



The relationship between obesity and suicide ideation among young adults in the United States

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ABSTRACT

The prevalence of both obesity and suicide ideation has risen in the last several decades among young adults in the United States (U.S.). Obesity is highly stigmatized in the U.S. and leads to discrimination and societal rejection, which suggests that obesity may increase the risk of suicide ideation. However, no U.S. population-representative studies to date have investigated the relationship between body weight and suicide ideation among young adults. We make this contribution by analyzing data from Wave III of the National Longitudinal Study of Adolescent to Adult Health (Add Health). Our results indicate obesity is not related to suicide ideation among young men or young women and overweight young men have lower odds of suicide ideation than normal weight young men. We speculate that these findings may be attributable to the very high U.S. overweight and obesity prevalence, which has made obesity more common despite stigmatization.

1. Introduction

Suicide rose among young people during the last two decades and it is currently the second leading cause of death for 15 to 24-year-olds in the United States (U.S.) (Centers for Disease Control and Prevention, 2021). Correspondingly, the prevalence of suicide ideation, plans and attempts have all also been increasing among young people (Han et al., 2018), with the most recent estimates suggesting that young adults ages 18 to 25 have a higher prevalence of serious suicidal thoughts and attempts than every other adult age group (National Institute of Mental Health, 2021).

Social isolation and alienation contribute to adults' suicidal thoughts and behaviors (Calati et al., 2019) as does social marginalization (Ferratte et al., 2015). This has led to a robust body of research examining the relationship between body weight and suicidal thoughts and behaviors given that obesity is stigmatized (Jackson, 2016; Puhl & Heuer, 2009) and leads to discrimination (Carr & Friedman, 2005; Spahlholz et al., 2016), societal rejection (Pont et al., 2017; Puhl & Latner, 2007) and social marginalization (Apolloni et al., 2011; Strauss & Pollack, 2003).

Yet the relationship between body weight and suicidal ideation among young adults has been largely understudied despite their high risk of weight gain (Cheng et al., 2016) and suicidal thoughts and attempts (National Institute of Mental Health, 2021). To our knowledge,

only one study investigates this topic, and it does so among a sample of undergraduate students (Zuromski, Cero, Witte, & Zeng, 2017). We build on this study and the larger body of research on the relationship between body weight and suicidal thoughts and behaviors by analyzing data from 18 to 26-year-old participants in Wave III of the National Longitudinal Study of Adolescent to Adult Health (Add Health). In our study, suicide ideation is defined as having serious thoughts about committing suicide. Body weight is defined using body mass index (BMI), or weight in kilograms divided by the square of height in meters, which we use to classify individuals into Centers for Disease Control and Prevention (2022) weight categories signifying "underweight," "normal or healthy weight," "overweight" and "class I, class II, and class III or severe obesity."

2. Background

In the U.S., thinness and athleticism are highly valued and one of several signs of social distinction (Bojorquez & Unikel, 2012; Bourdieu, 1984) whereas overweight and obesity are highly stigmatized (Jackson, 2016; Puhl & Heuer, 2009) and stereotyped as being the result of laziness, gluttony or lack of willpower (Carr & Friedman, 2005). Weight stigma and weight-based stereotypes are associated with discrimination and unfair treatment (Emmer et al., 2020), which increases the risk of social isolation and loneliness (Jung & Luck-Sikorski, 2019).

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Social isolation is a well-established risk factor for suicidality. [Durkheim \(1951\)](#) was one of the first scholars to attribute suicide to social forces exogenous to individual psychology. He postulated that suicide rates vary inversely with social integration, which has been shown to foster stable, durable and cohesive social ties and in turn, individuals' sense of belongingness, inclusion and reduced suicide risk ([Wray et al., 2011](#)).

