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The Relationship between Childhood Maltreatment and Psychopathology in Adults Undergoing Bariatric Surgery

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Abstract

Background: History of childhood maltreatment and psychopathology are common in adults with obesity.

Objectives: To report childhood maltreatment and to evaluate associations between severity and type of childhood maltreatment and lifetime history of psychopathology among adults with severe obesity awaiting bariatric surgery.

Setting: Four clinical centers of the Longitudinal Assessment of Bariatric Surgery (LABS) Research Consortium.

Methods: The Childhood Trauma Questionnaire, which assesses presence/severity (i.e., none, mild, moderate, severe) of physical abuse, mental abuse, physical neglect, mental neglect and sexual abuse, was completed by 302 female and 66 male bariatric surgery patients. Pre-surgery lifetime history of psychopathology and suicidal ideation/behavior (SI/B) were assessed with the

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Disclosures

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Structured Clinical Interview for DSMIV and the Suicidal Behavioral Questionnaire-Revised, respectively. Pre-surgery lifetime history of antidepressant use was self-reported.

Results: Two-thirds (66.6%) of females and 47.0% of males reported at least one form of childhood trauma; 42.4% and 24.2%, respectively, at greater than or equal to moderate severity. Among women, presence/greater severity of childhood mental or physical abuse or neglect were associated with a higher risk of history of psychopathology (i.e., major depressive disorder, post-traumatic stress disorder, other anxiety disorder, alcohol use disorder, binge eating disorder), SI/B and antidepressant use (p for all $.02$). These associations were independent of age, race, education, body mass index and childhood sexual abuse. Childhood sexual abuse was independently associated with a history of SI/B and antidepressant use only (p for both $.05$). Statistical power was limited to evaluate these associations among men.

Conclusion: Among women with obesity, presence/severity of childhood trauma was positively associated with relatively common psychiatric disorders.

Keywords

Bariatric surgery; trauma; abuse; maltreatment; childhood

Childhood maltreatment, including childhood abuse and neglect, is common in the general population, with published prevalences ranging from approximately a quarter to two-thirds of the population reporting having experienced some type of maltreatment [1–4]. A history of childhood maltreatment is also associated with increased risk of obesity in adults, higher body weight, and increased visceral adiposity in community populations [3,5,6]. Meta-analysis has demonstrated the positive association between childhood maltreatment and obesity in adults, as well as a positive dose-response relationship between the severity of the maltreatment and the likelihood of obesity in adults [7]. In addition to the reported association with obesity, childhood maltreatment has been associated with numerous medical and psychiatric comorbidities [8,9].

Studies of bariatric surgery candidates have reported rates of childhood maltreatment as high as 69.3% [9,10]. However, this literature has been limited by reporting data from a single clinical center [11,12]. Similar associations as those in community samples have been reported in the bariatric surgery literature, but again the extent of the literature has been limited by small sample sizes, variability in the quality of measures of psychopathology and childhood maltreatment, evaluation of only some types of maltreatment, and lack of examination of the severity of maltreatment [9,11].

Of the two studies that have evaluated associations between a history of childhood maltreatment and lifetime history of psychiatric disorders in individuals prior to bariatric surgery, both reported positive associations [11,12]. Specifically, one study [11] reported that a history of sexual abuse increased risk of mood and anxiety disorders, a history of physical abuse increased risk of a substance use disorder, and a history of emotional abuse or emotional neglect increased risk of a mood disorder. Women comprised the majority of this sample (191/230; 83%). The other study reported that a history of physical abuse, emotional abuse or emotional neglect increased risk of current depressive symptoms; women also

comprised the majority of this sample (282/340; 83%). [12]. The literature also has consistently shown high rates of psychopathology in individuals seeking bariatric surgery [13], better understanding the association between childhood maltreatment and psychopathology among adults undergoing bariatric surgery can inform interventions to help patients achieve optimal psychiatric health following surgery.

