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Research report

Weight management, psychological distress and binge eating in obesity. A reappraisal of the problem☆

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ABSTRACT

The psychological effects of dieting and weight loss have been an area of controversy in obesity. As part of a large multicenter study involving 1944 obese subjects seeking treatment at Italian medical centers, we investigated the effects of weight loss on psychological distress and binge eating in 500 subjects remaining in continuous treatment at different centers with slightly different strategies (78.8% females; age: $M = 46.2$ years, SD = 10.8; BMI: $M = 37.3$ kg/m^2, SD = 5.6). At baseline and after 12 months all subjects were evaluated by the Symptom CheckList-90 Global Severity Index (SCL-GSI) and by the Binge Eating Scale (BES). In both males and females, weight loss was associated with improved psychometric testing. Changes in SCL-GSI were associated with changes in BMI ($\beta = 0.13$; $t = 2.85$; $p < 0.005$), after adjustment for age, gender, initial BMI and center variability. Similarly, BES changes were associated with BMI change ($\beta = 0.15$; $t = 3.21$; $p < 0.001$). We conclude that in subjects compliant to follow-up a successful management of obesity, not directly addressing psychological distress, is associated with a significant improvement of both psychological distress and binge eating, linearly related to the amount of weight loss, independently of treatment procedures.

Introduction

The psychological effects of dieting and weight loss have been a matter of controversy in the field of obesity management. A review of several early studies (before the 1970s) described negative emotional consequences to dieting (Stunkard & Rush, 1974), whereas later studies found an improvement or no changes in the symptoms of depression and anxiety in obese patients treated by behavior modification combined with moderate calorie restriction (Bryan & Tiggemann, 2001; Taylor, Ferguson, & Reading, 1978; Wadden & Stunkard, 1986; Wing, Blair, Marcus, Epstein, & Harvey, 1994; Wing, Marcus, Epstein, & Kupfer, 1983), severe calorie restriction (Wadden, Foster, & Letizia, 1994; Wadden, Stunkard, Brownell, & Day, 1985; Wing, Marcus, Blair, & Burton, 1991), or use of weight loss drugs (Brownell & Stunkard, 1981; Kiortsis, Tsouli, Filippatos, Konitsiotis, & Elisaf, 2008; Wadden et al., 1997). Two systematic reviews concluded that professional weight loss interventions are not associated with negative psychological consequences and eating disorders, but rather with a modest improvement in psychological status both in obese adults (National Task Force on the Prevention and Treatment of Obesity, 2000) and in overweight children and adolescents (Butryn & Wadden, 2005). Finally, a recent study found that the sole control of food intake as dietary treatment for obesity, not accompanied by any intervention on psychological distress, improved eating psychopathology, self-esteem and mood (Werrij, Mulkens, Hospers, Smits-de Bruyn, & Jansen, 2008). These conflicting results may be explained by patients' selection, with earlier studies including patients with emotional disturbances treated in psychiatric settings, and more recent studies including patients generally free of clinical depression (National Task Force on the Prevention and Treatment of Obesity, 2000).

Several studies also assessed the effect of weight loss treatment on binge eating. Behavioral weight loss treatment combined with moderate energy restriction was associated with fewer episodes of binge eating in patients with binge eating disorder (Agras et al., 1994; Porzelius, Houston, Smith, Arkin, & Fisher, 1995; Wing, Marcus, Epstein, Blair, & Burton, 1989) and no onset of binge eating in those who, before treatment, were not binge eaters (Porzelius

☆ A complete list of participants in the QUOVADIS study has been previously published (Diab Nutr Metab, 2003;16:115–24).

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et al., 1995; Sherwood, Jeffery, & Wing, 1999; Wadden et al., 1994, 2004). Similar outcomes on binge eating were observed with severe energy restriction (Raymond, de Zwaan, Mitchell, Ackard, & Thuras, 2002; Wadden et al., 1994; Yanovski, Gormally, Leser, Gwirtsman, & Yanovski, 1994), but one study reported a worsening of binge eating after 12 weeks' consumption of a liquid very low-calorie diet (Telch & Agras, 1993). A significant reduction in the frequency of binging episodes was also reported with the use of weight loss drugs, associated with moderate energy restriction (Golay et al., 2005; Wilfley et al., 2008). A recent experimental study showed that nonobese women randomly assigned to receive a low-calorie diet significantly decreased bulimic symptoms in comparison to subjects assigned to a waitlist control condition (Presnell & Stice, 2003), an outcome confirmed also by a longitudinal study (Stice, Martinez, Presnell, & Groesz, 2006) and a randomized efficacy trial (Stice, Marti, Spoor, Presnell, & Shaw, 2008). These data suggest that successful dietary restraint tends to curb bulimic symptoms.