Interpersonal-psychological theory of suicidal behavior builds on the notion that social isolation is a risk factor for suicide and argues that it arises from thwarted belongingness, or feelings of alienation from friends, family and society ([Ribeiro & Joiner, 2009](#)). Recent studies utilize this theoretical perspective to argue and show that weight stigmatization and weight-based discrimination are both positively associated with suicidal thoughts and behaviors ([Douglas et al., 2021](#); [Hunger et al., 2019](#)). As such, overweight and obese individuals may be at heightened risk for suicide due the negative treatment they receive.

Indeed, some studies utilizing nationally representative samples ([Dong et al., 2006](#); [Mather et al., 2009](#); [Wagner et al., 2013](#)) and non-representative samples ([Dutton et al., 2013](#); [Zuromski et al., 2017](#)) document a positive relationship between obesity and suicidal thoughts and behaviors. However, other studies find less conclusive evidence about the significance and direction of the relationship between body weight and suicidal thoughts and behaviors, especially when women and men are examined separately.

For example, among adult women, some studies find no significant association between weight and suicidal ideation or attempts ([Goldney et al., 2009](#); [Zhang, 2006](#); [Zhao et al., 2012](#)). Other research points to a significant U-shaped association ([Gao et al., 2013](#)) and positive association ([Carpenter et al., 2000](#)) between BMI and suicide ideation.

Among adult men, the relationship between body weight and suicide ideation actually runs counter to expectations about what is known about the deleterious effects of weight stigma and discrimination. Several studies find that relative to a BMI in the normal weight range, overweight and obesity are related to lower odds of suicide ideation ([Carpenter et al., 2000](#); [Goldney et al., 2009](#)) and suicide attempts ([Carpenter et al., 2000](#); [Zhang, 2006](#)). Previous research also indicates that continuous measures of BMI are also inversely related to the likelihood of suicide ideation ([Goldney et al., 2009](#)) and attempting suicide ([Batty et al., 2010](#); [Gao et al., 2013](#); [Sorberg et al., 2014](#)).

There are several potential explanations for the inconsistent findings about how body weight and suicidal thoughts and behaviors are related. Among U.S. based studies, differences in the measurement of suicidal thoughts and behaviors and the populations studied may be a factor. For example, the only U.S. based nationally representative study that found a positive association between obesity and suicide attempts among men and women used a measure of lifetime rather than past-year suicide attempts ([Dong et al., 2006](#)).

Some of the populations sampled may have also been more vulnerable to the effect of obesity on suicidal thoughts and behaviors. For example, [Dutton et al. \(2013\)](#) analyzed data from a sample that included undergraduate psychology students ($n = 151$) and participants ages 18 to 75 at a behavioral weight management clinic ($n = 120$). Approximately 80% of the psychology students were women who face particular pressure to be thin ([Ordaz et al., 2018](#)). Furthermore, behavioral weight management participants were seeking obesity treatment, which likely reflects body discontent.

In studies examining populations outside of the U.S., lower country-level obesity prevalence may explain why obesity and suicidal thoughts and behaviors are related. For example, [Mather et al. \(2009\)](#) and [Wagner et al. \(2013\)](#) used population-based samples of adults from Canada and Germany. Whereas 42.5% of Americans are obese ([Fryar et al., 2021](#)), approximately a quarter of Canadians ([Carroll et al., 2015](#)) and less than a quarter of Germans ([Robert Koch Institut, 2021](#)) are obese. Obesity may be more stigmatized in these countries and in turn a more salient suicide risk factor.

The sex of respondents analyzed also appears to be an important

consideration given the different findings cited above about how body weight and suicidal thoughts and behaviors are related among men and women. These disparate results may reflect the fact that women have a higher percentage of body fat than men at the same BMI values ([Jackson et al., 2002](#)). As such, across the BMI spectrum, men have more muscle than adipose tissue whereas at higher BMIs women have more adipose tissue than muscle ([Heymfield et al., 2009](#)). If a higher body weight reflects muscularity for men, the negative relationship between overweight/obesity and suicidality among men could reflect the benefit of having a socially prescribed body ideal, which is to be big and muscular ([Calogero & Thompson, 2010](#)). Conversely, if a higher body weight reflects more adipose tissue for women, a higher BMI likely indicates a failure to achieve the socially prescribed body ideal of thinness ([Calogero & Thompson, 2010](#)).