The primary aim of the present analysis was to describe the prevalence of childhood maltreatment, by type and severity, in a large multicenter study of adults undergoing bariatric surgery using standardized validated measures. Additional aims included testing the associations between a history of childhood maltreatment, by type and severity, with psychopathology. Given that type and severity of childhood maltreatment can vary by gender [14], all analysis was stratified by gender. We hypothesized that among both females and males a history of emotional abuse or neglect, physical abuse or neglect and sexual abuse would be independently associated with increased rates of psychopathology, suicidal ideation/behavior (SI/B), and antidepressant use, after controlling for demographics and severity of obesity. Suicidal ideation/behavior is of particular importance given the increasing evidence of relatively high rates of suicide after bariatric surgery (15,16). We also offer our thoughts concerning the potential treatment implications of these findings regarding the availability and timing of specific interventions for those experiencing ongoing problems likely attributable to a history of childhood maltreatment.

METHODS

Participants

Patients who were 18 years of age or older and were scheduled to undergo a first bariatric surgery procedure at one of four clinical/research centers in the United States were invited to participate in one or both of the following sub-studies of the Longitudinal Assessment of Bariatric Surgery (LABS) consortium: the LABS-3 Psychosocial study and National Institute on Drug Abuse supplement study. Of the 410 adults in these combined samples, 368 completed the Childhood Trauma Questionnaire (CTQ) and were thus included in the analysis sample.

Assessments

For both studies, baseline research assessments were conducted by LABS-trained and certified personnel within 30 days prior to surgery. Assessments were conducted independently of the surgery screening and approval process and the results were not shared with the surgery teams. Follow-up research assessments were conducted annually. The Childhood Trauma Questionnaire (CTQ) and the Suicidal Behavior Questionnaire-Revised (SBQ-R) were administered at the baseline assessment of the National Institute on Drug Abuse supplement study, whereas they were administered at the year-4 or year-5 assessment of the LABS-3 study because they were added to the LABS-3 study protocol after study initiation. The present effort utilizes data collected at the baseline assessment, plus the CTQ and SBQ-R no matter administration date.

Each clinical center received approval from their respective Institutional Review Board prior to data collection, and all participants provided written informed consent prior to participation.

Measures

Sociodemographics and Body Mass Index (BMI): Self-report questionnaires, which have been previously described, were used to assess sex, age, race, ethnicity, education, income and employment [17]. Height and weight measurements followed a LABS-standardized protocol [17], and BMI was calculated from these values.

Childhood Trauma: The Childhood Trauma Questionnaire (CTQ) is a 28-item, well-validated self-report questionnaire which is widely used for the assessment of traumatic experiences prior to age of 17 (18,19)]. The CTQ asks respondents to retrospectively rate their history of abuse or neglect across five sub-scales using a 5-point Likert Scale with values ranging from 'Never True' to 'Very Often True'. The subscales are emotional, physical, and sexual abuse and physical and emotional neglect. Thresholds to define presence and severity for each subscale score are shown in Supplemental Table 1. Each subscale has a score range from 5–25, with varying thresholds to indicate severity.

Lifetime History of Psychopathology: The Structured Clinical Interview for DSM-IV (SCID IV) [20] was administered prior to surgery to determine history of psychopathology. This report evaluates the most common types of psychopathology in this sample: any affective disorder, including major depressive disorder (MDD), any anxiety disorder other than post-traumatic stress disorder (PTSD), PTSD, any substance use disorder, including alcohol use disorder (AUD), and any eating disorder, including binge eating disorder (BED).

Suicide ideation/Behavior (SI/B): The Suicidal Behavior Questionnaire-Revised (SBQ-R) is a brief validated measure that assesses past suicidal thoughts and behavior and future suicide risk [21]. One item assessed whether the respondent had “thought about or attempted to kill yourself,” any time prior to surgery (i.e., pre-surgery lifetime history). Due to low frequencies, the six response categories were collapsed into four categories indicating ‘never’, ‘brief passing thought,’ ‘had plan’ and ‘had prior attempt.’ History of SI/B included endorsement of the latter three responses.

