

Cognitive-Behavioral Therapy for Group Assertive Training in outpatients with Eating Disorders: an Open Label Trial

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Abstract:

Poor assertiveness is a hallmark of Eating Disorders (ED) and it might play a role in etiology and maintenance of ED symptoms. Forty outpatients with Bulimia Nervosa, Binge-Eating Disorder or Not Otherwise Specified ED underwent a 10-week session Cognitive-Behavioral group Therapy (CBT) for assertiveness. Patients were assessed at baseline and after one and three months from treatment beginning. Regression analyses were conducted to assess predictors of outcome. From baseline to month 3, the proportion of patients free of ED symptoms increased while severity of symptoms decreased. Discomfort related to assertiveness decreased while probability of engage in assertive behaviors increased. Some beneficial effects on emotional control were observed. Furthermore, level of general assertiveness achieved after treatment predicted improvements in ED symptoms and emotion regulation. In conclusion, results provide preliminary evidence for the role of CBT group assertive training as an effective intervention for ED patients.

Keywords: assertiveness; eating disorders; binge eating disorder; bulimia nervosa; cognitive behavioral therapy; CBT

1. Introduction

People with a competent range of social skills have a variety of complementary abilities. The capacity to initiate and maintain a conversation, the adequate expression of one's own feelings and opinions, the ability to deal with criticism in interpersonal situations and to defend one's own rights and opinions in a respectful way of others' rights, as a whole, are known as assertiveness [1]. Assertive people are able to recognize their own needs, to affirm themselves with good chance to achieve their own goals, while maintaining positive relationships with others. In other words, the adoption of assertive behaviors allows the understanding and the communication of emotions, feelings and opinions to other people in a balanced way, without assuming passive or aggressive behaviors [1]. Poor assertiveness is a feature of patients affected by Eating Disorders (ED), especially Bulimia Nervosa (BN) and Binge-Eating Disorders (BED) [2–4]. Indeed, besides abnormal eating patterns, people affected by ED show reduced ability to express feelings, low ability to understand others' perspective [3], and a high self-directed hostility [5]. ED patients usually show difficulties in interpersonal relationships: interpersonal difficulties could be related to giving priority to other people emotions over their own feelings or to interpersonal distrust and conflicts with other people, considering at the same time the presence of specific personality characteristics that can be associated with ED, such as anxious-fearful traits, obsessive-compulsive or avoidant traits in AN and dramatic-erratic personality traits in BN and BED [6,7]. Due to poor assertiveness, they are likely to experience high levels of distress in human interactions [2,3]. Moreover, interpersonal difficulties are often associated with the occurrence of binge behaviors [8] and such difficulties, together with depressive and anxiety symptoms, might play a significant role in the etiology and maintenance of bulimic symptoms [9]. Raykos et al. [10] examined baseline interpersonal problems across eating disorder diagnoses and reported that more severe psychopathology was associated with significantly greater difficulty in socializing. Moreover, their findings showed that interpersonal problems such as difficult socializing and being assertive appeared to be unique risk factors for Eating Disorders.

With regards to treatment options for ED, besides the antidepressants fluoxetine which reduces binge behaviors in BN patients in the short term [11], the Cognitive Behavioral Therapy (CBT) represents the most effective therapy for BN and BED [12]. CBT for ED address not only ED symptoms but also other specific features such as mood intolerance, clinical perfectionism, low self-esteem or interpersonal difficulties [13]. Previous studies demonstrated the effectiveness of CBT on several outcomes, e.g. ED symptoms, psychosocial functioning and interpersonal problems: in particular, CBT techniques allow to address the overevaluation of shape and weight (core symptom in EDs), establishing a regular eating behavior and helping the patient engaging in the process of change. Furthermore, CBT training takes into consideration the

interpersonal life area, evaluating the potential role of the patient's relationships, which could favor the process of change or in contrast represent an obstacle to the healing process [4, 12-14]. Group and individual CBT for patients with Bulimia Nervosa revealed equivalent effects, though individual CBT seems to be more effective in maintaining abstinence from bulimic behaviors in the long term [15]. However, CBT is overall known to be effective in group settings as well [12, 16].