Regardless of the reasons for the mixed evidence about the relationship between body weight and suicidal thoughts and behaviors, it is unclear how to expect results from previous studies to translate into research expectations for a nationally representative sample of U.S. young adults. Young men and women may be especially vulnerable to suicidal thoughts and behaviors if they are obese given that the transition from adolescence to young adulthood is a period associated with substantial weight gain ([Cheng et al., 2016](#)) and increasing body dissatisfaction ([Bucchianeri et al., 2013](#)). The only study that we are aware of that examines the association between body weight and suicide ideation among young adults supports this notion. In a sample of 338 college students, nearly all of whom were white women enrolled in a psychology course at a single southeastern U.S. university, suicide ideation significantly rose among those with a BMI above 28 (which approaches the BMI threshold of 30 that signals obesity) ([Zuromski et al., 2017](#)).

Conversely, there are also reasons why the findings of [Zuromski et al. \(2017\)](#) may not be applicable to a national-level study of body weight and suicide ideation. Mostly white female college students enrolled in a psychology course in one region of the country are not representative of the population of young adults in the U.S., especially given the fact that social norms surrounding body type stigmatize white women with larger bodies more so than Black women, Hispanic women and men ([Hicken et al., 2013](#); [Reece, 2019](#); [Sattler et al., 2018](#)). Adding to uncertainty is the current U.S. weight context. Young adults today and those in our sample who were in this life course stage in the early 2000's have grown up at a time where weight stigma and discrimination continue to persist ([Jackson, 2016](#); [Puhl & Heuer, 2009](#); [Carr & Friedman, 2005](#); [Schafer & Ferraro, 2011](#)) but being overweight and obese has become common. At least 70% of U.S. adults have been overweight or obese since the turn of the century with current estimates indicating that 29.5% are overweight and 42.5% are obese ([Fryar et al., 2021](#)). As such, social isolation and exclusion due to body weight may be less salient than in previous eras, and as a result, less likely to produce suicide ideation among young men and young women. Obese and overweight young adults simply have many adult peers who are also obese and overweight.

This leads to competing expectations about how body weight will be related to suicide ideation in the current study. It is possible that we will find no association between body weight and suicide ideation among young men or young women given the high prevalence of overweight and obesity in the U.S. It is also possible that young men and young women will both experience more suicide ideation at higher body weights, consistent with findings of the only study of young adults to date ([Zuromski et al., 2017](#)). Finally, it is possible that we will have gender specific findings about the relationship between body weight and suicide ideation, with overweight and obesity having more implications for suicide ideation among young women and no association or even negative associations among young men. Regardless of which of expectation is supported, the current study will shed new light on how body weight is related to suicide ideation among a general population of young adults during the life course stage when suicide ideation is most common.

3. Methods

3.1. Data

We analyze data from the National Longitudinal Study of Adolescent to Adult Health (Add Health), a longitudinal study of 1994–1995 7th – 12th graders. During the first wave of data collection, 90,118 students were selected from 134 middle, junior and high schools for participation in the 1994–1995 in-school survey and then 20,745 students were selected to participate in an in-home interview. In-home study participants except for Wave I seniors were followed up one year later in 1996, and all Wave I study participants were additionally followed up in 2001–2002 (Wave III), 2008 (Wave IV) and 2016–2018 (Wave V). The Add Health study is one of the largest and most comprehensive studies of adolescents in the U.S. and includes data on a wide variety of health and social outcomes assessed from adolescence to adulthood.

Because we are interested in young adulthood, we use data from the third wave of data collection when respondents were ages 18 to 26 along with data from Wave I. Of the 15,197 Wave III participants, we excluded respondents who were still in high school ($N = 108$). We also excluded pregnant women ($N = 309$) because their BMI is unlikely to capture their normal body composition. Finally, because we use sample weights in our analyses, we exclude respondents for whom weights are not available ($N = 837$). Thus, our final sample includes 13,943 Add Health respondents.

