Original article

Comparative study of cognitive-behavioral psychotherapy and nutritional support in patients with different types of eating disorders

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A B S T R A C T

Background and objective: There are several psychological approaches to treat ED with efficacy being revealed by empirical research; however none of them are universally accepted. The objective was to compare response to Cognitive Behavioral Therapy in patients with different clinical forms of Eating Disorders.

Material and method: Seventy-four patients diagnosed with eating disorders, 32 with Anorexia nervosa (AN), 19 with Bulimia nervosa (BN) and 23 with Eating disorders not otherwise specified (EDNOS) were included. This is a prospective and comparative study. Patients were treated by psychotherapy, nutritional treatment and pharmacotherapy.

Results: The recovery rates in the groups of patients with AN, BN and EDNOS were 14 (43.7%), 8 (42.1%), 10 (43.4%), respectively, p > 0.05. The rates of improvement were 14 (43.7%), 10 (52.6%), 12 (52.1%) for AN, BN and EDNOS, respectively, p > 0.05. Finally, the rate of patients who had poor outcome were 3 (9.3%), 1 (5.2%), and 1 (4.3%), p > 0.05, for AN, BN, and EDNOS, respectively. Cox regression analysis showed that the age of disease onset and no use of psychotropic drugs predicted a good response in patients with ED.

Conclusions: The treatment response to Cognitive Behavioral Therapy, nutritional support and psychotropic drugs in the majority of patients was favorable and similar in most patients with different types of Eating Disorders. Furthermore, a young age and no use of psychotropic drugs predict a favorable outcome in patients with ED.

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Estudio comparativo de psicoterapia cognitivo-conductual y terapia nutricional en pacientes con diferentes tipos de trastornos de la conducta alimentaria

R E S U M E N

Fundamento y objetivo: Hay diferentes aproximaciones psicológicas para tratar los trastornos de la conducta alimentaria (TCA) que estudios empíricos han demostrado eficaces, sin embargo, ninguna de ellas está aceptada de manera universal. El objetivo fue comparar la respuesta a la terapia cognitivo-conductual en pacientes con diferentes formas clínicas de TCA.

Material y método: Setenta y cuatro pacientes con diagnóstico de TCA, 32 con anorexia nerviosa (AN), 19 con bulimia nerviosa (BN) y 23 con trastornos alimentarios no especificados (TCANE), fueron incluidos. Se trata de un estudio prospectivo y comparativo. Los pacientes fueron tratados con psicoterapia, tratamiento nutricional y farmacológico.

Resultados: La tasa de recuperación en los grupos de pacientes con AN, BN y TCANE fueron 14 (43,7%), 8 (42,1%) y 10 (43,4%), respectivamente (p > 0,05). Las tasas de mejoría fueron 14 (43,7%), 10 (52,6%) y 12...
Introduction

Eating disorders (ED) include anorexia nervosa (AN), bulimia nervosa (BN) and eating disorders not otherwise specified (EDNOS). In recent decades, ED has become a major challenge for health care due to the increase of its incidence and prevalence, mainly in EDNOS.

There are several psychological approaches to treat ED with efficacy being revealed by empirical research; however none of them is universally accepted, which could be explained because each particular case requires an adaptation of these techniques taking into account the characteristics of each patient and the environment. It is well known that ED are diseases with a multifactorial psychopathological basis which affect the nutritional status and the functioning of all the organs and systems of the body; therefore, the best approach should include different disciplines to treat all aspects of the problem. Most experts involved in the treatment of eating disorders work in interdisciplinaries that have a common denominator, namely, solving the conflicts that lead to disturbances in eating behavior through nutritional rehabilitation and psychotherapy. Some patients prefer individual psychotherapy, while others prefer group psychotherapy, in which they can share experiences with other patients with similar characteristics.

There are numerous psychotherapeutic approaches for treating ED, but none of them is recommended across all the different eating disorders. Cognitive behavioral therapy is reasonably effective to treat patients with BN and Binge eating. The situation for AN and EDNOS is less conclusive, even though the available data support the use of CBT also in AN and EDNOS.

The aim of the present exploratory study was to compare the treatment response in patients with AN, BN and EDNOS treated with a cognitive-behavioral psychotherapy together with nutritional support and to determine predictive variables of the outcome in these patients.

Material and methods

Participants

Inclusion criteria: Incident cases of AN, BN and EDNOS diagnosed according to criteria from the American Psychiatry Association (APA), of both genders, aged 15 years old and over, attended at the outpatients Eating Disorders Unit of the University Hospital of Vigo, were included in the study; the patients were followed up for at least 3 years after treatment and the study duration was from January 2005 to December 2011. Some patients required periods of inpatient treatment when their outpatient treatment failed or had severe electrolyte imbalance, cardiac arrhythmias, physiological instability, food refusal, inability of the family to support recovery, uncontrolled binge eating and vomiting, medical complications of malnutrition, and suicide risk.

