

# High frequency of psychopathology in subjects wishing to lose weight: an observational study in Italian subjects

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## Abstract

**Objective:** To investigate the frequency of psychiatric disorders in subjects wishing to lose weight categorized according to BMI.

**Design:** Cross-sectional study.

**Setting:** An academic outpatient clinical nutrition service in Italy.

**Subjects:** A total of 207 subjects (thirty-nine men and 168 women; mean age: 38·7 (SD 14·1) years) consecutively attending the study centre for the first time between January 2003 and December 2006.

**Results:** In the entire study group, eighty-three (40%) subjects had a psychiatric disorder according to criteria of the *Diagnostic and Statistical Manual of Mental Disorders*, fourth edition, text revision. Eating disorders were the most prevalent psychiatric condition (thirty-six subjects, 17·4%), followed by mood and anxiety disorders (9·7% and 8·7%, respectively). The frequency of psychiatric disorders among different BMI categories was as follows: 75·0% in underweight, 50·0% in normal weight, 33·3% in overweight and 33·3% in obese subjects.

**Conclusions:** Psychiatric disorders may be frequently found in subjects wishing to lose weight. Our results highlight the importance of psychiatric assessment especially in underweight and normal-weight subjects.

**Keywords**  
Psychological distress  
Body mass index  
Eating disorders

According to the National Institutes of Health (NIH) clinical guidelines on the identification, evaluation and treatment of overweight and obesity in adults, weight loss is recommended for subjects with a BMI of  $\geq 30$  kg/m<sup>2</sup> and for those with a BMI between 25 and 29·9 kg/m<sup>2</sup> with two or more risk factors<sup>(1)</sup>. However, there is evidence to suggest that the wish to lose weight extends to include normal-weight or underweight subjects, possibly for cultural, social or psychological reasons<sup>(2,3)</sup>. Of note, normal-weight dieters appear to be chiefly heedful of this behaviour through public health messages<sup>(3)</sup>. According to Italy National Statistics Agency (ISTAT) 2002 data, 6·2% of subjects in a representative sample of the Italian population were dieters, and almost half of them were of normal weight<sup>(4)</sup>. In an ISTAT 2005 report, weekly weight check procedures were more frequent in normal-weight (28·5%) than in overweight or obese women (22·5–22·7%)<sup>(5)</sup>.

The reasons why normal-weight subjects try to lose weight are not yet completely defined. A significant relationship between the wish to lose weight, body dissatisfaction and interpersonal distress has been reported<sup>(2)</sup>. Interestingly, dissatisfaction with weight is not limited to young women but has also been reported in middle-aged and elderly women<sup>(6)</sup>.

Earlier studies focusing on the relationship between the wish to lose weight and psychiatric or psychological conditions have mainly been focused on obese subjects<sup>(7)</sup>. Results have generally reported a higher frequency of psychiatric disorders in obese persons wishing to lose weight<sup>(8–10)</sup>. We therefore reasoned that the wish for weight reduction could be driven not only by a health behaviour but also by psychological distress or psychiatric disorders. Whether psychiatric diagnoses could be associated with the wish to lose weight in normal-weight or underweight subjects has not been previously addressed. The aim of the present study was to investigate the frequency of psychiatric diagnosis according to different BMI categories in all consecutive patients presenting to an outpatient clinical nutrition service with the wish to lose weight.

## Methods

The present observational study was cross-sectional in nature. Between January 2003 and December 2006, a total of 329 subjects presented consecutively to the Human Nutrition and Eating Disorders Research Centre, University

of Pavia, requiring a dietary treatment. The reasons for asking about the diet were assessed through a specific form, including the wish to lose weight (237 patients), the need for a medical nutrition therapy for a specific disease (seventy-six subjects) and nutritional counselling for pregnancy or exercise (sixteen subjects). All subjects wishing to lose weight ( $n$  237) were deemed to be eligible. Exclusion criteria were: pregnancy, severe physical illnesses (malignancies or severe organ failure) and inability to provide consent. Thirty subjects were unwilling to participate in the study. A total of 207 subjects were therefore included in the final analysis.