Medication for Psychiatric or Emotional Problem: Prior to surgery, a lifetime history of use of medication for psychiatric or emotional problems, including antidepressant medication (regardless of indication) was self-reported on the Psychiatric and Emotional Survey [17].

Analysis

Analyses were conducted using SAS version 9.4 (SAS Institute, Cary, NC, USA). All analyses were stratified by sex. Descriptive statistics were used to summarize sociodemographics, type and severity of childhood trauma, and pre-surgery lifetime history of psychopathology and antidepressant medication use.

The emotional and physical abuse domains were moderately to strongly correlated ($r_s=.58$ among females; $r_s=.63$ among males; p for both $<.001$), and the emotional and physical

neglect domains were moderately correlated ($r_s=.53$ among females; $r_s=.51$ among males; p for both $<.001$). Therefore two summary variables were created for testing associations with pre-surgery BMI, lifetime history of psychopathology and antidepressant medication use: non-sexual abuse (assigned the higher severity rating from the emotional and physical abuse domains) and neglect (assigned the higher severity rating from the emotional and physical neglect domains). For example, if a participant's emotional abuse rating was mild and their physical abuse rating was moderate, they were assigned moderate severity for emotional/physical abuse. The sexual abuse subscale was also evaluated. Due to the small sample of males, dichotomous variables were created to indicate any nonsexual abuse, neglect or sexual abuse by combining the low to severe categories.

Linear regression models were used to evaluate whether severity (for females) or presence (for males) of non-sexual abuse, neglect and sexual abuse were independently associated with BMI, controlling for age, race (among females only because there was only one non-white male participant) and education. Likewise, Poisson mixed models with robust error variance were used to evaluate whether severity (for females) or presence (for males) of non-sexual abuse, neglect and sexual abuse were independently associated with history of the most common types of psychopathology (i.e., MDD, PTSD, anxiety disorders other than PTSD, AUD, BED), SI/B, and use of antidepressant medication, controlling for age, race (among females only), education and BMI. Analysis among males was considered exploratory in nature due to the small sample size. Due to collinearity between the non-sexual abuse and neglect variables (females: $r_s=.65$, $p<.001$; males: $r_s=.43$, $p<.001$), they were evaluated in separate models. The first set of models evaluated non-sexual abuse, controlling for sexual abuse; the second set evaluated both neglect and sexual abuse, controlling for each other. Adjusted Beta coefficients (β) for BMI, for severity (females) or by presence (males) of childhood non-sexual abuse, neglect and sexual abuse and P-values are reported. Adjusted relative risks (AAR) and 95% confidence intervals (95% CI) for psychopathology outcomes, by severity (females) or presence (males) of childhood non-sexual abuse, neglect and sexual abuse are presented, along with crude and Holm's-adjusted P-values (for seven dependent variables). All reported P-values are two-sided; P-values less than 0.05 were considered to be statistically significant.

Results

The majority of participants (82.1%) were female. Median age was 47 years (25th–75th%tile: 38–54) for females and 49 years (25th–75th%tile: 39–59) for males. Additional sociodemographic data are shown in Table 1.

Presence/severity of non-sexual abuse, neglect and sexual abuse is shown in Table 2. Three individuals declined to answer the sexual abuse section of the measure. Two-thirds (66.6%) of females and almost half (47.0%) of males reported at least one form of abuse or neglect. The proportions decreased to 42.4% of females and 24.2% of males when a minimum threshold of moderate severity was applied. Having a history of at least two types of abuse at any severity was common in both females (50.4%) and males (33.3%). When applying a threshold of moderate severity proportions decreased to 24.7% in females and 12.0% in

males. All types of abuse (i.e., emotional, physical and sexual) were reported by a higher percentage of females compared to males (Table 2).

