

Impact of Obesity on Health-related Quality of Life in Schizophrenia and Bipolar Disorder

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Objective: Studies have reported that up to 60% of individuals with schizophrenia and 68% of those with bipolar disorder are overweight/obese. This paper explores the health-related quality of life (HRQOL) of individuals with schizophrenia or bipolar disorder as a function of obesity status.

Methods and Procedures: Two hundred and eleven participants were recruited from four psychiatric programs (outpatient, day treatment, case management, and psychosocial rehabilitation). HRQOL was assessed using both a general measure (Medical Outcomes Study Short-Form-36 (SF-36)) and a weight-related measure (Impact of Weight on Quality of Life-Lite (IWQOL-Lite)). To interpret HRQOL scores obtained by the obese group, we compared scores to those obtained by reference groups from the weight-loss literature.

Results: Sixty-three percent of participants with schizophrenia and 68% of those with bipolar disorder were obese. Obese participants were more likely to be women, on mood stabilizers, taking a greater number of psychiatric medications, and to have poorer weight-related and general HRQOL. Weight-related HRQOL in the obese psychiatric sample was more impaired than in outpatient and day treatment samples seeking weight loss but less impaired than in gastric-bypass patients. Several of the physical domains of general HRQOL were more impaired for the obese psychiatric sample than for the outpatient weight-loss sample. However, physical functioning was less impaired for the obese psychiatric sample than for gastric-bypass patients.

Discussion: The presence of obesity among individuals with schizophrenia or bipolar disorder is associated with decreased HRQOL. These results have implications for prevention and management of weight gain in individuals with schizophrenia or bipolar disorder.

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INTRODUCTION

Data on the prevalence of obesity in the United States indicate that ~30.4% of adults and 16% of children/adolescents are obese (1). Although there is an increased prevalence of obesity among all age, gender, and ethnic groups, certain groups have higher prevalence rates—e.g., women (particularly African-American and Mexican-American women) and children/adolescents (especially Mexican-American boys) (2). Another group with a disproportionately high prevalence of obesity consists of individuals with schizophrenia or bipolar disorder (3–6). It has been estimated that 40–60% of individuals with schizophrenia (7) and 55–68% of individuals with bipolar disorder (8–11) are overweight or obese due to a combination of illness-related factors and use of antipsychotic medications (12–15). Centorrino and colleagues suggest that the challenge of treating obesity may be even greater for those who have gained weight largely

due to the use of psychotropic medications (16). They state, “It is extremely difficult for chronically and severely mentally ill patients who require antipsychotic treatment to eat less and exercise more when their treatment increases appetite and produces fatigue and sedation, and their illnesses decrease motivation and limit social interactions and activities. Moreover, their typically strained financial resources and social circumstances often limit their access to low-calorie foods and preclude membership in health clubs, access to exercise equipment, and dietary counseling or education.” In spite of the high prevalence of obesity in this population, there is little research in the obesity literature on individuals with schizophrenia or bipolar disorder. Thus, the impact of obesity on the health-related quality of life (HRQOL) of these individuals is an area in need of further study.

HRQOL may be defined as the impact of health or disease on physical, mental, and social well-being from the patient's point

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of view (17). Compared to the general population, individuals with schizophrenia or bipolar disorder report poorer HRQOL (18–21). However, most of these studies fail to address the potential impact of obesity on HRQOL. In the only study to do so, obese outpatients with schizophrenia reported decreased HRQOL relative to their nonobese counterparts, particularly in the areas of physical functioning and general health (22). As in nonpsychiatric populations—where obesity is associated with profound decreases in physical functioning, social/interpersonal life, self-esteem, mobility, energy, work, sexual life, and activities of daily living (23–26)—weight gain in psychiatric patients has been associated with decreased general quality of life and life satisfaction (27,28).

The purpose of this study is to compare the HRQOL of obese and nonobese individuals with schizophrenia and bipolar disorder. To interpret HRQOL scores obtained by the obese group, we compared these scores to those obtained by various reference groups from the weight-loss literature. This is a nonintervention, cross-sectional study assessing the relationship between obesity status and HRQOL. It is hypothesized that obese individuals with schizophrenia or bipolar disorder will report greater impairment in HRQOL than their nonobese counterparts, and that this impairment will be similar to or greater than that reported in the weight-loss literature for individuals who seek various weight-loss treatments.