Weight and height were measured using standard techniques from which BMI was calculated. Patients were classified into four groups according to BMI: underweight (BMI < 18.5 kg/m<sup>2</sup>), normal weight (BMI = 18.5–24.9 kg/m<sup>2</sup>), overweight (BMI = 25–29.9 kg/m<sup>2</sup>) and obese (BMI ≥ 30 kg/m<sup>2</sup>)<sup>(11)</sup>. Diagnosis of Axis I and II psychiatric disorders was made by a board-certified psychiatrist according to criteria of the *Diagnostic and Statistical Manual of Mental Disorders*, fourth edition, text revision (DSM-IV-TR)<sup>(12)</sup>. The study procedures complied with the tenets of the Helsinki Declaration and the Institutional Review Board of the University of Pavia approved the protocol. All subjects gave their written informed consent. The main objective was to assess the frequency of psychiatric disorders in subjects wishing to lose weight across different BMI categories. Continuous data are presented as means and standard deviations and were compared across the study groups by using one-way ANOVA or the Student's *t* test, as appropriate. Categorical variables are shown as counts and percentages and compared across groups by using the  $\chi^2$  analysis. All computations were performed with the Statistical Package for Social Sciences statistical software package version 15.0

(SPSS Inc., Chicago, IL, USA). Two-tailed *P* values < 0.05 were deemed to be statistically significant.

## Results

The sociodemographic characteristics of the study patients according to different BMI categories are depicted in Table 1. A total of 207 subjects (thirty-nine men and 168 women, mean age: 38.7 (SD 14.1) years) were included in the present study. In the entire study sample, the mean BMI was 28.5 (SD 6.6) kg/m<sup>2</sup>. There were significant differences in marital and employment status according to BMI categories. No other significant differences were found.

In the entire study group, eighty-three (40%) subjects had a psychiatric disorder according to DSM-IV-TR criteria. The frequency of psychiatric diagnosis was significantly higher in women (44%, seventy-four subjects) than in men (23.1%, nine subjects;  $P$  < 0.05). Eating disorders were the most prevalent psychiatric disorders ( $n$  36, 17.4%), followed by mood disorders ( $n$  20, 9.7%) and anxiety disorders ( $n$  18, 8.7%). Only women were affected by eating disorders, and the distribution of the diagnosis was as follows: anorexia nervosa (AN) in seven patients (3.4%), bulimia nervosa (BN) in ten (4.8%), binge eating disorder (BED) in nine (4.3%) and other eating disorders not otherwise specified (EDNOS other than BED) in ten (4.8%) subjects. In patients with ED, there were nine who also met the criteria for a diagnosis in another major diagnostic category (four major depression, two anxiety disorders and three personality disorders plus major depression). Mood disorders (six cases, 15.4%) and anxiety disorders (three cases, 7.7%) were the only two diagnostic categories in men.

**Table 1** Sociodemographic characteristics of the study patients

Variables	Underweight		Normal weight		Overweight		Obese		<i>P</i> *
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Age (years)	27.5	7.6	32.6	12.3	38.8	13.3	44.1	14	<0.05
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
Gender									
Female	15	93.8	40	90.9	49	74.2	64	79.0	0.08
Total	16	7.7	44	21.3	66	31.9	81	39.1	
Education (years)									
0–8	3	18.8	9	20.5	19	28.8	24	29.6	0.56
9–13	10	62.5	26	59.1	33	50.0	48	59.3	
>13	3	18.8	9	20.5	14	21.2	9	11.1	
Marital status									
Married or living with a partner	5	31.2	15	34.1	44	66.7	58	71.6	<0.05
Separated, divorced or widowed	0	–	0	–	3	4.5	6	7.4	
Single	11	68.8	29	65.9	19	28.8	17	21.0	
Employment									
Student	8	50.0	15	34.0	11	16.7	3	3.7	<0.05
Unemployed/retired	0	0.0	4	9.1	5	6.7	7	8.6	
Employed	6	37.5	22	50.0	43	65.2	55	67.9	
Homemaker	2	12.5	3	6.8	6	9.1	14	17.3	

\*One-way ANOVA test for continuous variables and  $\chi^2$  test for categorical variables across the four BMI classes.

**Table 2** Frequency of psychiatric diagnosis across different BMI classes

Psychiatric diagnosis	Underweight (n 16)		Normal weight (n 44)		Overweight (n 66)		Obese (n 81)		Total (n 207)	
	n	%	n	%	n	%	n	%	n	%
Present										
Substance-related disorders	0	—	0	—	0	—	1	1.2	1	0.05
Anxiety disorders	1	6.2	3	6.8	5	7.6	9	11.1	18	8.70
Sleep disorders	0	—	0	—	0	—	1	1.2	1	0.05
Eating disorders	11	68.8	11	25.0	6	9.0	8	9.9	36	17.40
Mood disorders	0	—	4	9.1	10	15.2	6	7.4	20	9.70
Personality disorders	0	—	3	6.8	1	1.5	1	1.2	5	2.40
Psychiatric disorders due to general medical conditions	0	—	0	—	0	—	1	1.2	1	0.05
Schizophrenia and other psychotic disorders	0	—	1	2.3	0	—	0	—	1	0.05
None	4	25.0	22	50.0	44	66.7	54	66.7	124	60.00

$P < 0.05$ ,  $\chi^2$  test across different BMI categories.