Prevalence of history of forms of psychopathology and psychiatric medication use are shown in Table 3. Approximately half (50.3%) of females and over a quarter (29.2%) of males had a history of a mood disorder, most of whom endorsed MDD. Among both females and males, most participants with a substance use disorder reported AUD, most participants with an eating disorder reported BED, and most participants who had taken medication for psychiatric or emotional problems reported antidepressants.

Over a quarter (28.7%) of females and about one in five (19.7%) males reported a history of SI/B (i.e., brief passing thought, plan, attempt combined). Of women reporting a history of SI/B ($n=77$), the majority reported having had a “brief passing thought” (54.5%); with fewer reporting, but still a substantial number, having had a plan (18.2%) or having attempted (28.6%) to kill self. Similarly, the majority of men with a history of SI/B ($n=12$), reported having had a “brief passing thought” (75.0%); with fewer reporting having had a plan (8.3%) or having attempted (16.7%) to kill self.

Severity of childhood non-sexual abuse (e.g., $\beta=-0.9$ severe vs none; $p=.84$), neglect ($\beta=-0.7$ severe vs none; $p=.10$) and sexual abuse ($\beta=1.8$ severe vs none; $p=.64$) were not significantly related to BMI among women. Likewise presence of childhood non-sexual abuse ($\beta=2.8$; $p=.29$), neglect ($\beta=0.6$; $p=.78$) and sexual abuse ($\beta=1.9$; $p=.61$) were not significantly related to BMI among men.

Risk of histories of common types of psychopathology, SI/B and antidepressant medication use among females, by severity of childhood non-sexual abuse, neglect and sexual abuse are shown in Table 4. With control for sociodemographics, BMI and severity of sexual abuse, presence/severity of non-sexual abuse was significantly associated with greater risk of all seven outcomes. Although confidence intervals were wide, in general, estimated risk was higher with higher severity ratings. For example, compared to no history of non-sexual abuse, risk of BED was 1.5 (95%CI, 0.7–3.0), 2.2 (95%CI, 0.9–5.5) and 3.5 (95%CI, 1.8–6.7) times higher for women with a history of mild, moderate, and severe non-sexual abuse, respectively. Findings were similar for neglect, possibly an artifact of the high correlation between non-sexual abuse and neglect. Presence of sexual abuse was related to higher risk of PTSD, SI/B and antidepressant medication use. However, estimated risks were not higher with higher severity ratings. The association with PTSD was no longer significant after adjustment for multiple outcomes.

Results of exploratory analysis evaluating risk of histories of common types of psychopathology among males, by presence of childhood non-sexual abuse, neglect and sexual abuse are also shown in Table 4. Controlling for sociodemographics, BMI and neglect, men with a history of sexual abuse had 3.8 times (95%CI, 1.5–9.7) the risk of PTSD compared to men with no such history. Several other associations were significant prior to adjustment for multiple outcomes (i.e., between non-sexual abuse and PTSD, other anxiety disorder and SI/B; between neglect and SI/B; and between sexual abuse and SI).

DISCUSSION

Two-thirds of females and nearly half of males reported at least one form of childhood trauma, similar to the overall rate of childhood trauma reported in other samples of bariatric surgery patients [11,12]. The study sample also reported substantial prevalences of suicide ideation/behavior (27.1%) and specifically suicide attempts (7.3%). This is particularly meaningful considering data suggesting a higher risk of completed suicide following bariatric surgery [15,16].