Exclusion criteria: patients with a coexisting axis I psychiatric disorder that precluded eating disorder-focused treatment as well as pregnant or lactation patients.

Diagnostic criteria

Clinicians conducted an unstructured interview using the ED diagnostic criteria from the APA. The questionnaires used in the evaluation were the Eating Attitudes Test 26 (EAT 26) and the Questionnaire of Eating and Weight Patterns Revised (QEWPR). Design: this was a prospective and comparative study.

Study variables: demographic variables (gender, age), anthropometric variables (height, weight, BMI), period of time before diagnosis, presence of family history of ED (yes or no), ED clinical form (AN, BN or EDNOS), periods of inpatient treatment (yes or no), psychopharmacological treatment and the treatment outcome.

Intervention

All patients were treated following the regular practice or our unit which consists of psychotherapy, nutritional treatment and pharmacotherapy.

Psychotherapy: Cognitive-Behavioral therapy (CBT) according to Williamson’s approach, administered by the same psychologist in individual sessions, using the cognitive restructuring, self-reports, stimulus control, extinction of habits and inappropriate behaviors and differential reinforcement of appropriate behaviors. The therapist led to the patient to change their thinking and behavior.

Nutritional therapy: The aim was to return the patients to their normal habits and body weight. Patients with AN were submitted to a gradual increase of caloric intake, used enteral and parenteral artificial nutrition according to patients’ requirements. In contrast, in the group of patients with BN and EDNOS, the objectives of nutritional therapy were to lose weight and maintain it since most of these patients had overweight or were obese. These patients were treated with individualized dietary recommendations based on a schedule of meals, portion size and the distribution of the essential elements in each meal.

Psychiatric intervention: the psychiatrist of the team confirmed the diagnosis of ED in all the patients. Patients with comorbidities such as anxiety or depression were evaluated and treated by him. He prescribed the appropriate psychotropic drugs for each patient requiring them.

The nutritional and psychiatric treatments were administrated at regular intervals, according to our clinical practice; initially, each patient was evaluated every three weeks, and then, according to their need, this period was extended.

Outcome of patients

We considered the following treatment outcome: Recovery, Improvement or Partial Remission, Poor Outcome, and Mortality.
according to Kordy et al. consensus.\(^5\) Recovery or full remission requires a psychological (for EAT 26 test less than 20 points and in QEEBP-R test any positive item for BN and binge eating disorder) and nutritional (muscle weakness, depression, anemia, fatigue, mouth lesions, edema, low blood pressure, etc.) symptom-free status, with a normal lifestyle according to the patients' family, social and professional conditions, reestablishing their previous menstrual cycles and a BMI within the normal range (from 19 to 25 kg/m\(^2\)) only for AN, at least twelve months after the treatment was terminated. Improvement or partial remission was defined as a subclinical symptomatic status where symptoms are less severe but have not improved enough to achieve a symptom-free status, and it is compatible with a normal life style; we also included in this category relapses, defined as returning to full symptomatic status after being in full recovery. Poor Outcome is characterized by the persistence of clinical manifestations of ED which are incompatible with a normal life style.

Data analysis

A per-protocol analysis was performed. Continuous variables were expressed as mean ± standard deviation and categorical variables as percentages, differences between continuous variables were tested by one-way analysis of variance (ANOVA) when the distribution of the variables were normal by Kolmogorov–Smirnoff test; Tamhane or Bonferroni post hoc tests were applied depending of the homogeneity of the variance to correct for multiples comparisons. Non-parametric U Mann–Whitney test was used if distribution of the data was not normal. Chi-square or Fisher's exact test were used to compare categorical variables. The anthropometric variables were recorded at the first evaluation which occurred immediately before the start of treatment and at the final evaluation when the study ended. To establish variables with prognostic value the whole sample of patients (AN, BN and EDNOS) was considered. First, the study variables were submitted to univariate analysis, being recovery the dependent variable and age, time of evolution, body weight, BMI, drug-therapy and periods of inpatient treatment the independent variables. Then, a multi-variable regression analysis (Cox proportional hazards model with forward conditional selection of variables) was performed on those variables showing significance in the univariate analysis. Statistical significance was set at \(p < 0.05\) and the statistical analyses were carried out using the SPSS v. 17.0 software package.

This study was approved by the local Ethical Committee. All participants gave their informed consent.

Results

Seventy-seven patients with ED were initially included in the present study. Three (4%) out of 77 abandoned the study for different reasons: one changed her address and the other two because they did not agree with the treatment proposed. As a consequence, these patients were excluded from the final evaluation.