As stated before, focusing on problematic interpersonal features associated with ED is a useful and powerful strategy to treat these

conditions and obtain long-lasting amelioration of symptoms. An open trial of group CBT evaluating some interpersonal elements (such as assertiveness) in a sample of 29 patients, based on the work of Fairburn et al. [17] and Jones & Stone [18], showed an overall improvement in dimensional measures of bulimic attitudes and behaviors, in particular maintained at the 6-month follow-up. Moreover, statistically significant improvement in psychological functioning was evident for assertiveness [19]. Another open trial carried out on BN outpatients confirmed that a Combined Group CBT (CGCBT) with assertive training and self-esteem enhancement reduced binge-eating behaviors and improved social functioning [20].

Recently, authors have focused on exploring predictors of clinical outcome in ED [21–23] to target those variables that could improve ED symptoms, in order to enhance clinical interventions and protocols of care. From evidence, predictors of ED symptoms reduction were improvement in emotion regulation strategies [22], reduction in weight and shape concerns and reduction of depressed mood [21], concern over mistakes, perfectionism and mood intolerance [23]. To our knowledge, even though assertive trainings have been shown to improve ED symptoms in open trial studies [17–20], its specific role in predicting clinical improvement in ED symptoms and emotion regulation strategies has not been examined yet.

In the present study we delivered a CBT group training on assertiveness (not focused on specific eating disorder patterns) in order to improve ED symptoms (such as binge behaviors, unusual eating behaviors, disordered eating patterns etc.) and emotion regulation in outpatients with BN, BED, and other related disorders such as NOS eating disorder (EDNOS), and Night Eating Syndrome (NES). We evaluated the specific effect of the assertiveness module included in the CBT-Enhanced protocol treatment, as CBT-E can be considered a powerful treatment that can be used in outpatients with ED, as showed in previous studies. In fact, CBT-E allows to target perfectionism, to cope adequately with intense mood alterations (e.g. depression, anger and anxiety) and to work on low self-esteem and interpersonal difficulties. Especially for BN and BED, CBT techniques are considered as a first-line treatment [13-14, 24].

Furthermore, in order to assess predictors of outcomes, we expected: a) the general level of assertiveness achieved after intervention (3 months) to predict the severity of ED symptoms, over and above the severity of ED symptoms showed at baseline; b) the general level of assertiveness at 3 months to predict the ability of emotions regulation after treatment (3 months), over and above difficulties in emotion regulation strategies showed at baseline.

2. Materials and Methods

2.1. Participants

Patients were consecutively recruited among individuals referred for a psychiatric consultation from February 2012 until January 2014, to the Adult-Study and Assistance Unit for Eating Disorders of Bologna, Northern Italy. It is an Academic Outpatients Clinic specialised in the diagnosis and treatment of eating disorders in adult (≥ 18 years, Italian legal age); patients are followed regularly and consultations are held by a psychiatrist generally once a week, therefore the most severe cases are addressed in different and more intensive levels of care. Patients were asked to participate whether they met the following inclusion criteria (i) age ≥ 18 years, (ii) ability to provide an informed consent, and (iii) diagnosis of Bulimia Nervosa (BN), or Binge-eating Disorder (BED), or

NOS Feeding or Eating Disorder (EDNOS), according to DSM-IV criteria (DSM-IV criteria were used for all patients to maintain homogeneity in diagnosis, as the first patients were enrolled before DSM-V was published). Exclusion criteria were (i) current presence of psychotic symptoms, (ii) serious suicidal ideation, (iii) substance abuse, (iv) mental retardation, (v) poor understanding and difficulties in comprehension and speaking Italian, (vi) neurological disorders and/or severe or unstable medical conditions that could impair evaluations. An informed consent was signed by all participants at study's enrollment. The study was approved by the local ethical committee (Comitato Etico Interaziendale Bologna-Imola - CE-BI, approval code: CE07OS09). Out of 45 patients meeting the inclusion criteria, 40 accepted to take part to the CBT group training on assertiveness. The remaining 5 subjects did not accept because they felt uncomfortable in filling out the psychometric tests.

