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## Research Article

# Anorexia Nervosa and Obesity: A Psychological Health Comparison

### Abstract

The aim of this pilot study was to compare psychopathological features and psychological health between women presenting anorexia nervosa (AN) and those presenting obesity (OB). Six AN patients (Body mass index: BMI <15) and six OB patients (BMI >40) completed Minnesota Multiphasic Personality Inventory-2 (MMPI-2), Toronto Alexithymia Scale (TAS-20), Beck Depression Inventory (BDI), the Symptom Checklist-90 (SCL-90) and the Eating Disorder Inventory (EDI-2). These instruments are self-administered questionnaires for adults. The women also provided information on their global functioning (GAF), according to DSM-IV, through a clinical interview. The AN patients expressed significantly more alexithymic symptoms (TAS-20), more psychological symptoms on the EDI-2 sub-scales, and lower global functioning (GAF) than the OB patients. There were no differences in depression rating or general psychopathology as measured by the BDI, SCL-90 or MMPI-2. The present results depict certain indications that the psychological health of the AN patients was more compromised than it was among the OB patients.

## Introduction

Patients presenting anorexia nervosa (AN) and those presenting obesity (OB) express marked differences in bodily appearance and shape, but these eating disorder patients, nevertheless, share several common features. Although in some quarters the presence of OB as an eating disorder may be denied, for the purposes of the present study and based on our own psychiatric convictions OB is regarded as a disorder with eating behavioral consequences. Both groups show markedly problems, symptomatically, with food intake and eating behaviour. This patient group is occupied also, in a variety of ways, with persistent thoughts concerning what to eat or not, the number of calories in-taken, slimming techniques and other related topics. Both groups of eating disorder patients are afflicted with poor physical health and accompanying complaints. Several studies have shown a U-or J-shaped relationship between Body Mass Index (BMI) and mortality, with individuals at the extremely low and the extremely high weight levels at increased risk for serious health problems (National Task Force on Prevention and Treatment of Obesity, Overweight, Obesity and [1]. Eating disorders imply critical threats to personal safety and constitute a growing problem, and seems to be overrepresented in adults with neuropsychiatric disorders compared with the general population [2-4], with links to childhood adversity [5,6]. Anorexia nervosa constitutes a psychiatric disorder with a prolonged course, severe medical and psychiatric morbidity, and often a severe extent of co-morbidity [7] and high levels of mortality. Obesity is not considered a psychiatric disorder, but rather a medical disorder with psychopathological eating behavior since it is not associated with consistent and adaptive behaviors and psychopathological features. It is well known, however, that women suffering from obesity often present psychological symptoms, such as anxiety and depressive symptoms [8-10].

Patients presenting eating, or eating-type, disorders often report

alexithymia, an inability to identify and describe their emotions and affective status [11,12]. They show a paucity of words expressing feelings and demonstrate difficulties in identifying and distinguishing feeling of physical sensations. Alexithymia and personal distress seem to predict the vulnerability features of Anorexia Nervosa (AN) with higher levels of personal distress in the latter linked to poor self-regulation and emotional awareness [13]. There is a high co-morbidity between the eating disorders (Lundblad et al., 2003), AN and OB, and anxiety and/or alexithymia disorders [14], moreover, AN patients display certain features similar to those abusing substances/exercise, through a 'narrowed' behavioral repertoire such that weight loss, food intake restriction, and excessive exercise interfere with other activities in a similar fashion to substance/exercise abuse [15]. Further, co-morbidity between AN, anxiety, depression and psychoactive substance use has been described [16]. It is likely that the disorder elevates anxiety, depression with stress presenting a predisposing factor to poorer health-related quality-of-life and social support [17]. The core affective processes that evolve into the development and maintenance of eating disorder remain relatively unknown although the contributions of alexithymia suggest an affective basis [18].

The purpose of the present study was to compare the psychopathological features of women diagnosed with either AN or OB using well-established instruments that included Minnesota Multiphasic Personality Inventory-2 (MMPI-2), Toronto Alexithymia Scale (TAS-20), Beck Depression Inventory (BDI), the Symptom Checklist-90 (SCL-90) with accompanying Eating Disorder Inventory (EDI-2) and the Global Assessment of Functioning Scale (GAF).

## Method and Materials

### Participants

The patient sample consisted of six women presenting AN [19], and with a BMI range of 14.3-14.9, who were consecutively assessed at Sahlgrenska University Hospital, at a special psychiatric clinic for

adult eating disorder patients and six women presenting OB [20], and with a BMI range of 42.0-58.7, who were assessed consecutively at the Department of Body Composition and Metabolism at the same hospital.