METHODS AND PROCEDURES

Participants

One hundred and eleven adults with schizophrenia and 100 with bipolar disorder were recruited from one of four programs for persons with psychiatric illness in four US states: an outpatient program, a day treatment program, a case management service, and a psychosocial rehabilitation facility. Criteria for inclusion were as follows: documented chart diagnosis of schizophrenia or bipolar disorder, the ability to understand and complete self-report measures (as determined by program staff), and the ability to provide informed consent (as determined by program staff). Participants from these programs were well known to the staff and had documentation of diagnoses from their primary treating clinicians.

Participants with schizophrenia and bipolar disorder did not differ significantly in terms of age (schizophrenia: 43.5 ± 8.7 ; bipolar: 42.8 ± 12.6 ; $t_{207} = 0.43$; $P = 0.207$) or BMI (schizophrenia: 32.6 ± 8.6 ; bipolar: 34.8 ± 8.9 ; $t_{208} = -1.76$, $P = 0.079$), but the schizophrenia group had a significantly higher proportion of men (57.7% vs. 34.0%; Fisher's exact $P = 0.001$). The schizophrenia and bipolar groups also did not differ significantly on any Impact of Weight on Quality of Life-Lite (IWQOL-Lite) (see description below) scales (P values = 0.535–0.971) or total score ($P = 0.281$), with the exception of the self-esteem scale, where schizophrenia participants reported significantly better self-esteem than those with bipolar disorder (schizophrenia: 62.1 ± 29.3 ; bipolar: 51.2 ± 32.8 ; $t_{209} = 2.56$; $P = 0.011$). The schizophrenia group was similar to the bipolar group on Short-Form-36 (SF-36) physical component summary (PCS) (schizophrenia: 43.1 ± 10.7 ; bipolar: 41.0 ± 12.2 ; $t_{201} = 1.34$; $P = 0.181$) but differed on mental component summary (MCS), with the bipolar group being more impaired (schizophrenia: 41.9 ± 11.6 ; bipolar: 35.4 ± 13.1 ; $t_{201} = 3.72$; $P < 0.001$). Based upon the similarity between schizophrenia and bipolar participants with respect to BMI and weight-related quality of life, these groups were combined for subsequent analyses.

Procedures

Program/research personnel obtained heights and weights for each participant. Participants completed the measures described below and

received financial compensation for participation in the study. This study was approved by the University of North Dakota Institutional Review Board, as well as individual program review boards. Written informed consent was obtained from all participants, and the principles outlined in the Declaration of Helsinki were followed.

Measures

IWQOL-Lite. The IWQOL-Lite is a 31-item self-report measure of weight-related quality of life (29). The IWQOL-Lite consists of five subscales (physical function, self-esteem, sexual life, public distress, and work) and a total score. Scores range from 0 to 100, with higher scores indicating better HRQOL. In nonpsychiatric samples, the IWQOL-Lite has demonstrated excellent internal consistency (29), test-retest reliability (30), and validity (29–32). Previous research in individuals with either schizophrenia or bipolar disorder has demonstrated that the IWQOL-Lite is a reliable and valid measure for assessing weight-related quality of life in individuals with these diagnoses (33).

Medical Outcomes Study SF-36. The SF-36 (34), a 36-item self-report instrument, is a widely used measure of general HRQOL that has also been validated for use in psychiatric populations (35). The SF-36 consists of eight subscales (the first four of which assess the physical health aspects of HRQOL and second four of which assess the mental health aspects of HRQOL) and two summary scores (PCS and MCS). Scores on the SF-36 range from 0 to 100, with 100 representing the best quality of life. Scores on the PCS and MCS are norm-based, where the mean of the general population is 50 and the s.d. is 10. Estimates of internal consistency for the SF-36 typically have exceeded 0.80 for all subscales across diverse patient groups (36,37).

Statistical analyses

The obese and nonobese groups were compared on psychiatric diagnosis, gender, and psychotropic medication use using Fisher's exact test, on ethnicity using χ^2 analysis, and on BMI and age using independent samples t -tests. Obese and nonobese groups were then compared on the IWQOL-Lite and SF-36 using one-way analysis of covariance controlling for gender. A P value of 0.05 was used to determine statistical significance. The percent of variance in HRQOL scores attributable to obesity status was determined using partial η^2 coefficients. Missing data on the IWQOL-Lite ranged from 0% (self-esteem, public distress, IWQOL-Lite total) to 2.4% (sexual life) and on the SF-36 ranged from 0% (bodily pain, social functioning) to 3.8% (physical component, mental component). All valid data were used for each analysis.