2.2. Evaluations

The diagnostic evaluation was performed by the Mini International Neuropsychiatric Interview (MINI) [25], a semi structured clinical interview which was administered once at the baseline. Other psychometric evaluations were administered at baseline and after 1 and 3 months from treatment beginning. As group sessions were weekly, at 1-month follow-up participants had already attended 4 sessions, while the 3-months follow-up was performed two weeks after the end of the treatment. Therefore, evaluations were made at baseline, during the training (month 1) and after the training (month 3). Evaluations included the Bulimic Investigatory Test of Edinburgh (BITE) [26], the Scale of Interpersonal Behaviour (SIB) [27,28] and the Difficulties in Emotion Regulation Scale (DERS) [29,30].

The Bulimic Investigatory Test of Edinburgh (BITE) is a questionnaire containing 33 items measuring presence and severity of bulimic symptoms and it consists of two subscales: the symptomatology scale (30 items), which measures the level of symptoms present and the severity scale (3 items) that provides a severity index. This questionnaire has a high internal consistency (Cronbach's alpha coefficient = 0.96). The BITE is a reliable and valid screening tool: when supported by a clinical evaluation it is suitable for a detailed definition of BN and BED [26]. The Italian version of BITE, as used in this trial, has proven good psychometric properties [31].

The Scale of Interpersonal Behaviour (SIB) questionnaire contains 50 items, 46 of which are classified into the following four categories of assertive responding: 1) Display of negative feelings (Negative assertion), 2) Expression of and dealing with personal limitations, 3) Initiating assertiveness, 4) Praising others and the ability to deal with compliments/praise of others (Positive assertion). In addition to these subscales, a fifth scale named General Assertiveness can be employed as an indication of a person's overall level of assertiveness across various situations and various types of assertive behaviour. The general (Overall) assertiveness score is obtained by summing all the 50 items. For each dimension, the SIB gives two types of information: the

importance of discomfort (anxiety/distress) associated with attempts of self-assertion in specific social situations (Discomfort scale) and the probability of engaging in a specific assertive response (Frequency scale). The Italian version of the questionnaire [27] shows robust psychometric properties, reliability and internal consistency (Cronbach's alpha coefficient = 0.84). Difficulties in emotion regulation were measured by the Italian version of the Difficulties in Emotion Regulation Scale (DERS) [29, 30]. The original 41 items covered six dimensions with good reliability (Cronbach's alphas > 0.80), resulting in a 36-item questionnaire. The dimensions reflected (a) problems of accepting emotional responses (Non-Acceptance), (b) problems engaging in goal directed behavior (Goals), (c) difficulties with impulse control (Impulse) in response to upsetting emotions, (d) lack of awareness of emotions (Awareness), (e) limited access to emotion regulation strategies (Strategies) in response to distress and (f) lack of emotional clarity (Clarity). Although the factor structure of the Italian validation of the DERS [30] did not perfectly overlap with the original one, the overall and subscales' internal consistency was high (Cronbach's alpha coefficient: 0.90).

Participants' opinion and degree of satisfaction regarding the training received was evaluated with no objective tool or scale but during ordinary follow-up clinical interviews held by the referent physician of the clinic.

2.3. Experimental Treatment: Assertiveness Training

The participants underwent the CBT training in groups of about 7 people. The training consisted in 10-weeks group sessions: each session was 90 minutes long and it was held weekly by a trained cognitive-behavioral psychotherapist with previous experience in individual and group CBT treatment of ED (C.S.). The psychotherapist was blind to the participants' clinical diagnosis and symptoms severity and was otherwise involved neither in the enrollment procedure nor in test administration. The following CBT techniques were used during the training sessions: psychoeducation, cognitive restructuring of distorted thinking, interpersonal skills training, role-playing and problem-solving [32].

