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Personality features of obese women in relation to binge eating and night eating

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ABSTRACT

Personality traits can affect eating behaviors, the development of obesity, and obesity treatment failure. We investigated the personality characteristics and their relation with disordered eating in 586 obese women consecutively seeking treatment at eight Italian medical centers (age, 47.7 ± 9.8 years) and 185 age-matched, normal weight women without symptoms of eating disorders (Eating Attitude Test < 20). The assessment included anthropometry, the Temperament and Character Inventory (TCI), the Binge Eating Scale (BES) and the Night Eating Questionnaire (NEQ). Logistic regression analyses were carried out in different models with BES score ≥ 27 and NEQ ≥ 30 as dependent variables and TCI scores as independent factors. Personality traits of obese individuals included significantly lower self-directedness and cooperativeness on TCI. BES and NEQ scores were higher in obese women, and values above the defined cut-offs were present in 77 and 18 cases (14 with high BES), respectively. After controlling for age and BMI, high BES values were associated with high novelty seeking and harm avoidance and low self-directedness, the last two scales being also associated with high NEQ. We conclude that personality traits differ between obese patients seeking treatment and controls, and the presence of disordered eating is associated with specific personality characteristics.

1. Introduction

Disordered eating has been variably associated with specific personality traits (Fassino et al., 2002b; van den Bree et al., 2006), but studies carried out by means of the Karolinska Scales of Personality (Bjorvell et al., 1994; Jonsson et al., 1986; Poston et al., 1999) or the Minnesota Multiphasic Personality Inventory (Kolotkin et al., 1987; Martin, 1999) produced conflicting results. Higher scores in monotony avoidance were systematically associated with incapacity to maintain weight loss, but the scale does not help predict outcome in obesity treatment (Poston et al., 1999). These inventories were designed and validated to assess overt pathological personality traits, whereas the inter-individual variation of normal traits may be left undiagnosed because of poor specificity (Sullivan et al., 2007).

Personality traits might be partly responsible for the development of obesity as well as for the failure of obesity treatment (Sullivan et al., 2007), via disordered eating. However, the possible negative role of the social inheritance of obesity and disordered eating on personality changes was also taken into account (Sutin et al., 2011). Whichever the cause and the effect, a precise assessment of personality traits might help identify strategies to improve obesity treatment.

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The Temperament and Character Inventory (TCI) was designed to make a comprehensive evaluation of normal personality (Cloninger et al., 1993, 1994; Svrakic et al., 1993). It is based on a psychobiological model of personality based on seven dimensions divided into temperament and character. Temperament is defined as the partly inherited emotional responses, stable throughout life, mediated by neurotransmitter functioning (Cloninger, 1987) in the central nervous system. It is identified by four dimensions (novelty seeking, harm avoidance, reward dependence and persistence). Character is defined as the sum of personality traits acquired through experience, identified by three dimensions (self-directedness, cooperativeness, self-transcendence).

In individuals with eating disorders, high values of novelty seeking were associated with binge eating or overeating, while low values of novelty seeking with dietary caloric restriction (Brewerton et al., 1993; Bulik et al., 1995b; Fassino et al., 2001, 2004; Kleifield et al., 1994; Waller et al., 1993). Low persistence scores were positively associated with drop-out in a cognitive behavior inpatient treatment for eating disorder (Dalle Grave et al., 2008), whereas high self-directedness was associated with a rapid and sustained response to cognitive behavioral therapy for bulimia nervosa (Bulik et al., 1999).

Only a few data are available on the personality of obese individuals as assessed by the TCI. Obese individuals in the community scored higher in novelty seeking and lower in persistence and self-directedness than non-obese individuals. They also scored lower in reward dependence and cooperativeness than obese individuals of a university weight management program (Sullivan et al., 2007). In a different study, obese patients with binge eating disorder (BED) had lower self-directedness than obese patients without BED (Fassino et al., 2002b), but both groups had higher scores of novelty seeking and harm avoidance, as well as lower scores of cooperativeness and self-directedness compared to controls (Fassino et al., 2002b). Finally, a study in children using the Junior TCI found a trend of lower persistence and higher novelty seeking in overweight compared to normal-weight children (Hwang et al., 2006). Limitations of TCI reports in obesity include small sample sizes in the majority of studies and lack of a comprehensive analysis of psychosocial variables in the population (Fassino et al., 2002b; Sullivan et al., 2007).

The present study was aimed to trace personality traits in a large group of obese women seeking treatment at eight Italian medical centers and in a control population without obesity, in order to define a possible specificity of temperament and character in relation to excess body weight. In the obese cohort, personality traits were also evaluated in relation to specific eating disorders frequently associated with obesity.