To interpret IWQOL-Lite and SF-36 scores obtained by the obese group in the current sample, we compared these scores to those obtained at baseline (i.e., pretreatment) by reference groups from the weight-loss literature. Several different reference groups were used because previous research has indicated that HRQOL varies by the type of weight-loss treatment (38). Reference groups for IWQOL-Lite scores included 694 individuals participating in an outpatient weight-loss program (38), 736 participants in an intensive day treatment program for weight loss and lifestyle change (38), and 141 candidates for gastric-bypass weight-loss surgery (38). SF-36 reference groups included 312 participants in an outpatient weight-loss program (39), 459 candidates for laparoscopic banding surgery for weight loss (40), and 143 candidates for gastric-bypass weight-loss surgery (41). Scores between the psychiatric obese group in the current sample and each of the reference groups were compared using independent samples t -tests with two-tailed α set to 0.017 (0.05/3). Data on general population norms of the SF-36 were provided as a point of reference.

RESULTS

Participant characteristics

Sixty-three percent of participants with schizophrenia (70 of 111) and 68% of participants with bipolar disorder (68 of 100) were obese (i.e., BMI of ≥ 30). Participant characteristics by

obesity status are presented in **Table 1**. Obese and nonobese participants did not differ in terms of psychiatric diagnosis, ethnicity or age. However, obese participants were more likely than nonobese participants to be women (59% vs. 44%) on mood stabilizers (47% vs. 27%) and other psychotropic medications (48% vs. 33%), and on a greater number of psychotropic medications (3.1 vs. 2.5).

Weight-related HRQOL scores

IWQOL-Lite scores for obese and nonobese groups are presented in **Table 2**. As hypothesized, obese participants with schizophrenia and bipolar disorder reported more impairment than nonobese participants on all IWQOL-Lite scales plus total score (all P values <0.001). The proportion of variance in IWQOL-Lite scores attributable to obesity status ranged from 10% (sexual life) to 26% (physical function). The η^2 values for both physical function and total score exceeded the value for a large effect (0.25), as defined by Cohen (42), suggesting that these differences were not

only statistically significant but clinically meaningful. It should also be noted that all the effects for the remaining scales were above the cutoff for a medium effect (0.09).

General HRQOL

SF-36 scores on the eight subscales and two summary scales (PCS and MCS) for obese and nonobese groups are presented in **Table 3**. Obese individuals with schizophrenia and bipolar disorder reported poorer HRQOL than nonobese participants on all SF-36 scales, except the mental health scale and the MCS score. The proportion of variance in SF-36 scores attributable to obesity status ranged from 0% (mental component) to 11% (physical function). None of the η^2 values for the SF-36 exceeded the value for a large effect (0.25) (42). For physical functioning, role physical, bodily pain, and PCS η^2 values exceeded the cutoff for a medium effect (0.09).

Severity of impairments in HRQOL

Table 4 presents IWQOL-Lite scores for the obese participants in the current study along with comparable scores for three overweight/obese samples seeking weight loss. The obese psychiatric sample reported significantly greater weight-related HRQOL impairments than the outpatient weight-loss sample on all five IWQOL-Lite scales and total score. The obese psychiatric group also reported greater impairments than the day treatment weight-loss group on self-esteem, sexual life, work, and total score. In contrast, the obese psychiatric group reported significantly less impairment than the gastric-bypass group on sexual life, public distress, work, and total score.

The obese psychiatric group reported significantly greater impairments than an outpatient weight-loss reference sample on six of eight SF-36 scale scores (physical functioning, role physical, general health, social function, role emotional, and mental health), as shown in **Table 5**. The obese psychiatric group also reported greater impairments than the laparoscopic banding candidates on bodily pain, role emotional, mental health, and