Although a childhood history of non-sexual abuse, neglect and sexual abuse were not related to BMI at time of surgery, results of modelling document an increased risk of MDD, BED, PTSD, other anxiety disorders, AUD, antidepressant use, and SI/B in women with a childhood history of non-sexual abuse and neglect. These findings are similar to a previous report identifying a positive association between history of emotional and sexual abuse and prevalence of mood and anxiety disorder diagnoses, and an association between physical abuse and increased risk of substance use disorders in a sample that was 83% female [11]. However, the previous report only controlled for BMI, not other forms of trauma, as is done in the present analysis. In addition, prior studies have not consistently identified an association between childhood trauma and eating disorder diagnoses in bariatric surgery candidates [11,22,23]. The present study also contributes new information by showing the risk of disorders was higher with more severe non-sexual abuse and neglect. Additional novel findings include positive associations between both a lifetime history of SI/B and antidepressant medication use with childhood sexual abuse in females, and indication of an increased risk of PTSD with sexual abuse, although the association did not remain significant after adjustment for multiple outcomes. Finally, it is noteworthy that the risk associated with sexual abuse was similar across severities (mild through severe), indicating the severity may not be as important for this type of childhood trauma. Additional studies are needed to confirm this finding. Of note, similar data have previously been reported from the adolescent bariatric sample (24).

Among men in the present study, statistical power to evaluate the associations between childhood trauma and lifetime history of psychopathology was limited. Most point estimates for RR indicated increased risk for men, but only one association remained significant after adjustment for multiple outcomes. That is, men with a history of childhood sexual abuse had 3.8 times the risk of PTSD compared to men without a history. Thus, overall study results suggest adverse effects of sexual abuse in both men and women, including an association with PTSD in men and women (prior to adjustment for multiple comparisons), as well as associations with SI/B and antidepressant use in women prior to bariatric surgery. Results are consistent with research linking childhood sexual abuse with a range of psychiatric disorders in adulthood including, but not limited to, PTSD, as well as suicidal ideation or attempts (25,26).

The present study has several strengths, including the use of standardized assessment measures to evaluate childhood trauma and psychiatric comorbidities, the multi-site design, and a fairly large sample size of females. There are some important limitations as well. First, although the sample size of males in this study was similar to prior studies, it was small for

the intended analysis, permitting only exploratory analysis of common types of psychopathology. Second, childhood trauma was assessed via a retrospective self-report instrument. However, several studies have shown negligible differences between prospective and retrospective reports of childhood trauma [27]. Furthermore, self-report may be preferred to clinical interview for assessment of history of childhood abuse given the unwillingness of some affected individuals to discuss this history with others [28]. Third, we were not sufficiently powered to evaluate associations between childhood trauma and current psychiatric disorders at time of surgery. Fourth, prevalence estimates of suicide ideation may be affected by the fact that 11% of women and 8% of men were missing this data. Finally, assessment of psychiatric history at the pre-surgical assessment was not limited to adult years. Thus, it is possible that reported disorders, or SI/B occurred prior to the reported childhood trauma.

Conclusions

Our results and prior data collectively show a relationship between a trauma history and psychopathology, as well as add new data to suggest associations with SI/B and antidepressant use. Obtaining a history of possible childhood trauma using detailed but sensitive questioning is required of what is a very difficult area for many patients. This suggests that specific interventions such as psychotherapy to address problems arising from a history of trauma must be considered along with careful postoperative monitoring, particularly regarding mood disorders and psychosocial adjustment. Established forms of counseling for a history of maltreatment for those whose adjustment is compromised but such a history are available in many clinical settings, and should be offered as options and considered by patients. Such interventions, if indicated, should generally not delay surgery, except in unusual circumstances, wherein the severity of the symptoms, their assessed impact on functioning, and their anticipated consequences for adherence to the requirements of surgery, recovery, and post-operative behaviors, appear to be seriously compromised. Exploration of the potential impact of childhood trauma on post-operative outcomes, including long-term weight outcome, may also be useful for informing the necessity and timing of interventions. Prior literature on the impact of a history of childhood trauma on subsequent weight loss has been limited and the results mixed. Although one pilot study found that childhood sexual abuse was associated with greater weight loss (29), other research found no association between adverse childhood experiences as post-surgery weightloss (30), and yet other investigations suggest poorer weight losses (31, 32). Prospective studies are needed to examine the effects of childhood trauma and interventions to help bariatric surgery patients with a history of abuse and neglect achieve optimal health and wellbeing. Future research is also needed to examine body image, and eating behaviors, as well as additional work on male patients, whom are often under-represented in bariatric surgery samples.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Highlights

