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Exploring the Association between Body Image Disturbances in Obesity and the Success of Weight Loss Programs–An Italian Perspective

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Abstract

Background: Whereas body-image disturbance has been associated with the development and maintenance of obesity and binge-eating disorder, regarding its role in successful weight loss the research is very limited. Therefore, the present study primarily aims to clarify the association of different components of body image disturbance and psychopathology in obesity with different outcomes of standard weight loss programs.

Methods: Our data was obtained from a larger prospective study and from two time points–before and after completing the standard weight loss program. We selected 88 patients that lost more than 5% of their initial weight, distributed in two groups: 5% weight loss (5%-WL) group and 10%-WL group if more than 10% of WL was achieved. We assessed socio-demographic characteristics, Body-Mass Index (BMI) scores, general psychopathology, and body image disturbances *via* self-reported questionnaires, including Body Uneasiness Test (BUT).

Result: Our main results confirm the association between less successful weight loss with overvaluation of weight and shape, avoidance behaviour and body-related checking behaviour scores. Higher BMI scores were associated with body uneasiness global scores, obsessive-compulsive symptoms, phobic anxiety and psychoticism.

Conclusion: Our findings emphasize the importance of accessing and treating body image disturbance in obese patients undergoing weight loss programs, improving its outcomes.

Introduction

Body image is a complex, multidimensional concept of body representation that enables the construction of an integrated sense of one's own body in a dynamic environment [1]. It includes several components related to physical appearance, such as mental representation of one's own size, shape and facial characteristics, as well as personal attitudes towards one's own appearance, which includes perceptions, thoughts, feelings and attitudes related to the body.

Body-Image Disturbance (BID) is a core symptom of eating disorders spectrum and there is growing evidence that BID might be characteristic within the development and maintenance in Binge Eating Disorder (BED) and obesity as well [2-4].

In body image research, a distinction is made between three components of body image disturbance that interact and influence each other: The cognitive-affective component, the behavioural component, and the perceptual component.

The cognitive-affective component includes overvaluation of weight and shape as well as body dissatisfaction, with treatment programmes commonly targeting dysfunctional cognitions and emotions relating to the body [5,6]. Lower body satisfaction is correlated with unhealthy behaviours, namely weight gain, reduced physical activity and binge eating [7]. Individuals with obesity are more dissatisfied with their own bodies and display weight and shape concerns to a higher degree than healthy controls [8]. Moreover, research has emphasized a relation between higher dissatisfaction evaluations when Body Mass Index (BMI) increases, especially women [9].

The behavioural component consists of body-related checking and avoidance behaviour, especially activities with an enhanced focus on the body [10,11]. Heightened body avoidance and

checking behaviours are also common among obese patients and BED, where it appears to be more frequent in comparison to obese participants without BED, but these group differences did not reach statistical significance in a recent study [12-14].

The perceptual component comprises visually or tactilely perceived dimensions of body parts or whole part sizes. Findings about the perceptual dimension of body image are controversial. Whereas healthy persons seem to slightly underestimate their own body dimensions obese individuals have been reported to overestimate underestimate or be accurate [15-18]. When obese individuals perceive their actual and their felt body image rather realistically but might have a notion of their "ideal" figure as considerably slimmer, which is in line with findings in other eating disorders. Conversely, two other studies showed that as BMI increases, overweight and obese individuals become more accurate in their perception of their body size [8,19].

Although low self-esteem and depressiveness has been postulated to be associated with BID, disturbed body image still present after controlling depression in obesity and BED [14,20].

Regarding weight loss treatment outcomes and BID, obese individuals who underestimate their size are unlikely to attempt weight control or seek medical attention [21]. On the other hand, overestimation of shape and weight appeared to be not only related to the frequency of binge-eating episodes, but also strictly connected with general psychological distress [10]. It is well known that a negative body image is a motivational factor to undertake weight loss efforts, and there is some indication that body image is improved following weight loss. Additionally, a more persistent negative self-image has been associated to a poor outcome [22]. A more recent study by Legenbauer et al. showed that positive change from baseline to current levels of body dissatisfaction was significantly associated with successful weight loss and the maintenance thereof, in surgical and conventional treatments for obesity. BE has been identified as a risk factor for poor response to weight loss treatment in several but not all studies [23-27].

Aims of the study

Identify different components of body image disturbance in obese patients seeking treatment and its relationship to different BMI scores.

Clarify if body image disturbance changes after weight loss and if it can be correlated with more successful weight loss.

Materials and Methods

Participants were recruited while undergoing multidimensional weight loss treatment that comprises nutritional counselling and cognitive-behavioural interventions, at Niguarda Ca' Granda Hospital-the largest hospital that serves the north of Italy. The patients participate in three different settings according to the severity of the obesity: Intensive treatment at day hospital (3 times a week group session over 3 months); weekly group sessions over 1 year; and a monthly group [28,29].