## Instruments

**The Minnesota Multiphasic Personality Inventory – MMPI-2:** The MMPI-2 is a structured personality test that assesses degree of psychopathology in terms of 10 different dimensions; hypochondrias, depression, hysteria, psychopathic deviate, masculinity-femininity, paranoia, psycho-asthenia, schizophrenia, mania and social introversion. The test is a true-false self-report questionnaire consisting of 567 statements. The responses of each individual tested are assumed to reflect that person’s conscious self- image. The test mainly consists of clinical scales and validity scales. The validity scales measure test-taking attitude and assess whether the individual being tested took a normal, honest approach to the test. These scales allow us to see whether the subject is feigning his/her responses in any way. The test-retest reliability of MMPI-2 ranges from 0.58 to 0.91 for women. More information about the test is given in Butcher and Williams’s book from 1992 [21].

**The 20 item Toronto Alexithymia Scale – TAS-20:** The TAS-20, which is considered the best existing measure of alexithymia, has demonstrated good reliability and validity. Alexithymia involves difficulties in identifying and describing emotions. The three central factors of TAS-20 are:

1. “difficulty identifying feelings”,
2. “difficulty in describing feelings to others”, and
3. “externally-oriented thinking” [22].

Each TAS-20 item was rated on a 5-point Likert scale with total scores ranging from 20-100. The cut-off point for alexithymia is  $\geq 61$ , which has been empirically established [23].

**The Symptom Check List (SCL-90):** The SCL-90 is a self-report instrument designed to assess general psychopathology. It contains 90 items, distributed over nine subscales, which are labelled somatization, obsession-compulsion, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation and psychoticism [24]. The SCL-90 has been widely used all over the world [25] and has been shown to have a good validity and reliability [26].

**The Beck Depression Inventory (BDI):** Level of depression was assessed using the 21-item Beck Depression Inventory (BDI) and the factors of BDI are dependency, self-criticism and efficacy. BDI is a self-report instrument as well and has good validity and reliability [27].

**The Eating Disorder Inventory (EDI):** The EDI is a self-report instrument widely used in studying eating disorders. The Swedish version of EDI-2 (Garner, 1991; Garner & Norring, 1994) includes 91 items distributed over eleven different scales: drive for thinness, bulimia, body dissatisfaction, ineffectiveness, perfectionism, interpersonal distrust, interoceptive awareness, maturity fears, ascetism, impulse regulation and social insecurity.

**The Global Assessment of Functioning (GAF):** Today, most patients who are referred to the psychiatric care system are being routinely assessed with the DSM system [19]. The Global Assessment of Functioning (GAF), is a numeric scale (0 through 100) used by clinicians to subjectively rate the social, occupational and psychological overall level of functioning of adults.

A non-parametric test (The Wilcoxon-Mann-Whitney test) was used to analyse for differences between the AN and OB groups of patients.

## Ethical statement

The research ethics committee at Sahlgrenska University Hospital, Göteborg Sweden, approved the present study. Patient’s consent (informed consent) was obtained from the patients. All the patients were informed that study results would be subjected to data analysis with the purpose of writing and publishing a research report.

## Results

AN patients showed evidence of psychopathological symptoms than OB patients. The former expressed significantly higher levels of alexithymia (TAS score = 66) than the latter (TAS score = 48,  $p < 0.05$ ), combined with significantly lower levels of global functioning (GAF score = 30) compared the OB patients (GAF score = 57.5,  $p < 0.01$ ). The general psychopathological problems include ineffectiveness, perfectionism, interpersonal distrust, interoceptive awareness, maturity fears, extreme abstemiousness, lack of impulse regulation and social insecurity. Furthermore, the AN patients (EDI-psych = 58,  $p < 0.05$ ) obtained higher scores on the EDI-psychopathology scale than the OB patients (EDI-psych = 19.5) but did not differ on the EDI-symptom scales. The AN patients (EDI-3 = 11,  $p < 0.05$ ) obtained lower scores on the EDI-3 scale than the OB patients (EDI-3 = 20.5), but higher scores on the EDI-5, EDI-6 and EDI-7 scales (Tables 1,2). The EDI-3 scale refers to “body dissatisfaction” whereas the EDI-5, EDI-6 and EDI-7 refer to “perfectionism”, “interpersonal distrust” and “interoceptive awareness”, respectively.

## Discussion

Individuals presenting AN and those presenting OB display marked problems in the management of food intake and eating behaviors. Nevertheless, AN, as distinct from OB, reflects one form of eating disorder as well as a psychiatric disorder according to ICD-10 and Axis 1 in DSM-IV. The ICD-10 defines obesity as a medical condition, expressed in eating disorder rather than a psychiatric

**Table 1:** Comparisons between AN and OB patients on the TAS, BDI, SCL and GAF instruments.

	Anorexia nervosa			Obesity			p-value
	Median	Min.	Max.	Median	Min.	Max.	
TAS	66*	57	77	48	45	69	0.045
BDI	23.5	12	42	18	1	40	0.38
SCL	144.5	24	199	95.5	9	150	0.2
GAF	30**	20	40	57.5	50	70	0.0036

\*\* $p < 0.01$ , \* $p < 0.05$ , Wilcoxon-Mann-Whitney U tests.