Therefore, the outcomes of the assertiveness activities were (1) to promote and raise awareness of oneself and one's interpersonal difficulties, (2) to deal with emotional conflicts, (3) to recognize one's own behavioral style, (4) to achieve a balanced and constructive behavior without connotations of passivity and/or aggression, (5) to be able to effectively communicate with other people improving interpersonal skills, (6) to increase self-esteem and self-efficacy, thereby reducing the symptoms of anxiety related to discomfort in relationships.

All procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975 and its most recent revision. The study was approved by the local ethical committee (Comitato Etico Interaziendale Bologna-Imola - CE-BI, approval code: CE07OS09).

2.4. Statistical Analysis

All statistical analyses were performed by SPSS for Windows, 17th version [33]. Simple linear analyses were performed by the Chi-sq test, the Student's T-test and General linear model (GLM), within subjects contrast, depending on the nature of the variables. According to power

calculation, with a significance level of 0.05, on a sample size of 40 patients we were able to detect medium-large effect size of $w=0.45$ in Chi- sq analysis ($df=1$), with a sufficient power of 0.80, and medium effect sizes of $f=0.23$ in GLM for Repeated Measures Model within subjects contrasts. In addition, in order to assess predictors of outcomes (severity of ED symptoms and emotional dysregulations) regression analyses were conducted.

3. Results

3.1. Socio-Demographic Characteristics of the Study Population

The socio-demographic characteristics of the sample are summarized in table 1. As shown in Table 1, the experimental group was composed by 40 patients with ED; 97.5% of patients were Italian, while 87,5% were females. 80% of the patients sample was living in urban areas. Mean age of the experimental group was 47 years, with a baseline BMI of 35.3 Kg/m². In the whole sample, 65% of patients suffered of BED, 17.5% of BN, 10% of EDNOS and 7.5% of NES. Five of 40 patients (12.5%) were subjected to bariatric surgery and 23 patients were receiving psychotropic drugs (57.5%).

| Variable | Mean (SD ^a) |
|----------------------------------|-------------------------|
| INITIAL BMI (Kg/m ²) | 35.3 (10.1) |
| AGE (yy) | 47.4 (11.2) |
| Variable | N (%) |
| ITALIAN ORIGIN | 39 (97.5) |
| FEMALE GENDER | 35 (87.5) |
| LIVING IN AN URBAN AREA | 32 (80.0) |
| MARITAL STATUS | |
| Married/Living with partner | 21 (52.5) |
| Separate/Divorced | 7 (17.5) |
| Single | 12 (30.0) |
| QUALIFICATION | |
| Lower school diploma | 15 (37.5) |
| Secondary school diploma | 18 (45.0) |
| | |
| University Degree | 7 (17.5) |
| EMPLOYMENT | |
| White collar | 20 (50.0) |
| | |
| Blue collar | 15 (37.5) |
| Unemployed | 5 (12.5) |
| EATING DISORDERS | |
| Binge Eating Syndrome | 26 (65.0) |
| Bulimia Nervosa | 7 (17.5) |
| Not Otherwise Specified | 4 (10.0) |
| Night Eating Syndrome | 3 (7.5) |

| | |
|--------------------|-----------|
| BARIATRIC SURGERY | 5 (12.5) |
| PSYCHOTROPIC DRUGS | 23 (57.5) |

Table 1. Socio-demographic characteristics of the study population (N=40).