All participants were recruited for 2 weeks in all three different settings, at the end of the treatment. The following exclusion criteria were applied to all participants: Weight loss less than 5% from the baseline weight; physical conditions, particularly pregnancy; chronic non-obesity associated diseases; psychotic, or uncompensated psychiatric disorders, as well as dementia [30].

Participants provided sociodemographic information and weight and height were assessed in light clothing without shoes and classified within standardized obesity classes: Obese I (30 ≤ BMI<35); obese II (35 ≤ BMI<40); and obese III (40 ≤ BMI<45).

If the 5% Weight Loss (WL) criterion was fulfilled the participant was distributed in one of two groups: 5%-WL and 10%-WL if he reached more than 10% of his initial weight.

The following assessment instruments are valid in the Italian language and were applied to all participants in the form of self-reported questionnaires: (1) SCL-90-R (Symptom Checklist 90) to assess general psychopathology; (2) Binge Eating Scale (BES) to select patients with moderate to severe binge eating problems (total score >17); (3) Body Uneasiness Test (BUT). It contains 71 items, divided in two parts: BUT-A, which measures weight phobia, body image concerns, avoidance, detachment, compulsive self-monitoring and estrangement feelings towards one's own body (depersonalization); BUT-B refers to the specific worries about body parts or functions. In addition, when applicable, clinically relevant mental disorders were assessed with brief clinical interviews.

Statistical analysis

Data are described as mean ± standard deviation or median and interquartile range for continuous variables and as absolute frequency and respective percentage for categorical variables. The comparison between two disjoint groups for continuous variables was performed using the non-parametric Mann-Whitney Wilcoxon test. For more than two disjoint groups, comparisons were performed using the Kruskal-Wallis test. For categorical variables the comparisons were made using the Fisher's exact test. A significance level of 0.05 was considered.

Results

Sample characteristics

For this study 88 individuals were analysed, 70.5% female and 29.5% male with a mean age of 50.3 ± 13.9 years. Most of the individuals were married (48.9%) or single (42.0%), with 3.4% divorced and 5.7% widowed. Regarding the professional situation, 38.9% of the individuals were employed, 25.0% were retired, 23.6% were unemployed, 9.7% were students and 2.7% were domestic workers. Given the aim of the study to improve obesity management strategies, these individuals were followed up and the presence of psychopathology (SCL-90) and severity of Binge-Eating Behaviour (BEB) were assessed.

BMI scores and body image disturbances

We analysed BUT-A scores by BMI classification to understand if higher scores are attributed to individuals with higher BMI (Table 1).

	Obese I (30 ≤ BMI < 35)	Obese II (35 ≤ BMI <40)	Obese III (BMI ≥ 40)	
	n=40	n=17	n=25	
BUT	Median (IQR)	Median (IQR)	Median (IQR)	p
GSI	0.96 (1.23)	1.18 (1.02)	1.44 (1.44)	0.335
WP	1.25 (1.81)	1.50 (1.44)	1.88 (1.88)	0.367
A	0.75 (1.33)	1.00 (1.00)	0.50 (1.58)	0.604
BIC	1.73 (2.03)	2.22 (1.78)	1.89 (2.00)	0.261
CSM	0.42 (1.17)	0.50 (0.92)	0.83 (0.75)	0.447
D	0.30 (1.00)	0.60 (1.20)	0.80 (1.60)	0.24
PST	10.50 (10.50)	12.00 (9.50)	9.00 (11.00)	0.844
PSDI	2.14 (1.85)	2.47 (1.01)	2.23 (1.19)	0.381
BUT, Body Uneasiness Test; WP, Weight Phobia; A, Avoidance; BIC, Body Image Concerns; CSM, Compulsive Self-Monitoring; PSI, Positive Symptom Total; PSDI, Positive Symptom Distress Index.				

Table 1: Score analysis of scales by BMI

We found that higher BMI scores were consistently associated in the three groups with higher scores of body uneasiness global indexes, weight phobia, compulsive self-monitoring and depersonalization. In the obese III-group, it was found the minimal score in the avoidance behaviour, when compared to the other groups. No differences were observed between groups (Table 1).

Body image disturbances, psychopathology and successful weight loss

Weight was assessed at two time points, with 85.2% (n=75) losing 5% to 10% of their weight and 14.8% (n=13) losing more than 10% of their weight with the implementation of the measures.

The results are shown in Table 2. No statistically significant differences were observed between the groups regarding age (median: 52 *vs*. 51; p=0.77) and sex (Fisher's exact test: p=0.192).