- A history of childhood maltreatment was assessed in 302 women and 66 men
- 67% of women and 47% of men reported 1 form of childhood trauma
- 42% of women and 24% of men at moderate severity
- Among women, certain forms of abuse/neglect were associated with psychopathology

Table 1.**Sociodemographics of Adults Prior to Bariatric Surgery**

	Women (N=302)	Men (N=66)
Age, years		
median (IQR)	47(38–54)	48.5(39–59)
range	21–69	23–75
Race, n (%)		
missing	2	0
White	279(93.0)	65(98.5)
Non-white	21(7.0)	1(1.5)
Ethnicity, n (%)		
Hispanic	10(3.3)	2(3.0)
Non-Hispanic	292(96.7)	64(97.0)
Education, n (%)		
missing	8	2
HS or less	63(21.4)	12(18.8)
Some college/post HS education	120(40.8)	29(45.3)
College degree	79(26.9)	13(20.3)
Graduate or professional degree	32(10.9)	10(15.6)
Household income, n (%)		
missing	13	3
less than \$25,000	46(15.9)	12(19.0)
\$25,000–\$49,000	95(32.9)	17(27.0)
\$50,000–\$74,999	68(23.5)	16(25.4)
\$75,000–\$99,999	48(16.6)	5(7.9)
\$100,000 or more	32(11.1)	13(20.6)
Employment status, n (%)		
missing	83	
Employed	213(72.4)	43(68.3)
Unemployed	8(2.7)	3(4.8)
Other *	73(24.8)	17(27.0)
Body Mass Index, kg/m ²		
median (IQR)	44.6(41.0–49.8)	46.2(42.8–52.4)
range	33.5–76.8	36.2–76.0

* Homemaker, retired, disabled, other.

Table 2.**History of Childhood Maltreatment among Adults Prior to Bariatric Surgery**

	Women (N=302)	Men (N=66)
	n (%)	n (%)
Number of types of (any severity) abuse and/or neglect		
None	101(33.4)	35(53.0)
One	49(16.2)	16(24.2)
Two	48(15.9)	5(7.6)
Three	38(12.6)	2(3.0)
Four	45(14.9)	5(7.6)
Five	21(7.0)	3(4.5)
Number of types of moderate abuse and/or neglect		
None	174(57.6)	50(75.8)
One	45(14.9)	8(12.1)
Two	33(10.9)	3(4.5)
Three	21(7.0)	3(4.5)
Four	19(6.3)	1(1.5)
Five	10(3.3)	1(1.5)
Emotional Abuse		
None (or minimal)	161(53.3)	51(77.3)
Low (to moderate)	75(24.8)	9(13.6)
Moderate (to severe)	27(8.9)	2(3.0)
Severe (to extreme)	39(12.9)	4(6.1)
Physical Abuse		
missing	1	0
None (or minimal)	221(73.4)	57(86.4)
Low (to moderate)	29(9.6)	1(1.5)
Moderate (to severe)	23(7.6)	2(3.0)
Severe (to extreme)	28(9.3)	6(9.1)
Emotional Neglect		
missing	1	1
None (or minimal)	168(55.8)	45(69.2)
Low (to moderate)	80(26.6)	9(13.8)
Moderate (to severe)	36(12.0)	7(10.8)
Severe (to extreme)	17(5.6)	4(6.2)
Physical Neglect		
None (or minimal)	209(69.2)	49(74.2)
Low (to moderate)	48(15.9)	14(21.2)
Moderate (to severe)	21(7.0)	2(3.0)
Severe (to extreme)	24(7.9)	1(1.5)
Sexual Abuse		
missing	2	1

