study suggests that in this sample of adults across the United States, the experience of weight discrimination, but not BMI, is

TABLE 1 Means (SD) or percentages (*n*) for all study variables

Variable	Full sample	Obesity		Weight discrimination	
		No	Yes	No	Yes
Age in years	51.03 (16.58)	50.27 (17.05)	53.00 (15.16)	52.09 (16.51)	44.83 (15.66)
Gender (male)[a]	51.1% (1,070)	52.2% (786)	48.4% (284)	54% (966)	34.2% (104)
Race (African American)	16.6% (347)	16.3% (245)	17.4% (102)	16.5% (295)	17.1% (52)
Ethnicity (Latinx)	10.7% (224)	10.2% (154)	11.9% (70)	9.9% (177)	15.5% (47)
Education[b]	4.18 (1.51)	4.30 (1.48)	3.85 (1.53)	4.23 (1.50)	3.87 (1.52)
BMI					
Underweight	4.7% (98)	6.5% (98)	0%	4.3% (77)	6.9% (21)
Normal weight	33.6% (703)	46.6% (703)	0%	36.6% (655)	15.1% (46)
Overweight	33.7% (706)	46.8% (706)	0%	35.9% (642)	21.1% (64)
Obesity	28% (587)	0%	100% (587)	23.1% (414)	56.9% (173)
Weight discrimination (yes)	14.5% (304)	8.7% (131)	29.5% (173)	0%	100%
Coronavirus concerns	2.89 (0.90)	2.88 (0.89)	2.90 (0.90)	2.85 (.89)	3.12 (.90)
Precautionary behaviors (sum)	5.58 (1.91)	5.60 (1.93)	5.53 (1.86)	5.53 (1.93)	5.86 (1.76)
Trust to manage outbreak	3.24 (0.70)	3.26 (0.68)	3.16 (0.74)	3.27 (0.68)	3.04 (0.78)
Relationship quality decline[c]	1.88 (0.39)	1.86 (0.38)	1.91 (0.39)	1.87 (0.38)	1.95 (0.40)
Emotional closeness to					
Partner[c]	2.22 (0.53)	2.22 (0.54)	2.20 (0.52)	2.22 (0.52)	2.19 (0.59)
Family[d]	2.18 (0.51)	2.17 (0.52)	2.19 (0.50)	2.18 (0.51)	2.17 (0.55)
Friends[d]	2.09 (0.50)	2.08 (0.50)	2.10 (0.49)	2.09 (0.48)	2.08 (0.58)
Community[d]	2.02 (0.51)	2.03 (0.51)	1.98 (0.50)	2.03 (0.50)	1.91 n

N = 2,094.
[a]Gender identity was coded as identified as male (= 0) compared with identified as female, transgender, and other/unknown (= 1).
[b]Education was reported on a scale from 1 (less than high school) to 7 (PhD or equivalent).
[c]*n* = 1,386 in a committed romantic relationship.
[d]*n* = 2,086 because of missing data.

TABLE 2 Linear regression predicting psychological, behavioral, and interpersonal responses to the coronavirus pandemic from BMI and weight discrimination

Predictor	Coronavirus concerns		Precautionary behavior		Trust to manage outbreak		Relationship quality decline[a]	
	β (95% CI)	*P*	β (95% CI)	*P*	β (95% CI)	*P*	β (95% CI)	*P*
Age	−0.18 (−0.23 to −0.14)	0.000	0.04 (0.00 to 0.09)	0.065	0.07 (0.03 to 0.12)	0.002	−0.06 (−0.12 to 0.00)	0.052
Gender (male)	−0.03 (−0.07 to 0.02)	0.209	−0.15 (−0.20 to −0.11)	0.000	−0.01 (−0.05 to 0.04)	0.687	0.02 (−0.04 to 0.08)	0.530
Race (African American)	0.03 (−0.01 to 0.08)	0.167	0.00 (−0.04 to 0.05)	0.829	−0.05 (−0.09 to 0.00)	0.044	−0.04 (−0.11 to 0.01)	0.129
Ethnicity (Latinx)	0.03 (−0.01 to 0.08)	0.136	0.05 (0.01 to 0.10)	0.021	−0.04 (−0.08 to 0.01)	0.082	−0.05 (−0.11 to 0.00)	0.076
Education	0.10 (0.06 to 0.15)	0.000	0.04 (0.00 to 0.09)	0.042	−0.02 (−0.06 to 0.03)	0.473	0.03 (−0.03 to 0.08)	0.348
BMI								
Underweight	0.04 (0.00 to 0.09)	0.062	−0.05 (−0.10 to −0.01)	0.025	0.04 (0.00 to 0.089)	0.052	−0.02 (−0.08 to 0.04)	0.597
Overweight	0.01 (−0.04 to 0.06)	0.652	0.02 (−0.03 to 0.07)	0.475	0.00 (−0.05 to 0.05)	0.904	−0.06 (−0.12 to 0.00)	0.045
Obesity	0.03 (−0.02 to 0.08)	0.303	−0.04 (−0.09 to 0.02)	0.177	−0.04 (−0.09 to 0.02)	0.174	0.01 (−0.05 to 0.08)	0.672
Weight discrimination	0.07 (0.03 to 0.12)	0.001	0.06 (0.02 to 0.10)	0.008	−0.10 (−0.14 to −0.05)	0.000	0.06 (0.01 to 0.12)	0.037

N = 2,094.
[a]*n* = 1,389 for relationship quality decline. Coefficients are standardized beta coefficients (95% CI) from linear regression.

associated with psychological, behavioral, and interpersonal responses to the coronavirus pandemic. Previous experiences with weight discrimination were associated with having more concerns about the virus and engaging in more precautionary behavior to prevent infection but also to less trust and greater perceived disruption in close relationships. BMI was largely unrelated to these responses.