In turn, the influence of binge eating on weight loss has been extensively investigated. In general, pre-treatment binge eating status was not associated with weight loss outcomes (Delinsky, Latner, & Wilson, 2006; Teixeira, Going, Sardinha, & Lohman, 2005), but changes in eating patterns during treatment were rarely examined. In the Look AHEAD (Action for Health in Diabetes), a large trial examining the long-term effect of intentional weight loss on cardiovascular disease in overweight and obese adults with type 2 diabetes, the participants who stopped binge eating were just as successful at weight loss as non-binge eaters after 1 year, and lost more weight than those who continued or started binging during treatment (Gorin et al., 2008). A review of the literature reported an association between the amelioration of binge eating induced by specific treatment and weight loss (Yanovski, 2003). In summary, available data indicate that baseline binge eating does not obstacle weight loss.

Most data on the psychological effects of weight loss come from well-defined research settings. These studies have several strengths (e.g., internal validity/rigorous research design, low attrition rates, standardized interventions), but limited external validity because of exclusion criteria and specific procedures to reduce attrition (e.g., incentives for patients who participate in follow-up). We analyzed the effect of weight loss on psychological outcomes in obese patients participating in a large multi-site Italian observational study (Melchionda et al., 2003). Based on previous findings in research settings, our main hypothesis was that weight loss achieved with treatments not specifically addressing psychological distress and binge eating was associated with improved psychological outcomes also in patients observed in the "real world" of obesity centers.

Materials and methods

QUOVADIS study planning and protocol

The QUOVADIS (QUality of life in Obesity: eVAluation and DIsease Surveillance) study planning and protocol have been described in details in a previous paper (Melchionda et al., 2003). QUOVADIS is a purely observational study on quality of life, psychological distress, and eating behavior in obese patients seeking treatment at 25 obesity medical centers accredited by the Italian Health Service and treated according to their specific protocols. All the centers adopted an eclectic approach including different forms of dieting and physical exercise, combined in some cases with basic behavior modification strategies (e.g., food diary), drugs and bariatric surgery (less than 2% of patients). While the theory on which the treatment was based varied between centers, all adopted an initial intensive treatment period (3–6 months), followed by a less intensive continuous care (a follow-up control every 2–4 months) with periodic controls for an indefinite period of time (Dalle Grave et al., 2005).

All individuals with obesity (BMI $\geq$30 kg/m^2), consecutively seeking treatment, including those with binge eating, were eligible for the study, provided they were not on active treatment at the time of enrollment, were in the age range between 25 and 65 years and agreed to complete a package of self-administered questionnaires. To ensure that subjects were truly consecutive the medical record number of the patients was monitored across sites.

A systematic medical and psychosocial evaluation of participants was planned at baseline, approximately 1 week before the beginning of treatment, and after 12 months. Seven centers refused to collect the 12-month follow-up data because of limited human resources and longitudinal data were thus available only for 18 centers. For the purposes of the present report, 6 cases who underwent bariatric surgery were excluded from analysis.

The protocol was approved by the ethical committees of the individual centers, after approval by the ethical committee of the coordinating center (Azienda Ospedaliera di Bologna, Policlinico S. Orsola – Malpighi). All participants gave written informed consent for participation.

Measures

Case Report Form

The Case Report Form was filled in by physicians at the time of enrollment by directly interviewing patients.

Psychosocial measures

At baseline and at follow-up, the participants completed a battery of questionnaires measuring psychological distress and binge eating.

The Symptom CheckList-90R (SCL) (Derogatis & Cleary, 1977) was used to identify psychological distress. For each item, patients scored how much that problem has distressed them during the previous week, with responses ranging from 0 (not at all) to 4 (extremely). The 90 items of the test were used to compute the general symptom index (GSI), which is an indicator of the overall psychological distress (Derogatis & Cleary, 1977). A value $\geq$1 in SCL-GSI is suggestive of psychopathology (1.00–1.49, mild; 1.50–1.99, moderate; $\geq$2.00, severe) (Derogatis & Cleary, 1977). The various subscales of SCL were not considered for the purposes of the present study.

The Binge Eating Scale (BES) (Gormally, Block, Daston, & Rardin, 1982) was used to measure the severity of binge eating. It examines both behavioral signs (eating large amounts of food) and feeling or cognition during a binge episode (loss of control, guilt, fear of being unable to stop eating) in 16 items. Scores $\geq$27 conventionally serve as a cutoff value for identifying the presence of severe binge eating and $\leq$16 as a cutoff value for mild or no binge eating (Greeno, Marcus, & Wing, 1995).

Weight and height

Weight was measured on a medical-balance and height by a stadiometer in patients with underwear and no shoes. Weight change was examined from baseline to 12 months.

Statistical analyses

All weight data (in kg) were transformed into BMI units to improve comparison between genders. A first descriptive analysis was used to obtain a qualitative evaluation of clinical data, response to questionnaires and patients' outcomes. Changes in clinical parameters at 12 months were tested for significance by means of parametric and non-parametric tests for paired data, and