We do not exclude cases with missing data on dependent and independent variables. Instead, the Stata 17.0 `mi` function was used to multiply impute missing data. Missing values were replaced with imputed values drawn at random from a posterior predictive distribution that is conditioned on the observed values (Von Hippel, 2020). Imputations were performed using “chained” equations over 10 iterations. Results from our imputed analyses are comparable to results from analyses that employed listwise deletion.

3.2. Measures

Our main outcome of interest is a dichotomous indicator of suicide ideation ($1 = \text{yes}$). It is based on a Wave III question asking whether or not respondents had serious thoughts about committing suicide in the past 12-months.

Our main independent variable of interest is a respondent’s weight classification, based on BMI scores that we construct using Wave III interviewer assessments of measured weight and height. These categories reflect Centers for Disease Control and Prevention Guidelines for classifying men and women as “underweight” ($\text{BMI} < 18.5$), “normal or healthy weight” (reference) ($18.5 \geq \text{BMI} \leq 24.9$), “overweight” ($25.0 \geq \text{BMI} < 29.9$), “obese class I” ($30.0 \geq \text{BMI} \leq 34.9$), “obese class II” ($35.0 \geq \text{BMI} \leq 39.9$) and “obese class III or severe obesity” ($\text{BMI} \geq 40.0$).

We control for several variables in our analysis. This includes an indicator of Wave III weight perceptions, which is based on a question asking respondents how they feel about themselves in terms of weight. The response options included: “very underweight”, “slightly underweight”, “about the right weight”, “slightly overweight” and “very overweight”. We combined responses into a three-category variable indicating that respondents perceived being “about the right weight” (reference), “underweight” or “overweight.”

We also control for two indicators of physical and mental health. Fair/poor health status indicates whether respondents reported being in “fair or poor health” ($1 = \text{yes}$) as opposed to good, very good or excellent health at Wave III. High levels of depressive symptoms ($1 = \text{yes}$) at Wave III is a measure based on a modified 9-item Center for Epidemiological Studies (CES-D) instrument that asks respondents questions such as how often in the last week they were bothered by things not normally bothersome, could not shake the blues, felt like they were not as good as others, had trouble focusing, were depressed, were too tired to do things they enjoyed and were sad (Radloff, 1977). When responses to items are

summed (range 0–27) higher scores indicate more depressive symptoms. In line with other research that uses the 9-item CES-D scale in Add Health, we dichotomize scores using a cutoff score of 11 or higher ($= 1$) because of the skewed nature of CES-D scores and because scores above 10 are generally consistent with clinical diagnoses of depression (Frisco et al., 2013; Primack et al., 2009).

We also account for several indicators of respondents’ sociodemographic background during adolescence and young adulthood. This includes categorical indicators of Wave I parent’s marital status ($1 = \text{married}$), parent’s highest level of educational attainment (“less than a high school degree” (reference), “a high school degree or GED”, “some postsecondary education” or “Bachelor’s degree or more”), adolescent family income, race/ethnicity coded in accordance with Add Health guidelines (“non-Hispanic, White” (reference), “Hispanic”, “non-Hispanic, Black”, “non-Hispanic, Asian/Pacific Islander” or “non-Hispanic, Other”), Wave III age in years and nativity ($1 = \text{U.S. born}$). Finally, we also control for Wave III marital status ($1 = \text{married}$), whether respondents had children ($1 = \text{yes}$), lived with their parents ($1 = \text{yes}$), were attending postsecondary school ($1 = \text{yes}$) and were employed at least 10 h per week ($1 = \text{yes}$).

3.3. Analytic strategy

We first estimate and show weighted descriptive statistics for all study variables for the overall sample and for subsamples of young men and women. These estimates help to contextualize study findings and show how our sample compares to the only other study of body weight and suicide ideation among young adults (Zuromski et al., 2017).