Table 1 Characteristics of study participants by obesity status

	Obese (<i>n</i> = 138)	Nonobese (<i>n</i> = 73)	Significance
Psychiatric diagnosis (<i>n</i> , %)			Fisher's exact = 0.472
Schizophrenia	70 (50.7%)	41 (56.2%)	
Bipolar	68 (49.3%)	32 (43.8%)	
Gender (<i>n</i> , %)			Fisher's exact = 0.043
Women	81 (58.7%)	32 (43.8%)	
Men	57 (41.3%)	41 (56.2%)	
Ethnicity (<i>n</i> , %)			$\chi^2_{(2)} = 1.02$, $P = 0.599$
White	99 (71.7%)	48 (65.8%)	
African American	31 (22.5%)	21 (28.8%)	
Other	8 (5.8%)	4 (5.5%)	
Age (mean, s.d.)	43.9 (9.9)	41.7 (11.9)	$t_{(207)} = 1.44$, $P = 0.152$
BMI (mean, s.d.)	38.2 (7.1)	25.0 (3.9)	$t_{(209)} = 14.6$, $P < 0.001$
Psychotropic medication ^{a,b} (<i>n</i> , %)			
Typical antipsychotics	26 (20.5%)	16 (22.9%)	Fisher's exact = 0.719
Atypical antipsychotics	98 (77.2%)	57 (81.4%)	Fisher's exact = 0.586
Mood stabilizers	59 (46.5%)	19 (27.1%)	Fisher's exact = 0.010
Antidepressants	72 (56.7%)	33 (47.1%)	Fisher's exact = 0.233
Other psychotropic medications	61 (48.0%)	23 (32.9%)	Fisher's exact = 0.050
Total number of psychotropic medications (mean, s.d.)	3.1 (1.5)	2.5 (1.4)	$t_{(195)} = 2.85$, $P = 0.005$

^aMedications not mutually exclusive. ^bMedication information obtained for 127 obese and 70 nonobese participants.

Table 2 Impact of Weight on Quality of Life-Lite (IWQOL-Lite) scores by obesity status^a

IWQOL-Lite score	Obese (<i>n</i> = 138) ^b	Nonobese (<i>n</i> = 73) ^c	Significance	Partial η^2
Physical function	52.0 (25.8)	81.5 (18.7)	$F_{(1,208)} = 73.85$, $P < 0.001$	0.262
Self-esteem	47.6 (29.8)	74.6 (24.6)	$F_{(1,208)} = 46.87$, $P < 0.001$	0.184
Sexual life	58.2 (35.6)	81.4 (26.0)	$F_{(1,203)} = 73.85$, $P < 0.001$	0.105
Public distress	67.9 (28.3)	88.5 (19.5)	$F_{(1,208)} = 32.09$, $P < 0.001$	0.134
Work	63.0 (29.3)	88.5 (18.0)	$F_{(1,207)} = 46.92$, $P < 0.001$	0.185
IWQOL-Lite total	55.9 (23.6)	82.0 (17.6)	$F_{(1,208)} = 71.53$, $P < 0.001$	0.256

^aCell entries represent least squares means and s.d. adjusted for gender.

^bMaximum cell size. Valid cell size ranged from 134 (sexual life) to 138 (all others).

^cMaximum cell size. Valid cell size ranged from 72 (sexual life) to 73 (all others).

the MCS, but *less* impairment on Vitality. Additionally, the obese psychiatric sample reported significantly greater impairments than gastric-bypass candidates on social functioning, role emotional and mental health, but reported *less* impairment on physical functioning and vitality. Furthermore, the obese psychiatric sample had markedly lower scores on all scales of the SF-36 (i.e., greater impairment) than general population norms.

Table 3 Short-Form-36 (SF-36) scores by obesity status^a

SF-36 score	Obese (n = 138) ^b	Nonobese (n = 72) ^c	Significance	Partial η^2
Physical functioning	52.9 (26.7)	72.2 (25.8)	$F_{(1,206)} = 25.63$, $P < 0.001$	0.111
Role physical	43.0 (38.1)	68.2 (38.6)	$F_{(1,206)} = 20.26$, $P < 0.001$	0.090
Bodily pain	50.4 (29.1)	69.2 (24.6)	$F_{(1,206)} = 22.79$, $P < 0.001$	0.099
General health	48.4 (23.4)	59.4 (60.3)	$F_{(1,206)} = 12.06$, $P = 0.001$	0.055
Vitality	44.4 (23.8)	52.5 (20.4)	$F_{(1,207)} = 6.12$, $P = 0.014$	0.029
Social functioning	52.6 (28.6)	61.3 (31.2)	$F_{(1,206)} = 4.52$, $P = 0.035$	0.021
Role emotional	38.1 (39.5)	50.7 (41.4)	$F_{(1,206)} = 4.65$, $P = 0.032$	0.022
Mental health	51.9 (22.5)	55.8 (23.8)	$F_{(1,206)} = 1.40$, $P = 0.239$	0.007
Physical component	38.8 (10.8)	48.4 (9.6)	$F_{(1,200)} = 38.59$, $P < 0.001$	0.162
Mental component	38.6 (12.3)	39.8 (13.5)	$F_{(1,200)} = 0.14$, $P = 0.713$	0.001

^aCell entries represent least squares means and s.d. adjusted for gender.