	Women (N=302)	Men (N=66)
	n (%)	n (%)
None (or minimal)	203(67.7)	59(90.8)
Low (to moderate)	12(4.0)	2(3.1)
Moderate (to severe)	36(12.0)	1(1.5)
Severe (to extreme)	49(16.3)	3(4.6)
Non-sexual Abuse ^a		
None (or minimal)	148(49.0)	50(75.8)
Low (to moderate)	76(25.2)	8(12.1)
Moderate (to severe)	31(10.3)	2(3.0)
Severe (to extreme)	47(15.6)	6(9.1)
Neglect ^b		
None (or minimal)	148(49.0)	41(62.1)
Low (to moderate)	85(28.1)	13(19.7)
Moderate (to severe)	37(12.3)	7(10.6)
Severe (to extreme)	32(10.6)	5(7.6)

^a Assigned the higher severity rating from the emotional and physical abuse domains.

^b Assigned the higher severity rating from the emotional and physical neglect domains.

Table 3.

History of Select Psychopathology and Psychiatric Medication Use among Adults Prior to Bariatric Surgery

	Women (N=302)	Men (N=66)
Any affective disorder		
missing	12	1
No	144(49.7)	46(70.8)
Yes	146(50.3)	19(29.2)
Major depression disorder		
missing	12	1
No	161(55.5)	46(70.8)
Yes	129(44.5)	19(29.2)
Any anxiety disorder other than PTSD		1
missing	14	2
No	207(71.9)	52(81.3)
Yes	81(28.1)	12(18.8)
PTSD		
missing	13	1
No	249(86.2)	56(86.2)
Yes	40(13.8)	9(13.8)
Any substance abuse/disorder		
missing	12	2
No	179(61.7)	36(56.3)
Yes	111(38.3)	28(43.8)
Alcohol abuse/dependence		
missing	12	2
No	188(64.8)	36(56.3)
Yes	102(35.2)	28(43.8)
Any eating disorder (without EDNOS)		
missing	14	1
No	232(80.6)	52(80.0)
Yes	56(19.4)	13(20.0)
BED diagnosis		
missing	14	1
No	239(83.0)	54(83.1)
Yes	49(17.0)	11(16.9)
Suicidal ideation/behavior		
missing	34	5
No	191(71.3)	49(80.3)
Yes	77(28.7)	12(19.7)
Medication for psychiatric or emotional problems		
missing	9	3
No	119(40.6)	37(58.7)

	Women (N=302)	Men (N=66)
Yes	174(59.4)	26(41.3)
Antidepressants missing	10	5
No	124(42.5)	37(60.7)
Yes	168(57.5)	24(39.3)

Acronyms: EDNOS, eating disorder not otherwise specified; PTSD, Post-traumatic stress disorder

Table 4.

Risk of History of Common Types of Psychopathology and Medication use by Type of Childhood Trauma among Adults Prior to Bariatric Surgery, by Sex.