Then we estimate the association between body weight and suicide ideation using two logistic regression models for young men and women. For both groups, Model 1 estimates the bivariate relationship between body weight and suicide ideation unadjusted for control variables and Model 2 is adjusted for variables that may confound the relationship between body weight and suicide ideation.

4. Results

4.1. Descriptive statistics

Table 1 shows the weighted descriptive statistics for the overall sample and by sex. The first row of results shows that young adult suicide ideation was relatively rare in our sample. Only 7.03% of young women and 6.20% of young men reported suicide ideation in the past 12-months at Wave III. With respect to weight, a greater proportion of young women (49.59%) than young men (44.57%) were classified as being a normal or healthy weight based on their BMI scores. Conversely, a greater proportion of young men (31.83%) than young women (22.23%) were classified as overweight and similar proportions of young men (13.73%) and young women (12.58%) were classified as obese class I. A greater proportion of young women were classified as obese class II (6.73%) and obese class III (5.20%) than young men (5.16% are obese class II and 2.69% are obese class III). Even though a greater proportion of young men versus women have BMIs that lead them to be classified as overweight or obese, far fewer young men (30.66%) than women (49.13%) had overweight perceptions and more young men reported perceiving that their weight was about right (51.25% of young men versus 43.84% of young women).

Other descriptive statistics in Table 1 suggest that our sample is more diverse with respect to sex, race/ethnicity and early adult life experiences than the previous study on body weight and suicide ideation during young adulthood (Zuromski et al., 2017). Recall that the study just cited is comprised of mostly white female college students at a southeastern university. We note sample differences to highlight the possibility that our study results may differ from the previous study.

Table 1
Weighted descriptive statistics for the overall sample and by sex.

	All N = 13,943	Men N = 6714	Women N = 7229
	% or mean (SD)	% or mean (SD)	% or mean (SD)
Suicide ideation (1=yes)	6.60	6.20	7.03
Weight classification			
Normal or healthy weight (reference)	46.98	44.57	49.59
Underweight	2.82	2.03	3.68
Overweight	27.21	31.83	22.23
Obese class I	13.18	13.73	12.58
Obese class II	5.91	5.16	6.73
Obese class III or severe obesity	3.90	2.69	5.20
Weight perceptions			
About the right weight (reference)	47.69	51.25	43.84
Underweight	12.76	18.08	7.03
Overweight	39.55	30.66	49.13
Fair/poor health status (1=yes)	4.88	3.79	6.05
High levels of depressive symptoms (1=yes)	14.37	11.59	17.36
Parents married (1=yes)	73.60	73.86	73.31
Parent's highest level of educational attainment			
Less than a high school degree (reference)	16.41	16.03	16.83
High school degree or GED	31.68	31.13	32.27
Some postsecondary education	29.04	30.02	27.98
Bachelor's degree or more	22.87	22.82	22.92
Adolescent family income	2.35 (0.06)	2.32 (0.06)	2.39 (0.07)
Race/ethnicity			
Non-Hispanic, White (reference)	65.37	64.72	66.06
Hispanic	11.86	12.19	11.50
Non-Hispanic, Black	15.40	15.24	15.56
Non-Hispanic, Asian/Pacific Islander	3.89	4.05	3.73
Non-Hispanic, Other	3.48	3.79	3.15
Age	21.83 (0.12)	21.92 (0.12)	21.73 (0.12)
U.S. born (1=yes)	93.98	93.81	94.16
Married (1=yes)	15.74	13.00	18.69
Has children (1=yes)	18.79	13.94	24.01
Lives with parents (1=yes)	40.63	44.27	36.71
Attending postsecondary school (1=yes)	36.04	31.97	40.40
Employed at least 10 h/week (1=yes)	70.12	72.38	67.70

Source: National Longitudinal Study of Adolescent Health.