Seventy-four patients, 66 (89%) females, completed the treatment and the follow up period. They were aged 23.7 ± 9.05 years, ranging from 15 to 53 years. Thirty-two (43.2%), 19 (25.6%) and 23 (31%) had AN, BN and EDNOS, respectively. In Table 1 the main characteristics of the three groups are reported, showing significant differences regarding to the gender, body weight and BMI.

Inpatient treatment

Eighteen out of 74 patients (24%) were hospitalized: 15 (47%) of AN, 1 (5.2%) of BN and 2 of EDNOS groups and the periods lasted 17 ± 3 days, 15 days and 10.5 ± 0.7 days for AN, BN and EDNOS group respectively. The main reason for inpatient treatment in the AN group was to administer enteral nutrition.

Treatment response

Analysis of treatment outcome in the whole sample of patients revealed that 32 (43.2%) recovered, 37 (50.0%) improved and 5 (6.7%) had poor outcome. None of the participants died over the course of treatment and follow up.

When we compared the treatment response among patients with different diagnoses, we found that the recovery rates for patients with AN, BN and EDNOS were 14 (43.7%), 8 (42.1%) and 10 (43.4%), respectively. The rates of improvement were 14 (43.7%), 10 (52.6%), 12 (52.1%) for AN, BN and EDNOS, respectively. Finally, the rate of patients who had poor outcome were 3 (9.3%), 1 (5.2%), and 1 (4.3%), for AN, BN and EDNOS, respectively. There were no significant differences between the rates of recovery, improvement and poor outcome among the three groups of patients (Fig. 1).

The time required to achieve a complete recovery was similar in patients with AN and EDNOS, being 17.6 ± 9.2 and 17.7 ± 6.2 months, respectively, while this period of time was longer in the group of BN, 24.8 ± 27.3 months; however differences did not reach statistical significance (\(p > 0.07\)).

Body weight and BMI response

In the group of patients with AN, those recovering showed a clear increase in body weight and BMI in the final evaluation compared with the initial values, 47.1 ± 7.7 kg vs. 50.1 ± 7 kg, \(p < 0.05\), and 17.9 ± 2.4 kg/m\(^2\) vs. 19.35 ± 2.4 kg/m\(^2\), \(p < 0.05\), for weight and BMI respectively, while those who did not recover

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Main characteristics of the three groups of patients.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AN (N=32)</td>
</tr>
<tr>
<td></td>
<td>BN (N=19)</td>
</tr>
<tr>
<td></td>
<td>EDNOS (N=23)</td>
</tr>
<tr>
<td>Females (%)</td>
<td>29(90.6)</td>
</tr>
<tr>
<td>Age (years)</td>
<td>27.9 ± 9.9</td>
</tr>
<tr>
<td>Body weight (kg)</td>
<td>47.1 ± 7.7</td>
</tr>
<tr>
<td>BMI (kg/m(^2))</td>
<td>17.9 ± 2.4</td>
</tr>
</tbody>
</table>
(improvement plus poor outcome groups together) did not show significant differences both regarding the body weight and BMI respectively (47.1 ± 7.7 vs. 45.5 ± 6.8 kg and 17.9 ± 2.4 vs. 17.2 ± 1.8 kg/m²). In the group of BN, neither those who recovered (56.2 ± 8.4 vs. 55.5 ± 7.3 kg and 21.8 ± 3.1 vs. 20.9 ± 2.8 kg/m²) nor those who did not recover (58.5 ± 28.7 vs. 61.9 ± 26.5 kg and 23.5 ± 10.0 vs. 24.3 ± 8.4 kg/m²) showed significant differences. Finally in the group of patients with EDNOS, those who recovered showed a clear decrease in body weight and BMI in the last evaluation in comparison with the initial one, 78.1 ± 27.5 kg vs. 67.9 ± 20.5 kg, p < 0.05, and 28.5 ± 7.6 kg/m² vs. 24.4 ± 3.2 kg/m², p < 0.05, respectively; those who did not recover did not show significant differences both regarding the body weight and BMI respectively (86.4 ± 23.6 vs. 93.7 ± 32.1 kg and 31.6 ± 8.2 vs. 32.67 ± 6.9 kg/m²).

Regarding psychopharmacotherapy, 29 (92.3%), 18 (94.4%) and 16 (70.0%) patients with AN, BN and EDNOS were treated with psychotropic drugs, respectively. Of patients with AN, 13 (45.8%) were prescribed sertraline, 6 (20.8%) were prescribed fluoxetine and 10 (33.3%) received sertraline plus fluoxetine. Of patients with BN, 11 (61.1%) were prescribed fluoxetine and 7 (38.8%) received fluoxetine plus topiramate, while among patients with EDNOS, 9 (58.3%) were prescribed fluoxetine and 7 (41.6%) received fluoxetine plus topiramate.