**Table 2:** Comparisons between AN and OB patients on the EDI-psych, EDI-symp and EDI-1 to EDI-11 scales.

	Anorexia nervosa			Obesity			p-value
	Median	Min.	Max.	Median	Min.	Max.	
EDI-psych	58*	17	104	19.5	6	52	0.03
EDI-symp	21.5	12	37	27	15	53	0.47
EDI-1	9.5	2	18	7.5	2	16	0.51
EDI-2	1	0	9	1	0	10	0.79
EDI-3	11*	2	16	20.5	7	27	0.03
EDI-4	12	3	20	7.5	0	16	0.29
EDI-5	7*	2	11	0.5	0	10	0.05
EDI-6	4.5*	2	8	1.5	0	7	0.05
EDI-7	13*	1	19	2	0	10	0.04
EDI-8	5	1	11	1.5	0	8	0.08
EDI-9	4.5	0	16	3.5	1	5	0.41
EDI-10	2.5	0	10	0	0	5	0.15
EDI-11	7	3	16	4	0	7	0.08

\*p <0.05, Wilcoxon-Mann-Whitney U tests.

disorder. In consideration of the background, it is interesting to observe that both groups in the present study scored high on the EDI-2 sub-scales for eating disorder symptoms and that no significant differences were found between the groups. The instrument EDI-2 was designed to assess eating disorders rather than obesity. Eating behaviour is subject to influences of a multitude of affect-modulating conditions in which individuals develop personal attributes and acquire attitudes and habits that may be life-long, unless altered by circumstance; the affective component of eating disorder and AN, in particular, has been shown [28]. AN patients expressed higher levels of “perfectionism”, “interpersonal distrust” and “interoceptive awareness”, respectively, compared to OB patients; these attributes appear to contribute to the psychopathological symptom profiles of AN. Contrastingly, OB patients expressed higher levels of “body dissatisfaction” which implies that they were aware that some self-alteration of their obese condition was a necessity from several health perspectives. As a measure aimed at facilitation of psychological and physical health, it would appear more appropriate to rescind control needs regarding food intake and eating behaviour than to abstain drastically from intake of necessary nutrients. The observation that body and weight concerns predicted AN diagnosis [28], implies that cognitive-emotions or selective attentional processes may either contribute to or bolster the disorder. Certainly, any need for control and a specific body shape and weight may in turn motivate dietary restraint and an operationalization into behavioural strategies and dietary rules that can either be successful (resulting in weight loss) or fail in implementation (subjective or objective binge eating episodes) arising, e.g. from failure to abide by dietary rules [29]. Normal social life, positive feelings and interest in other individuals is usually absent AN patients with a BMI >15 [30]. AN patients display impairments in several aspects of social cognition [31,32], with specific regard to social signals reflecting emotional states of those in their proximity [33,34] and an exaggerated tendency to observe body rather than eyes [35].

In the present study, AN patients expressed higher levels of alexithymic symptoms than the OB patients. It was observed previously [28] that AN patients expressed high levels of “Emotional

identifying”, “Emotional describing”, “Emotional orientation” and Total scoring on the TAS instrument concomitant with low levels of positive affect and higher levels of restraint, eating concern, shape concern, weight concern, higher global score on the EDI-2 and higher levels of negative affect. It was found also that the AN condition was predicted by three factors shape concern and weight concern whereas positive affect was counter-predictive [28]. In another previous study observing a different group of patients [36], it was indicated that AN patients displayed higher levels of negative affect and negative emotions, more stress and depression, greater sleeping problems, pain, and use of analgesic drugs and mood-enhancing drugs, together with lower levels of positive affect and positive emotions but higher levels of physical activity. Regression analysis indicated that the diagnosed AN condition was predicted by negative affect, sleeping problems, use of mood-enhancing drugs exercise frequency. It was concluded that excessive exercise combined with depression, anxiety, obsessive-compulsive and addictive behaviors and sleep problems rendered AN representative from a perspective of multiple co-morbidities, possibly exacerbated through recurring bouts of starvation diets. It is possible also that those individuals who are unequipped to retain affective balance, through the pressures of childhood adversity, under conditions of emotional upheaval remain at risk for development of AN [37].

## Limitations

Although the number of patients participating in the present study was small (n = 6), the statistical significances obtained with these result point towards some rather robust differences in psychopathology as expressed by AN and OB patients. Suffice it to say, the present findings are in agreement with those obtained previously with different samples of the patient groups.

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