4.2. Body weight and suicide ideation

We first present results from models estimating the relationship between body weight and suicide ideation among young men in Table 2. When the model includes only body weight (Model 1), none of the obesity categories or underweight are significantly associated with suicide ideation, but the estimated odds of suicide ideation are 37% lower ((1 - (OR = 0.63)) for overweight versus normal or healthy weight young men. When all other control variables are included in Model 2, the magnitude and significance of the estimated effect of overweight (OR = 0.62, 95% CI: 0.41–0.95) on suicide ideation is virtually the same as the estimated effect in Model 1.

We now turn to results for young women in Table 3. Unlike young men, without (Model 1) and with control variables (Model 2), body weight is not significantly related to suicide ideation.

Before turning away from study results, note that we estimated several sets of supplementary analyses. First, we ensured that results did not differ when we estimated models using a linear measure of young men's and women's BMI scores or with BMI scores and a squared term. Neither BMI nor BMI² were significant predictors of suicide ideation for young men or women. We also examined models for the full sample not stratified by sex that included an interaction between BMI and sex. The

Table 2
Weighted estimates (odds ratios) from logistic regression models predicting young men's suicide ideation (N = 6714).

	Model 1		Model 2	
	OR	95% CI	OR	95% CI
Weight classification (ref=normal or healthy weight)				
Underweight	1.30	(0.50, 3.40)	1.24	(0.51, 3.02)
Overweight	0.63**	(0.45, 0.88)	0.62*	(0.41, 0.95)
Obese class I	0.84	(0.55, 1.29)	0.69	(0.40, 1.21)
Obese class II	0.94	(0.52, 1.70)	0.75	(0.34, 1.67)
Obese class III or severe obesity	0.64	(0.27, 1.51)	0.50	(0.22, 1.15)
Weight perceptions (ref=about the right weight)				
Underweight			1.11	(0.74, 1.67)
Overweight			1.43	(0.89, 2.30)
Fair/poor health (ref=excellent/very good/good health)			1.84*	(1.02, 3.33)
High levels of depressive symptoms (ref=no)			4.97***	(3.68, 6.71)
Parents married (ref=parents unmarried)			1.02	(0.70, 1.49)
Parent's highest level of educational attainment (ref=less than a high school degree)				
High school degree or GED			1.10	(0.66, 1.84)
Some postsecondary education			1.36	(0.80, 2.33)
Bachelor's degree or more			1.79*	(1.03, 3.14)
Adolescent family income			0.98	(0.85, 1.13)
Race/ethnicity (ref=non-Hispanic, White)				
Hispanic			0.85	(0.53, 1.36)
Non-Hispanic, Black			0.44**	(0.27, 0.73)
Non-Hispanic, Asian/Pacific Islander			0.79	(0.37, 1.68)
Non-Hispanic, Other			1.10	(0.59, 2.06)
Age			0.95	(0.86, 1.06)
U.S. born (ref=foreign-born)			1.00	(0.54, 1.84)
Married (ref=unmarried)			0.86	(0.50, 1.48)
Has children (ref=doesn't have children)			0.75	(0.43, 1.31)
Lives with parents (ref=no)			1.33	(0.98, 1.79)
Attending postsecondary school (ref=no)			0.97	(0.69, 1.38)
Employed at least 10 h/week (ref=no)			1.12	(0.79, 1.59)

*P < 0.05 **p < 0.01 ***p < 0.001.

Source: National Longitudinal Study of Adolescent Health.

interaction term was not statistically significant. As such, even though overweight is positively related to suicide ideation for young men but not related to young women's suicide ideation, this difference is not statistically significant. We also estimated whether study results differed for men and women from different racial/ethnic backgrounds. They did not.

5. Discussion

Our study is the first to examine the association between body weight

Table 3

Weighted estimates (odds ratios) from logistic regression models predicting young women's suicide ideation (N = 7229).