A Standard Deviation

3.2. Psychometric Evaluations During CBT Group Therapy for Assertiveness

At the BITE, the proportion of patients without eating symptoms increased during and after the training from 10% (baseline), up to 35.9% (month 3). As shown in table 2A, between baseline and month 3

participants with highly severe symptoms decreased from 22.5% to 10.3%, even though a significant difference could be observed only considering the severity of symptoms after the first month of treatment (Chi-sq=4.48 df=1 p=0.034).

However, comparing patients who are free from symptoms with those reporting ED symptoms (unusual eating habits and highly disordered eating pattern together), a significant overall decrease could be detected in the number of patients reporting symptoms (Chi-sq=7.98 df=2 p=0.018), especially comparing subjects at baseline and at month 3 from treatment initiation (Chi-sq=7.87 df=1 p=0.005).

Findings show that, during the group CBT, the number of patients reporting ED symptoms decreased over time, while patients reporting no symptoms at the BITE increased. Specifically, 26% of the patients reporting ED symptoms at baseline had no more ED symptoms at the end of the treatment (3 months after treatment beginning). Similarly, as regards the severity of symptoms, the number of patients with clinically relevant or severe symptoms decreased over time, while the number of patients with no clinically relevant symptoms increased. Overall, 24% of the patients with clinically relevant symptoms at baseline showed symptoms that were no more clinically relevant at the BITE at the end of the training.

| | Baseline | Month 1 | Month 3 ^b | Baseline vs. month 1 | | | Month 1 vs. month 3 | | |
|----------------------------------|-------------|-------------|----------------------|----------------------|---------|----|---------------------|---------|----|
| | N (column%) | N (column%) | N (column%) | Chi-sq | P-value | df | Chi-sq | P-value | df |
| BITE SCALE | | | | | | | | | |
| SYMPTOMS | | | | | | | | | |
| No ED | 4 (10.0) | 8 (20.0) | 14 (35.9) | | | | | | |
| Unusual eating habits | 20 (50.0) | 19 (47.5) | 14 (35.9) | 1.19 | 0.276 | 1 | 2.38 | 0.123 | 1 |
| Highly disordered eating pattern | 16 (40.0) | 13 (32.5) | 11 (28.2) | 1.62 | 0.203 | 1 | 1.47 | 0.360 | 1 |
| SEVERITY | | | | | | | | | |
| Not clinically relevant | 17 (42.5) | 27 (67.5) | 24 (61.5) | | | | | | |
| Clinically relevant | 14 (35.0) | 7 (17.5) | 11 (28.2) | 4.48 | 0.034 | 1 | 1.05 | 0.305 | 1 |
| High severity | 9 (22.5) | 6 (15.0) | 4 (10.3) | 2.07 | 0.15 | 1 | 0.17 | 0.682 | 1 |

Table 2A. Psychometric evaluations before, during and at the end of the assertiveness training: BITEscale

Missing info for 1 subject

Table 2B shows how Distress at the SIB diminished in 4 out of 5 dimensions (Negative Assertion, Expression of and dealing with personal limitations, Initiating Assertiveness, General Assertiveness) both after 1 month and after 3 months from treatment beginning. Similarly, the frequency of assertive behaviors increased. In particular, table 2B shows significant results for

Negative Assertion (Discomfort and Frequency Scale), Initiating Assertiveness (Discomfort Scale) and Positive Assertion (Frequency Scale). At the DERS, Goals scale scores improved significantly between baseline and month 1 and such improvement was confirmed at month 3 (F-value=3.899 df=2 p=0.026). Awareness decreased as well across time, even if the result did not appear to be statistically significant.