	Major depression disorder	Post-traumatic stress disorder (PTSD)	Anxiety disorder, not PTSD	Alcohol use disorder (AUD)	Binge eating disorder (BED)	Suicide ideation/behavior	Anti-depressant medication
ARR (95% CI)^d							
Women							
Non-sexual abuse							
None	1 (reference)	1 (reference)	1 (reference)	1 (reference)	1 (reference)	1 (reference)	1 (reference)
Mild	1.42 (0.98–2.07)	5.32(1.53–18.5)	1.17(0.66–2.08)	1.55(1.03–2.33)	1.48(0.72–2.99)	2.64(1.44–4.84)	1.10(0.84–1.45)
Moderate	2.20 (1.49–3.26)	2.58(0.56–11.77)	1.75(0.88–3.50)	2.11(1.35–3.30)	2.17(0.86–5.50)	4.01(2.11–7.60)	1.62(1.23–2.13)
Severe	2.26 (1.613.17)	13.28(3.97–44.4)	3.34(2.13–5.24)	1.31(0.80–2.13)	3.50(1.83–6.72)	4.40(2.43–7.93)	1.43(1.09–1.87)
P-value ^c	<.0001	<.0001	<.0001	.01	<.01	<.0001	<.01
P-value ^d	<.001	<.001	<.001	.01	<.01	<.001	<.01
Neglect							
None	1 (reference)	1 (reference)	1 (reference)	1 (reference)	1 (reference)	1 (reference)	1 (reference)
Mild	1.78 (1.27–2.51)	1.35(0.49–2.73)	2.01(1.24–3.25)	1.89(1.30–2.73)	1.56(0.81–2.99)	1.72(1.05–2.81)	1.30(1.02–1.65)
Moderate	2.22 (1.48–3.34)	2.31(0.83–6.40)	1.84(0.91–3.74)	1.66(1.02–2.42)	2.20(0.97–4.99)	2.32(1.23–4.38)	1.38(1.02–1.88)
Severe	2.22 (1.50–3.28)	4.79(1.96–11.66)	3.40(1.97–5.85)	1.33(0.73–2.66)	3.38(1.64–6.98)	2.84(1.60–5.05)	1.61(1.21–2.13)
P-value ^c	<.001	<.001	<.001	<.01	.01	<.01	<.01
P-value ^d	<.01	<.01	<.01	.02	.02	.02	.02
Sexual abuse							
None	1 (reference)	1 (reference)	1 (reference)	1 (reference)	1 (reference)	1 (reference)	1 (reference)
Mild	1.46 (0.69–3.10)	1.04(0.13–8.04)	1.59(0.62–4.08)	0.80(0.23–2.66)	1.88(0.44–7.93)	2.80(1.11–7.05)	1.81(1.30–2.51)
Moderate	0.94 (0.69–3.10)	0.43(0.06–2.83)	1.04(0.56–1.94)	1.09(0.66–1.80)	0.41(0.11–1.62)	1.36(0.72–2.56)	1.07(0.76–1.51)
Severe	0.96 (0.70–1.32)	1.43(0.20–10.08)	0.89(0.52–1.51)	1.13(0.76–1.67)	0.92(0.48–1.72)	1.88(1.23–2.86)	1.19(0.95–1.50)
P-value ^c	.75	.02	.74	.90	.47	<.01	<.01
P-value ^d	1.0	.08	1.0	1.0	1.0	.05	.03
Men							

	Major depression disorder	Post-traumatic stress disorder (PTSD)	Anxiety disorder, not PTSD	ARR (95% CI) ^a		Binge eating disorder (BED)	Suicide ideation/behavior	Anti-depressant medication
Non-sexual abuse	1.86 (0.80–4.28)	3.98(1.12–14.11)	5.15(1.45–18.29)	1.40(0.78–2.51)	0.92(0.28–3.06)	3.64(1.30–10.21) ^b	1.40(0.73–2.72)	
P-value ^c	.14	.03	.01	.26	.89	.02	.31	
P-value ^d	.58	.17	.09	.77	.89	.09	.77	
Neglect	2.53(1.12–5.71)	2.66(0.82–8.57)	0.95 (0.312.94)	1.53 (0.84–2.80)	0.75(0.20–2.84)	4.53(1.27–16.16) ^b	1.62(0.84–3.12)	
P-value ^c	.03	.10	.93	.16	.67	.02	.15	
P-value ^d	.16	.50	1.00	.60	1.00	.14	.60	
Sexual abuse	1.59(0.81–3.13)	3.83(1.51–9.72)	2.16(0.65–7.18)	0.65(0.22–1.93)	4.76(1.37–16.52)	2.48(1.24–5.15) ^b	1.47(0.84–2.57)	
P-value ^c	.17	<.01	.21	.43	.01	.01	.18	
P-value ^d	.69	.04	.69	.69	.07	.07	.69	

^aAdjusted for age, education and BMI. Models among females also adjusted for race. Non-sexual abuse and neglect also adjusted for sexual abuse. Sexual abuse also adjusted for neglect.

^bNot adjusted for education.

^cUnadjusted P-value for overall effect.

^dP-value for overall effect adjusted for seven outcomes with the Holm's adjustment.