	>5% Weight Loss	>10% Weight Loss	p
	(n=75)	(n=13)	
Scale	Median (IQR)	Median (IQR)	
SCL-90			
GSI	0.66 (0.97)	0.33 (0.69)	0.173
SOM	0.92 (0.92)	0.58 (0.61)	0.068
OC	0.80 (0.90)	0.30 (0.68)	0.050*

IS	0.67 (0.89)	0.28 (1.48)	0.371
DEP	0.77 (1.24)	0.62 (1.08)	0.495
ANX	050 (1.00)	0.45 (0.65)	0.445
HOS	0.33 (0.66)	0.42 (1.21)	0.877
PHOB	0.29 (0.57)	0.00 (0.04)	0.011*
PAR	0.50 (1.00)	0.67 (1.25)	0.759
PSY	0.40 (0.70)	0.10 (0.20)	0.036*
BES	11.00 (11.00)	8.00 (9.50)	0.17
BUT			
GSI	1.32 (1.11)	0.85 (1.13)	0.217
WP	1.50 (1.87)	1.00 (2.00)	0.417
A	0.83 (1.50)	0.67 (1.08)	0.347
BIC	2.00 (1.56)	1.44 (1.78)	0.329
CSM	0.67 (1.00)	0.33 (0.59)	0.042
D	0.40 (1.60)	0.20 (0.70)	0.379
PST	11.00 (11.00)	11.00 (11.50)	0.702
PSDI	2.40 (1.33)	2.23 (1.92)	0.962

SCL-90, Symptom Checklist 90; GSI, Global Severity Index; SOM, Somatization; OC, Obsessive-Compulsive; IS, Interpersonal Sensivity; DEP, Depression; ANX, Anxiety; HOS, Anger-Hostility; PHOB, Phobic Anxiety; PAR, Paranoid Ideation; PSY, Psychoticism; BES, Binge-Eating Scale; BUT, Body Uneasiness Test; WP, Weight Phobia; A, Avoidance; BIC, Body Image Concerns; CSM, Compulsive Self-Monitoring; PSI, Positive Symptom Total; PSDI, Positive Symptom Distress Index.

Table 2: Score analysis of scales by percentage of losing weight

Regarding the presence of clinically relevant symptoms evaluated in the SCL-90 scale, the median global severity index was higher in the 5%WL-group, but the difference was not significant in the two groups. Nevertheless, we found statistically significant higher scores of obsessive-compulsive symptoms as well as phobic anxiety and psychoticism in the 5%WL-group. Average depressive scores, assessed with SCL-90, were above the cut-off of clinical significance in the 5%WL group but they didn't differ significantly between them.

The evaluation of binge-eating behaviours in the BES scale was in average below the cut-off in the two groups, 3-point higher score in the BES scale in the 5%WL-group. It should be noted that moderate to severe BE behaviours (defined by a cut-off on BES scale of >17) was present almost exclusively in the 5%WL-group, except for one patient. BES moderate to severe were present in 21.3% (n=16) in the 5%WL-group.

Concerning body image disturbances, the 5%WL-group scored higher in the overvaluation of weight and shape (WP,BIC) and depersonalization, as well as in the behavioural component; namely, it was observed higher scores in the body-related checking and avoidance behaviour (A,CSM). The only component that differed significantly was the compulsive self-monitoring.

Discussion

The main aim of this article was to understand the association between psychopathology and different components of body image disturbance (cognitive-affective and behavioural components) and its role in the success of weight loss interventions. The data were derived from a larger prospective study conducted at Niguarda Hospital, which enabled the data collection from two time points, before and after the standard intervention for weight loss in obese patients.

From the collected data, we found that less successful weight loss (here defined in losing more than 5% of their initial weight) is associated with higher scores on psychopathology globally, being in accordance with other studies. We found that the presence of specific symptoms can potentially predict a less

successful weight loss, particularly obsessive-compulsive symptoms, phobic anxiety and psychoticism. Depressiveness was present in the two groups, higher in the 5%WL-group but it did not differ significantly between the two groups.

Although the presence of binge-eating behaviours did not differ in the average BES score between the two groups, the moderate-severe BE behaviours were almost exclusively present in the 5%WL-group. This discrepancy can be associated with a more clinical heterogenicity in the 5%WL group.

Regarding the association between the different components of body image disturbances evaluated in the BUT scale, we found that less successful weight loss is associated with higher degree of overvaluation of weight and shape, avoidance behaviour, and body-related checking behaviour. The latter translated in the "compulsive self-monitoring" in BES scale was the only component that differed statistically between the two groups. Focusing on reducing compulsive self-monitoring behaviours might be a starting point in the treatment of body image disturbance in obesity to improve outcomes in weight loss.

In addition, we analysed the same components of body image disturbance and verified if they were associated with BMI scores. Research related to this topic is controversial. We found that higher BMI scores were consistently associated with higher body image disturbances in general and particularly with weight phobia, compulsive self-monitoring, and depersonalization.

Conclusion

The strength of the present study lies in the application of a recently validated weight-specific assessment tool for body image in individuals with obesity. To our knowledge, no other study has evaluated multidimensional components of BID and successful weight loss in obesity. However, it has also some limitations. The inclusion of BED patients can be a confounding variable in our study, as it has been suggested by recent studies that body image disturbances are a symptom of BED that does not appear to be attributable merely to obesity. Our finding emphasises the importance in accessing and treating body image disturbance in obese patients undergoing weight loss programs, especially in class III obesity. Moreover, it adds evidence in understanding the role of BID in a successful outcome of conventional weight loss programs.

Conflict of interest statement

There is no conflict of interest to be disclosed on this paper.

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