| | Baseline | Month 1 | Month 3 ^b | GLM | | |
|---|-------------|-------------|----------------------|---------|---------|----|
| | Mean (SD) | Mean (SD) | Mean (SD) | F-value | p-value | df |
| SIB SCALE | | | | | | |
| DISCOMFORT SCALE | | | | | | |
| Negative assertion | 56.3 (12.5) | 51.6 (12.0) | 49.1 (13.2) | 6.681 | 0.003 | 2 |
| Expression of and dealing with personal limitations | 59.8 (14.4) | 56.4 (15.6) | 55.1 (15.1) | 1.420 | 0.250 | 2 |
| Initiating assertiveness | 58.0 (13.2) | 54.7 (13.2) | 53.3 (14.3) | 3.982 | 0.024 | 2 |
| Positive assertion | 57.7 (13.5) | 58.2 (13.6) | 57.1 (13.8) | 1.323 | 0.275 | 2 |
| General Assertiveness | 59.0 (13.3) | 54.1 (12.5) | 54.5 (15.5) | 4.284 | 0.19 | 2 |
| FREQUENCY SCALE | | | | | | |
| Negative assertion | 46.5 (11.4) | 46.6 (11.4) | 54.1 (11.0) | 6.729 | 0.002 | 2 |
| Expression of and dealing with personal limitations | 43.0 (12.0) | 46.2 (15.5) | 48.6 (12.5) | 1.409 | 0.253 | 2 |
| Initiating assertiveness | 42.8 (10.4) | 45.0 (12.3) | 50.7 (12.9) | 2.383 | 0.102 | 2 |
| Positive assertion | 47.0 (10.1) | 51.5 (13.8) | 52.0 (12.6) | 3.530 | 0.036 | 2 |
| General Assertiveness | 48.4 (18.1) | 50.8 (13.0) | 50.2 (11.2) | 1.623 | 0.206 | 2 |
| DERS SCALE | | | | | | |
| Non-Acceptance | 17.8 (6.2) | 14.7 (6.9) | 14.6 (5.2) | 2.543 | 0.087 | 2 |
| Goals | 16.8 (5.0) | 14.5 (5.3) | 14.1 (5.7) | 3.899 | 0.026 | 2 |
| Impulse | 21.5 (3.7) | 21.2 (4.0) | 21.2 (4.2) | 2.269 | 0.112 | 2 |
| Awareness | 14.4 (6.2) | 13.7 (5.9) | 12.6 (5.1) | 1 | 0.374 | 2 |
| Strategies | 13.5 (3.5) | 13.7 (3.6) | 12.8 (2.7) | 2.053 | 0.137 | 2 |
| Clarity | 10.2 (3.5) | 11.0 (2.7) | 10.6 (3.1) | 2.711 | 0.075 | 2 |

Table 2B. Psychometric evaluations before, during and at the end of the assertiveness training: SIB and DERS scale

missing info for 1 subject

3.3. Predictors of Outcomes (ED symptoms and emotional deregulation)

A logistic regression analysis was conducted to assess assertiveness as a predictor of improvement in ED symptoms. In the first step, the severity of bulimic symptoms showed at baseline (as designated by the overall score of BITE) was entered as an independent variable and was found to be a significant predictor of severity of bulimic symptoms assessed at 3 months (dependent variable). Subsequently, the overall level of assertiveness achieved after treatment (measured by the fifth scale of the SIB) score was added in the second step and was found to significantly account for bulimic symptoms, in addition to the variance explained by bulimic symptoms evaluated before treatment. A closer inspection of the final equation in the analysis revealed that both measures of bulimic symptoms at baseline and level of assertiveness achieved after treatment were significant predictors of severity of bulimic symptoms at 3 months.

| Steps | B | SE | Sig | Exp (B) | 95% CI |
|---------------|------|------|-----|---------|--------------|
| 1- BITE (bl) | 1.7 | .89 | .05 | 5.5 | 0.96 - 31.43 |
| 2- BITE (bl)/ | 2.68 | 1.16 | .02 | 14.6 | 1.5 - 143.34 |
| SIB (3 month) | .08 | .04 | .05 | 1.08 | 1 - 1.17 |

Table 3. Logistic regression analysis with ED severity symptoms at 3 months as the dependent variable and ED severity symptoms at baseline and general assertiveness at 3 months as independent variables in ED sample.