The frequency of psychiatric disorders decreased significantly with increasing BMI categories ( $P < 0.05$ ; Table 2). The frequency of psychiatric disorders among underweight subjects was 75.0%. In particular, 68.8% of them had a diagnosis of eating disorders (43.8% AN, 6.2% BN and 18.8% EDNOS other than BED) and 6.2% had anxiety disorders. The frequency of psychiatric disorders in normal-weight subjects was 50%. Of note, 25% of normal-weight subjects had a diagnosis of eating disorders (13.6% BN, 9% EDNOS other than BED and 2.3% BED). The frequency of psychiatric disorders among overweight subjects was 33.3%. The frequency of eating, mood, anxiety and personality disorders in the overweight group was 9.0%, 15.2%, 7.6% and 1.5%, respectively. Among subjects affected by eating disorders, 4.5% were diagnosed with BN and 4.5% with BED. The frequency of psychiatric disorders in obese subjects was 33.3%. The most prevalent psychiatric disturbances were anxiety disorders (11.1%), eating disorders (9.9%) and mood disorders (7.4%). Among subjects affected by eating disorders, 6.2% suffered from BED and 3.7% from EDNOS other than BED.

## Discussion

In the present study, we found a significant proportion of normal-weight and underweight subjects who were wishing to lose weight (29% of the entire study sample). This finding is in keeping with previous preliminary observations<sup>(2,3)</sup>. The wish to lose weight in normal-weight subjects has been mainly reported in young women who appeared to be heedful of this behaviour by socio-cultural pressure<sup>(2,13)</sup>. However, the question as to whether the wish to lose weight may be related to the presence of overt psychiatric disorders remains to be established.

The main finding in the present study is the significant prevalence of psychiatric disorders (40%) in subjects who were wishing to lose weight, especially in underweight and normal-weight subjects. This was mainly driven by the prevalence of eating disorders, followed by mood and

anxiety disorders. It has been recently shown that socio-demographic data such as gender, educational factors, marital or employment status may influence the prevalence of psychiatric disorders<sup>(14)</sup>. In our study, however, we found no significant association between sociodemographic characteristics and the frequency of psychiatric conditions. In addition, the study of De Girolamo *et al.*<sup>(14)</sup> did not address the distribution of psychiatric diagnoses according to different BMI categories. The relationship between BMI and mental health has been investigated in the European Study on the Epidemiology of Mental Disorders (ESEMeD)<sup>(15)</sup>, which included the ISTAT findings in the Italian population. In keeping with other reports<sup>(8–10)</sup>, the ESEMeD study found that obese subjects were 30–40% more likely to suffer from one or more mental disorders compared with normal-weight subjects<sup>(15)</sup>. Although we have excellent epidemiological data on the prevalence of mental disorders in obese subjects<sup>(16–18)</sup> and in the general population<sup>(14)</sup>, less is known about outpatient populations and the distribution of psychiatric diagnosis according to DSM-IV-TR criteria<sup>(12)</sup> in normal-weight and underweight subjects who wish to lose weight. Ricca *et al.*<sup>(18)</sup> reported that obese patients seeking weight-loss treatment had a higher prevalence of depressive symptoms than normal-weight controls who were not weight preoccupied. The present study highlights the need for careful psychiatric assessment of underweight or normal-weight subjects wishing to lose weight. The results of our study should be interpreted within the context of its limitations. First, our sample is representative of consecutive patients attending an academic outpatient clinical nutrition service in Italy and thus may not be representative of the entire population wishing to lose weight. Second, our study was cross-sectional in nature and no inference can be drawn on the causal relationship between weight control and mental health. Third, we did not conduct a structured psychiatric clinical interview with normal-weight controls who were not weight preoccupied. We have therefore interpreted our findings in the framework of currently available epidemiological data, with special reference to Italy. These limitations

notwithstanding, our study also has some strengths. Psychiatric interviews were administered not only in obese patients but also in all subjects who were wishing to lose weight. In addition, all subjects presented spontaneously to our centre and volunteer bias can be reasonably excluded. The psychiatric interview was also administered as part of our standard diagnostic protocol.

There are two main results of our study that deserve consideration. First, the wish to lose weight is not limited to obese or overweight subjects. Second, normal-weight and underweight subjects wishing to lose weight show a significant prevalence of psychiatric disorders. This clearly warrants the need to increase awareness of psychiatric conditions not only in obese but also in normal-weight or underweight subjects who are weight preoccupied.

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