	Model 1		Model 2	
	OR	95% CI	OR	95% CI
Weight classification (ref=normal or healthy weight)				
Underweight	1.15	(0.58, 2.28)	1.10	(0.53, 2.28)
Overweight	0.87	(0.60, 1.26)	0.83	(0.55, 1.24)
Obese class I	1.06	(0.70, 1.61)	1.00	(0.62, 1.62)
Obese class II	1.53	(0.94, 2.47)	1.19	(0.65, 2.18)
Obese class III or severe obesity	1.08	(0.64, 1.83)	0.93	(0.47, 1.84)
Weight perceptions (ref=about the right weight)				
Underweight			1.12	(0.65, 1.94)
Overweight			1.21	(0.85, 1.74)
Fair/poor health (ref=excellent/very good/good health)			1.73**	(1.15, 2.59)
High levels of depressive symptoms (ref=no)			5.85***	(4.40, 7.78)
Parents married (ref=parents unmarried)			0.90	(0.62, 1.29)
Parent's highest level of educational attainment (ref=less than a high school degree)				
High school degree or GED			1.00	(0.61, 1.62)
Some postsecondary education			1.43	(0.93, 2.21)
Bachelor's degree or more			1.06	(0.66, 1.71)
Adolescent family income				
			1.00	(0.89, 1.12)
Race/ethnicity (ref=non-Hispanic, White)				
Hispanic			0.78	(0.45, 1.35)
Non-Hispanic, Black			0.45**	(0.29, 0.70)
Non-Hispanic, Asian/Pacific Islander			0.66	(0.33, 1.32)
Non-Hispanic, Other			1.11	(0.64, 1.94)
Age				
			0.90*	(0.82, 0.98)
U.S. born (ref=foreign-born)				
			0.75	(0.41, 1.36)
Married (ref=unmarried)				
			0.51**	(0.32, 0.83)
Has children (ref=doesn't have children)				
			0.65*	(0.45, 0.93)
Lives with parents (ref=no)				
			0.81	(0.60, 1.08)
Attending postsecondary school (ref=no)				
			0.90	(0.68, 1.18)
Employed at least 10 h/week (ref=no)				
			1.09	(0.81, 1.46)

*P < 0.05 **p < 0.01 ***p < 0.001.

Source: *National Longitudinal Study of Adolescent Health*.

and suicide ideation among a nationally representative sample of young adults. The only other study to date that examines this association among young adults utilized a small, select sample of mostly white female undergraduate students enrolled in a psychology course at a southeastern university in the U.S. (Zuromski et al., 2017). Their results suggest a U-shaped relationship between BMI and suicide ideation exists with an increase in the likelihood of suicide ideation for those with a BMI above 28 (approaching the threshold for obesity). This finding aligns with previous research that suggests that pressure to be thin is especially salient among white undergraduate women at southeastern universities (Ordaz et al., 2018).

In a national sample, we find that overweight and obesity are less consequential for young adult suicide ideation. Not only was body weight not related to young women's odds of suicide ideation, but overweight men had significantly lower odds of suicide ideation compared to men who were normal or healthy weight. Our findings for young adult men align with studies that found overweight men had significantly lower odds of suicide ideation (Carpenter et al., 2000) and suicide attempts (Carpenter et al., 2000; Zhang, 2006) relative to normal weight men and studies that found an inverse relationship between BMI and suicide ideation (Goldney et al., 2009) and suicide attempts (Batty et al., 2010; Gao et al., 2013; Sorberg et al., 2014). Our findings for young adult women align with several previous studies that did not detect a significant association between weight and suicidality among all adult women in nationally representative U.S. and Australian samples (Goldney et al., 2009; Zhang, 2006; Zhao et al., 2012).

Our finding of no significant association between obesity and suicide ideation for men or women contrasts several other studies that found a positive association between obesity and suicidal thoughts and behaviors among Canadians (Mather et al., 2009), Germans (Wagner et al., 2013) and samples that included university students and behavioral weight management clinic patients (Dutton et al., 2013). When placed within the context of our study findings and those of other U.S. national samples (Zhang, 2006; Zhao et al., 2012; Carpenter et al., 2000), it appears as if body weight is associated with suicidality among particular U.S. subsamples and in some countries outside of the U.S., but at the population level, body weight does not appear to be related to the suicide risk of young adults or all adults more generally.