In addition, a hierarchical linear regression analysis was conducted to assess assertiveness as predictor of improvement in emotion regulation strategies. In the first step, emotion dysregulation showed at baseline (as designated by the overall score of DERS) was entered as an independent variable and was found to be a significant predictor of emotion dysregulation at 3 months (dependent variable). Subsequently, the overall level of assertiveness achieved after treatment (measured by the fifth scale of the SIB) was added in the second step and was found to significantly account for emotion dysregulation at 3 months, in addition to the variance explained by emotion dysregulation assessed at baseline. A closer inspection of the final equation in the analysis revealed that both measures of emotion dysregulation at baseline and level of assertiveness achieved after treatment were significant predictors of improvements in emotion regulation strategies at 3 months.

| Steps | B | SE | t | sig | 95% CI lower-upper |
|---------------|------|-----|------|-----|--------------------|
| 1- DERS (bl) | 0.59 | .13 | 4.63 | .00 | .33 - .84 |
| 2- DERS (bl)/ | .49 | .12 | 4.01 | .00 | .24 - .75 |
| SIB (3 month) | .41 | .17 | 2.37 | .02 | .05 - .76 |

Table 4. Hierarchical regression analysis with Emotional Deregulation at 3 months as the dependent variable and Emotional Deregulation at baseline and general assertiveness at 3 months as independent variables in ED sample.

3.4. Evaluations by Patients

Overall, the feedback of the participants about the assertiveness training was very positive: they all became more aware of their interpersonal difficulties and at the end of the treatment they were able to recognize how their difficulties could influence their ED symptoms and how to manage them.

4. Discussion

Results provide preliminary evidence for the efficacy of the assertive training in reducing ED symptoms in patients affected by binge eating (BED), bulimia (BN) and related ED such as NOS eating disorders (EDNOS) and Night eating syndrome (NES). Moreover, it seems to improve specific dimensions of interpersonal and assertive behavior.

4.1. Effect of the Assertive CBT Group on Eating Disorder Symptoms

Our results are consistent with previous findings showing that unspecific training for assertive skills is as effective in reducing symptoms severity as specific interventions focused on symptoms of BN [34]. Furthermore, they are consistent with studies suggesting that the improvement of assertiveness correlates with a natural improvement of eating patterns, as found in girls and young women [35,36]: low assertiveness has been shown to be related to eating problems and interventions on both self-esteem and interpersonal difficulties have been shown to reduce disordered eating behaviors.

Since the intervention was specifically focused on assertiveness, the decreasing discomfort observed in the patients enrolled associated with assertive behaviors and the increasing probability to engage in assertive behaviors together with the improvement of symptoms, suggests the role of poor assertiveness as a potential risk factor for BN, BED and other related disorders [2–4].

4.2. Effect of the Assertive CBT Group on Assertiveness

According to our data, discomfort associated with assertive behaviors decreased at 3 months, though the probability of engaging in assertive behaviors did not change significantly overall.

The main change observed was related to discomfort associated with Negative assertion, i.e. displaying negative feelings in situations in which the individual have to request change in another person's annoying behaviour, have to stand up for his/her rights in a public situation, have to take initiative to resolve problems and to satisfy his/her needs or have to refuse requests.

Another interesting result for the patients' interpersonal skills was observed on Initiating assertiveness, i.e. introducing oneself, starting a conversation with a stranger or a group of strangers and expressing one's own opinion. Discomfort decreased during and after the treatment, and the probability to engage in these assertive behaviors increased after the treatment. Discomfort and probability of Expression and dealing with personal limitation decreased and increased respectively after treatment. Similar findings were obtained in several trials testing multidimensional interventions that included assertive training [19, 37–39].

4.3. Effect of the Assertive CBT Group on Emotion Regulation

Results show that even though our intervention was not strictly focused on emotion regulation skills, the assertive training had positive results on some dimensions of emotion regulation. Difficulties in emotion regulation have been associated with emotional eating in obese bariatric surgery candidates [40,41] and in people suffering from ED [42–45], in particular in Anorexia Nervosa [46,46–50], BED [51–54] and BN[46,52,55].