^bMaximum cell size. Valid cell sizes ranged from 133 (physical component, mental component) to 138 (vitality, social functioning). ^cMaximum cell size. Valid cell sizes ranged from 69 (physical component, mental component) to 72 (physical functioning, role physical, bodily pain, social functioning).

DISCUSSION

In this study, 63% of participants with schizophrenia and 68% of participants with bipolar disorder were obese. Obesity was more prevalent among women and in individuals taking mood stabilizers or receiving a higher number of psychiatric medications. As hypothesized, obese individuals with either schizophrenia or bipolar disorder reported poorer general and weight-related HRQOL than their nonobese counterparts. To our knowledge, this is the first study to describe the negative impact of obesity on two types of HRQOL in both schizophrenia and bipolar disorder.

Obese participants' scores on all scales of the IWQOL-Lite were more impaired than those obtained by a reference group of

Table 4 Mean BMI and Impact of Weight on Quality of Life-Lite (IWQOL-Lite) scores across studies

Study	Present study	Kolotkin <i>et al.</i> (38)		
		(1) Outpatient weight loss	(2) Day treatment weight loss	(3) Gastric-bypass surgery for weight loss
Valid n	138	694	736	141
BMI	38.2 (7.1) ^{<3}	36.2 (6.6)	39.3 (9.4)	49.0 (9.3)
Physical function	51.7 (25.8) ^{<1}	68.8 (19.9)	57.2 (26.4)	44.8 (29.4)
Self-esteem	46.8 (29.8) ^{<1, <2}	61.3 (26.0)	57.6 (27.2)	46.2 (27.8)
Sexual life	57.6 (35.6) ^{<1, <2, >3}	70.0 (26.6)	65.7 (28.3)	44.7 (29.8)
Public distress	67.2 (28.3) ^{<1, >3}	81.0 (22.0)	71.6 (26.8)	41.4 (25.7)
Work	62.5 (29.3) ^{<1, <2, >3}	79.6 (21.5)	72.0 (23.5)	40.4 (28.4)
IWQOL-Lite total	55.4 (23.6) ^{<1, <2, >3}	70.6 (18.2)	62.5 (20.7)	44.0 (22.2)

1, outpatient weight-loss group at baseline; 2, day treatment weight-loss group at baseline; 3, gastric-bypass surgery group at baseline.

Table 5 Mean BMI and Short-Form-36 (SF-36) scores across studies

Study	Present study	(1) Fontaine <i>et al.</i> (39)	(2) Dixon <i>et al.</i> (40)	(3) Nguyen <i>et al.</i> (41)	General population norms (34,53)
					US general population
Valid n	138	312	459	143	—
BMI	38.2 (7.1) ^{<2, <3}	38.1 (8.4)	45.0 (8)	48.0 (5.0)	—
Physical functioning	52.4 (26.7) ^{<1, >3}	72.2 (25.4)	46.3 (23)	43.2 (22.9)	84.2 (23.3)
Role physical	42.6 (38.1) ^{<1}	69.7 (37.2)	41.4 (39)	42.2 (39.0)	81.0 (34.0)
Bodily pain	49.7 (29.1) ^{<2}	53.1 (26.5)	62.8 (23)	49.8 (23.4)	75.2 (23.7)
General health	47.9 (23.4) ^{<1}	63.4 (20.2)	42.6 (21)	53.7 (22.0)	72.0 (20.3)
Vitality	43.9 (23.8) ^{>2, >3}	45.3 (21.0)	33.4 (21)	37.5 (19.9)	60.9 (21.0)
Social functioning	51.6 (28.6) ^{<1, <3}	76.8 (25.1)	54.1 (28)	63.0 (27.9)	83.3 (22.7)
Role emotional	37.5 (39.5) ^{<1, <2, <3}	73.3 (37.2)	52.3 (42)	47.3 (25.7)	81.3 (33.0)
Mental health	51.4 (22.5) ^{<1, <2, <3}	68.1 (18.5)	58.8 (21)	72.4 (16.2)	74.7 (18.1)
Physical component	38.7 (10.8)	—	36.8 (9.5)	—	50.0 (10.0)
Mental component	38.3 (12.3) ^{<2}	—	45.7 (8.2)	—	50.0 (10.0)

1, outpatient weight-loss group at baseline; 2, lap-band surgery for weight loss at baseline; 3, gastric-bypass surgery group at baseline.