TABLE 3 Regression analysis predicting perceived change in emotional closeness from BMI and weight discrimination

Predictor	Partner[a]		Family and relatives		Friends		Community	
	β (95% CI)	P	β (95% CI)	P	β (95% CI)	P	β (95% CI)	P
Age	0.09 (0.03 to 0.16)	0.003	0.11 (0.06 to 0.16)	0.000	0.09 (0.04 to 0.14)	0.000	0.04 (−0.01 to 0.09)	0.087
Gender (male)	−0.06 (−0.12 to 0.00)	0.042	−0.06 (−0.11 to −0.02)	0.008	−0.02 (−0.06 to 0.03)	0.484	0.00 (−0.04 to 0.05)	0.849
Race (African American)	0.06 (0.01 to 0.13)	0.026	0.00 (−0.04 to 0.05)	0.873	0.02 (−0.03 to 0.06)	0.744	−0.05 (−0.10 to −0.01)	0.022
Ethnicity (Latinx)	−0.04 (−0.11 to 0.01)	0.099	0.00 (−0.04 to 0.05)	0.817	0.00 (−0.05 to 0.04)	0.809	−0.04 (−0.09 to 0.00)	0.050
Education	0.01 (−0.05 to 0.07)	0.732	0.02 (−0.03 to 0.06)	0.478	0.03 (−0.02 to 0.07)	0.206	0.03 (−0.01 to 0.08)	0.142
BMI								
Underweight	0.03 (−0.02 to 0.09)	0.259	−0.03 (−0.07 to 0.02)	0.240	0.00 (−0.04 to 0.05)	0.865	0.02 (−0.03 to 0.06)	0.463
Overweight	0.03 (−0.03 to 0.10)	0.316	−0.01 (−0.06 to 0.04)	0.630	−0.04 (−0.09 to 0.01)	0.143	−0.03 (−0.08 to 0.02)	0.272
Obesity	0.00 (−0.06 to 0.07)	0.946	0.00 (−0.06 to 0.05)	0.912	0.00 (−0.06 to 0.05)	0.919	−0.03 (−0.08 to 0.02)	0.292
Weight discrimination	−0.01 (−0.07 to 0.05)	0.828	0.01 (−0.04 to 0.05)	0.759	0.01 (−0.04 to 0.05)	0.324	−0.07 (−0.12 to −0.03)	0.002

$N = 2,086$.
[a]$n = 1,386$ in a committed romantic relationship. Coefficients are standardized beta coefficients (95% CI) from linear regression.

Weight discrimination is associated routinely with worse health outcomes, independent of BMI (6). In the present research, weight discrimination was associated with both more adaptive (e.g., engaging in more preventive behaviors) and less adaptive (e.g., perceived declines in relationship quality) responses to the coronavirus outbreak. Individuals who have experienced weight discrimination tend to have more anxiety (9), and, in the current context, this anxiety may have translated into greater concerns over the effects of the coronavirus. Interestingly, although weight discrimination has been associated previously with greater engagement in high-risk health behaviors (8), it was associated with engaging in more CDC-recommended behaviors to reduce the spread of the coronavirus. Weight discrimination may increase sensitivity to threats in the environment, as with other forms of stigma (10), which we speculate could translate into proactive, protective behavior in some cases. This pattern suggests an adaptive response to the pandemic. At the same time, weight discrimination was also associated with less trust in others to manage the crisis and with perceived declines in quality of close relationships. In the context of health care, weight discrimination has been associated with less trust in medical authorities, perhaps because of the poor treatment many of these individuals have endured (11). Individuals who have experienced weight discrimination are also vulnerable to loneliness (12), and weight stigma has been associated with more difficulties in interpersonal relationships (13). The association with perceived decline in the current study may also reflect, in part, worse relationship quality prior to the pandemic. Unfair treatment may be an interpersonal violation that lowers trust and increases disconnection from one's community when confronted with a significant threat.

In contrast to weight discrimination, BMI was essentially unrelated to responses during the acute phase of the pandemic. Despite risks for complications from COVID-19 associated with obesity (1,14), individuals with higher BMI were no more concerned about the pandemic than individuals with normal weight. Furthermore, although previous research has found fairly consistent evidence that individuals with obesity are more likely to engage in some preventive behaviors, such as flu vaccinations (15), participants with higher BMI were no more or less likely than individuals with lower BMI to engage in behaviors to protect themselves and others against the coronavirus. Given the risks of complications from COVID-19, precautionary behaviors

may be especially important for individuals with higher BMI. Finally, although BMI has been associated with problems in interpersonal relationships (16), the declines in relationship quality observed during the acute phase of the pandemic were nearly completely unrelated to higher BMI.

The present research suggests that, as with many health-related outcomes, experiences with weight discrimination had stronger associations with responses to the pandemic than BMI, including engaging in more precautionary behaviors. Future research will need to address limitations, such as whether this pattern extends to other populations and to other pandemic-related responses. The pattern of associations for BMI category also suggests that the risk of complications associated with COVID-19 for individuals with higher BMI may need to be better communicated to the public. At the same time, caution must be taken to not stigmatize individuals with obesity even further.**O**

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