In the last decade, among novel treatments for ED, some approaches have been developed to specifically address emotion regulation, especially for BN and BED [56]. According to a recent review of the literature [57], dialectical behavior therapy (DBT), which specifically address emotion

deregulation, is effective in addressing ED and their symptoms. However, improvement in emotion regulation capabilities as a driving element for ED symptoms reduction is not fully supported and the beneficial effects seem not to be maintained in the long term [58]. In our sample, training on assertiveness suggest improvement on some dimensions of the emotional control (Non-Acceptance and Goals scales scores in particular), contributing potentially to the reduction of symptoms severity and frequency in BN and BED patients.

4.4. Predictors of Outcomes

In our study we aimed at assessing the impact of assertiveness on clinical improvements, in particular ED symptoms and emotion deregulation. Findings have shown how the level of assertiveness achieved after treatment could predict a reduction in bulimic symptoms, emotion deregulation and severity (as showed for both BITE and DERS at baseline).

4.5. Limitations of the Study

Overall, the results of the present study should be taken in the light of some important limitations. Firstly, patients were already receiving a psychotherapeutic and/or psychopharmacological intervention. The effect of previous treatment may have influenced the group training results. However, this represents indeed what happens in routine clinical practice and increases the external validity of our study.

Nonetheless, even though all subjects were already under treatment, a positive effect of the assertiveness training could be observed on ED symptoms, suggesting that it may be an effective strategy to improve the standard individual psychological and/or pharmacological treatment.

Another limitation which may be partially explained by the point discussed above is the high percentage of patients that, at baseline, were classified as not having clinically relevant ED symptoms (10%) and/or not of clinically relevant severity (42.5%). Nevertheless, all the patients enrolled received a structured clinical diagnostic interview (MINI), beside the BITE assessment, to ensure the presence of a current ED: they were enrolled in the study only if satisfying criteria for a current ED were present.

The Italian version of the BITE has proven good psychometric properties and good sensitivity for BN, but it lacks accuracy in detecting some ED such as anorexia, NES and EDNOS. This might explain the inclusion of patients with no or not clinically relevant symptoms, due to the BITE use. However, it remains one of the most consistent, valid and reliable questionnaires to detect altered eating behaviors.

Nevertheless, the specificity of our sample and the relative overall low severity of symptoms should be taken into account as a potential confounder, as well as a limitation for comparative purposes. Furthermore, the sample size was small (n=40) and we were able to detect only medium-large effects on the presence and the severity of symptoms before, during and after treatment, and medium effect sizes on continuous evaluations. This may explain the low statistical significance of the results obtained and the potential lack of detection of smaller effects. On the other hand, for the same reason, the results obtained may be considered clinically significant, even though the lack of correction for multiple testing may also increase the detection of false positive findings.

Furthermore, as we limited our assessment to 3 months after treatment beginning (the last observation (3rd month) was only 2-weeks after treatment ending) we are able to suggest that the assertiveness training is of some effectiveness for ED only in the short term. Longer follow-ups are needed to evaluate possible maintenance of the observed beneficial effects.

Finally, we point out that the present study is an open label trial therefore lacking a control group and that patients' gender was not taken into account in the analysis. Results must be considered in the light of these limitations.

5. Conclusions

In conclusion, this study suggests that CBT for group assertive training could be an effective tool to improve ED symptoms and emotion regulation strategies in outpatients affected by BED, BN and related ED (NOSED and NES), at least over a short period. Though, the present study provides only preliminary evidence and randomized controlled trials are necessary to confirm our results.

Furthermore, our findings showed how assertiveness has a potential role in predicting clinical improvement: poor assertiveness could be considered as a key feature of ED and consequently we highlight with the present study the importance of focusing on this ability during interventions on this clinical population.

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