outpatients seeking weight-loss treatment. For three of the five scales of the IWQOL-Lite (self-esteem, sexual life, work) and total score, the obese psychiatric group reported greater impairments in weight-related quality of life than a reference group of individuals participating in an intensive day treatment program for weight loss and lifestyle change. However, the obese psychiatric group reported less impairment on three of the five IWQOL-Lite scales than a reference group of obese individuals seeking gastric-bypass surgery. Thus, IWQOL-Lite scores for obese participants with schizophrenia or bipolar disorder indicate a significant negative impact of obesity on many aspects of quality of life that is similar to or more severe than that experienced by obese individuals who seek outpatient weight-loss treatment or intensive day treatment for weight loss and lifestyle change.

Previous research has indicated that obesity is associated with impairments in the physical aspects of HRQOL more so than in the emotional or psychosocial aspects (43). In this study, all four of the scales of the SF-36 that assess physical HRQOL and three of the four that assess mental or psychosocial HRQOL (all except mental health) were more impaired for the obese participants than the nonobese participants. When compared to reference groups seeking various weight-loss treatments, the obese psychiatric group reported greater impairments in physical HRQOL than individuals seeking outpatient weight-loss treatment (physical functioning, role physical, and general health) and individuals seeking laparoscopic banding (bodily pain) but less impairment than candidates for gastric-bypass surgery (physical functioning). Not surprisingly, obese psychiatric participants' scores on the mental or psychosocial aspects of HRQOL were generally more impaired than individuals seeking outpatient weight-loss treatment (social functioning, role emotional, and mental health), laparoscopic banding (role emotional mental health, and the MCS), and gastric-bypass surgery (social functioning, role emotional, and mental health).

Our findings are consistent with limited research on obesity and/or weight gain in psychiatric patients, where excess weight has been described as distressing (15,44,45) and has been associated with decreased general quality of life, HRQOL, and life satisfaction (22,27,28).

The results of this study have implications for clinicians who treat individuals with schizophrenia and bipolar disorder. First, clinicians need to be aware that obesity adds to the burden of these illnesses in the form of reduced HRQOL. Second, because patients with schizophrenia and bipolar disorder are distressed by weight gain, they may display poor adherence or even premature discontinuation of treatment because of weight gain. In a study of individuals with schizophrenia, both BMI status and subjective distress from weight gain were predictors of noncompliance with medications, even when accounting for other possible confounding factors (46), with obese individuals more than twice as likely as those with a normal BMI to report missing medication. Furthermore, weight gain and metabolic syndrome were among the most commonly reported reasons for discontinuation of treatment in the Clinical Antipsychotic Trial of Interventional Effectiveness of individuals with chronic schizophrenia (47). To enhance patient adherence to therapy,

clinicians should consider the weight gain potential of medications when deciding which medications to prescribe (48,49). Patients starting on atypical antipsychotics should undergo regular monitoring of weight (50). Finally, specific interventions for the prevention and treatment of weight gain associated with antipsychotic therapy should be utilized (16,51,52).

A limitation of the current study is that participants were not randomly selected, and as a result, may not be representative of individuals with schizophrenia and bipolar disorder. Additionally, we do not know the severity of psychiatric illness in the study participants, although they were recruited primarily from programs for individuals with chronic and severe illness. As a result, we do not know whether these results would generalize to other psychiatric samples, such as a clinically stable psychiatric group. Another limitation is that diagnoses were obtained from medical records rather than either a standardized, structured interview or a formalized diagnosis within the trial. Finally, it is unknown whether any members of the reference groups of individuals seeking outpatient weight loss, day treatment weight-loss treatment, laparoscopic banding, or gastric-bypass surgery had schizophrenia or bipolar disorder.

In conclusion, obesity is a commonly occurring condition in individuals with schizophrenia or bipolar disorder that is associated with decreased health-related and weight-related quality of life. Thus, weight gain and/or obesity appear to be distressing to psychiatric patients, which may have implications for adherence to treatment by these individuals. Because of the negative quality of life consequences of obesity, as well as the health risks, prevention of weight gain and effective management of weight are of paramount importance in the treatment of individuals with psychiatric illness. We encourage healthcare providers to assess a drug's propensity to induce weight gain when selecting an agent for long-term treatment, monitor weight changes in their patients, and ask their patients to report about both positive and negative effects of treatment, including weight gain, in order to evaluate the effects of treatment on HRQOL.

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