2. Materials and methods

2.1. QUOVADIS II study planning and protocol

The QUOVADIS II (QUality of life in Obesity: eVAluation and DIsease Surveillance II) is a purely observational study on personality, psychological well-being, body image and eating behavior set up in 2006 in obese patients seeking treatment at medical centers. It was conducted in eight Italian centers (Verona, Milan, Bologna, Ferrara, Florence, Rome) accredited by the Italian Health Service for the treatment of obesity. After enrollment, subjects were treated along the lines of the specific programs of the Centers, including dieting, cognitive behavioral therapy, and drugs.

The sample study included 586 women with obesity (body-mass index (BMI) $\geq 30\ kg/m^2$), consecutively seeking treatment. All cases, including those with binge eating, were eligible for the study provided they were not on active treatment at the time of enrollment and were in the age range between 25 and 65 years. To ensure that subjects were truly consecutive, the medical record number of the patients was monitored across sites.

The control group consisted of 185 normal weight women (BMI in the range 18.5–24.9 kg/m^2) in the same age range, with a score < 20 on the Eating Attitude Test (EAT) (to exclude participants with symptoms of eating disorder) (Garner and Garfinkel, 1979). All subjects of the control group were recruited among relatives and friends of the personnel participating in the study.

Data collection included a detailed case report form and a set of questionnaires for personality, psychological distress and eating behavior disorders. The protocol was approved by the ethical committees of the individual centers, after initial approval by the ethical committee of the coordinating center (Azienda Ospedaliera di Bologna, Policlinico S. Orsola – Malpighi). All participants gave written informed consent to participation. The investigation was carried out in accordance with the latest version of the Declaration of Helsinki.

2.2. Measures

2.2.1. Case report form

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

2.2.2. Weight and height

Patients were measured bare-footed and in underwear with a medical balance and a stadiometer. Weight changes were examined from baseline to 12 months.

2.2.3. Psychosocial assessment

Participants with obesity completed a battery of specific questionnaires used to detect personality, psychiatric distress, binge eating, night eating and body image uneasiness. The control subjects completed only the TCI and the EAT.

The TCI is based on a psychobiological model of personality (Cloninger et al., 1994), including four temperament dimensions (novelty seeking, harm avoidance, reward dependence and persistence) and three character dimensions (self-directedness, cooperativeness and self-transcendence). Novelty seeking reflects the degree of activation of exploratory activity. Harm avoidance describes the efficiency of the behavioral inhibition system. Reward dependence reflects the maintenance of rewarded behavior. Persistence expresses the maintenance of behavior as resistance to frustration. Self-directedness, cooperativeness and self-transcendence express the degree to which the self is viewed as autonomous, integrated as part of society and as integral part of the universe, respectively. Low self-directedness and cooperativeness are common dimensional patterns across personality disorder subtypes and strong predictors of a diagnosis of DSM axis II disorder (Cloninger et al., 1994). The TCI has good internal consistency (Cloninger et al., 1994; Sato et al., 1999), inter-tester reliability and test-retest reliability (Cloninger et al., 1994). It has been validated in its Italian version (Fassino et al., 2002a).

The Binge Eating Scale (BES) (Gormally et al., 1982) was used to assess the severity of binge eating. Its 16 items examine 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). A score ≥ 27 conventionally serves as a cutoff value for identifying the presence of severe eating disorder, compatible with binge eating disorder, whereas values ≤ 16 may be used as screening values to exclude binge eating (Greeno et al., 1995).

The Night Eating Questionnaire (NEQ) was used to assess the behavioral and psychological symptoms of the night eating syndrome (NES) (Allison et al., 2008). The NEQ is a 14-item questionnaire that assesses core features (e.g., percentage of calories consumed after dinner and frequency of awakenings and nocturnal ingestions) and associated symptoms of the night eating syndrome (e.g., cravings at night, insomnia, and disordered mood). The total scale exhibited adequate reliability ($\alpha = 0.70$) and a cut-off score of 30 can be used as a screening value predicting a high risk of NES (Allison et al., 2008).

The EAT was limited to the control population to rule out eating disorders (Garner and Garfinkel, 1979). The 26-item EAT (EAT-26) is a standardized measure of symptoms and concerns characteristic of eating disorders; it was the screening instrument used in the 1998 National Eating Disorders Screening Program and has been validated in its Italian version (Dotti and Lazzari, 1998). Studies have shown that values below 20 can reasonably exclude eating disorders, whereas values ≥ 20 may be referred for a diagnostic interview (Garner et al., 1982).

2.3. Statistical analyses

Descriptive statistics are presented by means (standard deviation) for continuous variables and by frequencies (percentages) for discrete variables. The Kolmogorov–Smirnov and Shapiro–Wilk tests indicated that demographic and clinical variables were not normally distributed. The Mann–Whitney test, χ^2 test or Kruskal–Wallis test were used for groups comparison, as appropriate.

General linear models were performed to analyze differences between groups, controlling for age and/or BMI.

A stepwise logistic regression analysis, adjusted for age and BMI, was performed in separate models to investigate the association of each personality dimension of the TCI (independent variables) with the presence of clinically significant binge eating (identified by BES values ≥ 27 as dependent variable) and night eating (identified by NEQ ≥ 30).