Although we cannot be certain about why body weight and suicide ideation are unrelated among U.S. young adults (and adults more generally), we hypothesize that our findings may reflect the fact that overweight and obesity are common in the U.S. and have been since the turn of the century (Flegal et al., 2002). As such, body weight in and of itself may have little salience for the suicide risk of young men and women who have grown up in a largely obesogenic country like the U.S. It is important to note that this does not mean that obesity may not have salience for some U.S. subpopulations like those in previous research (Dutton et al., 2013; Zuromski et al., 2017). Obesity may also have implications for suicide ideation among other vulnerable groups of obese young adults such as women with eating disorders. Future research should investigate this possibility.

Our finding of reduced odds of suicide ideation for overweight men may reflect the conflation of overweight and muscularity. Among men, muscle represents a larger fraction of body mass than adipose tissue (Heymsfield et al., 2009) signifying that a heavier BMI may be indicative of increased muscularity rather than fat. In our society, the socially prescribed body ideal for boys and men is big and muscular (Calogero & Thompson, 2010) and more muscular men achieve this body ideal which may reduce their likelihood for suicidal thoughts and behaviors.

This study has several strengths. First, it is the first to use data from a nationally representative sample to draw inferences about how body weight and suicide ideation are related in the general U.S. young adult population. Second, our BMI categories are constructed from interviewer-assessed height and weight data. Many previous studies of body weight and suicidality construct BMI from self-reported weight and height (Carpenter et al., 2000; Dutton et al., 2013; Goldney et al., 2009; Mather et al., 2009; Wagner et al., 2013). Both men and women overestimate their height and underestimate their weight (Gorber et al., 2007; Merrill & Richardson, 2009) and discrepancies between self-reported and measured height and weight can lead to misclassifications of obese individuals (Stommel & Schoenborn, 2009).

Our research is not without limitations, however. First, in the U.S., nonfatal suicidal behavior is considered unmasculine which may lead to underreporting of male suicidal thoughts and behaviors (Canetto & Sakinofsky, 1998). Underreporting of young men's suicide ideation could potentially bias our results. Second, our measure of suicide ideation is based on a self-report one-item question that asks about past-year

suicide ideation. Other measures should be used in future research, such as the ten-item Suicide Ideation Scale, which gauges covert suicidal thoughts to more overt ideation and suicide attempts (Luxton et al., 2011). Third, our data on body weight and suicide ideation are cross-sectional, which means we cannot speak to the causal nature of our findings. Fourth, our data were collected in the early 2000's and the prevalence of obesity and suicidality has continued to rise since the early 2000's, making it unclear whether findings capture relationships between weight and suicidality among current cohorts of young adults. Fifth, we do not capture dimensions of weight discrimination in our analyses, which may be more important for suicide ideation than actual weight.

Yet despite limitations, our study provides an important contribution to the body of literature on the relationship between obesity and suicidal thoughts and behaviors as the first to consider this relationship among a nationally representative sample of young adults. We find that obesity is not a significant predictor of suicide ideation among young men and women and that overweight appears to protect young men from suicide ideation. Our results and the broader literature suggest the association between body weight and suicidal thoughts and behaviors is not straight forward. In an era of rising obesity and suicide, future research should continue to explore this relationship in order to best address ways to promote physical and mental wellbeing.

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Author statement

Carlyn Graham: Conceptualization, Methodology, Analysis, Writing—Original Draft, Writing—Review & Editing.

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Ethical approval statement

This research used restricted access data from the National Longitudinal Study of Adolescent to Adult Health (Add Health), which is directed by Robert A. Hummer and funded by the National Institute on Aging cooperative agreements U01 AG071448 (Hummer) and U01AG071450 (Aiello and Hummer) at the University of North Carolina at Chapel Hill. This study received approval by the Pennsylvania State University IRB. In accordance with the Ethics in Publishing guidelines, this study has no ethical issues. We have no competing interests or financial interests to disclose.

Declaration of competing interest

None.

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