**Predictive variables**

Since there were no differences in the proportion of outcome in the three types of ED (Fig. 1), to determine predictive variables of the outcome in patients with ED, we compared the main demographic and clinical characteristics among patients grouped by their treatment outcome, recovered vs. improved plus poor outcome, by a univariate analysis. There were significant differences between the two groups of patients regarding age, time of evolution and the use of psychotropic drugs, Table 2. Subsequently, given that the variables showed significant differences between the treatment outcome groups, a regression analysis with a Cox model was performed. The analysis showed that an earlier age of disorder onset and no use of psychotropic drugs were associated with recovery, Table 3.

**Discussion**

In the present study, we report our experience treating patients with different clinical forms of ED using cognitive behavioral psychotherapy, nutritional support and, in most patients, psychotropic drugs. The study design was a prospective comparative uncontrolled case series, in which the patients were treated following the regular practice of the eating disorders unit of the University Hospital of Vigo.

The discussion of the main outcome findings was severely hampered by the lack of commonly accepted outcome criteria. Given the wide acceptance of the distinction among recovery, improvement, poor outcome and mortality as a general classification of the global outcome of disorders, we used these criteria to classify the treatment outcome according to consensus agreement.

The recovery rates reported in the literature range from 24.3% to 50.3% for AN 12–24 from 5% to 73% for BN 25–27 and from 0% to 43% for EDNOS 13–15. In our study, the recovery rates found for AN, BN and EDNOS were in the upper limits of the above mentioned data, with no differences between the three types of ED.

The reported improvement rates range from 1% to 32% for AN 22 from 4% to 67% for BN 25–27, however, data about the rate of improvement in patients with EDNOS are not available in the literature. In line with the recovery rate, the results of the present study show values that are in the upper limits of those described in the literature. Furthermore, we did not find differences in the rate of improvement among the three groups of patients.

With regard to the rate of patients who had poor outcome, the literature shows values that range from 6% to 62% for AN 23 0% to 79% for BN 25–27 while data on EDNOS are lacking. Our results are in the lower limits of the previously reported rates, without differences between AN and BN.

The wide range of the rates of treatment outcome in the literature could be explained by differences in the study methodology, primarily on the duration of the follow-up, if the patient has been treated as outpatient or inpatient, whether they are incident or prevalent cases, the conversion of some patients from one form of ED to another one and finally the year when the studies were carried out (which may reflect different diagnostic criteria in DSM).

Regarding the time for recovery in the different ED groups, we observed that the BN group needed a larger period of time to recover in comparison with AN and EDNOS groups, which is in agreement with previous reports. 28–29

Data from the literature indicate that longer treatment duration and higher BMI at the initial evaluation were associated with higher success rates at end of treatment. 30 We looked for some demographic and clinical parameters that might be useful to establish the prognosis of these patients. The multivariate analysis (Cox regression) showed that an earlier age of onset and no use of psychotropic drugs significantly predicted the recovery in patients with ED. The predictive value of the age is in agreement with previous findings, 30–31 while the role of pharmacotherapy could be explained because less severe cases of ED were not treated with psychopharmacotherapy.

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**Table 2**

Univariate analysis of prognosis variables in the three groups of patients.

<table>
<thead>
<tr>
<th></th>
<th>AN</th>
<th></th>
<th>BN</th>
<th></th>
<th>EDNOS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Recovery</td>
<td>I+Chr</td>
<td>Recovery</td>
<td>I+Chr</td>
<td>Recovery</td>
</tr>
<tr>
<td></td>
<td>Mean (sd)</td>
<td>Mean (sd)</td>
<td>Mean (sd)</td>
<td>Mean (sd)</td>
<td>Mean (sd)</td>
</tr>
<tr>
<td>Age (yr)</td>
<td>16.6 (4.0)</td>
<td>26.3 (10.6)</td>
<td>21.6 (4.5)</td>
<td>22.3 (6.6)</td>
<td>23.1 (5.5)</td>
</tr>
<tr>
<td>Body weight (kg)</td>
<td>47.7 (5.6)</td>
<td>46.8 (8.8)</td>
<td>53.6 (5.9)</td>
<td>58.1 (9.7)</td>
<td>65.1 (16.3)</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>18.7 (1.8)</td>
<td>17.6(2.7)</td>
<td>19.9 (2.1)</td>
<td>23.3 (3.5)</td>
<td>23.3 (4.2)</td>
</tr>
<tr>
<td>Time evol. (months)</td>
<td>2.0 (1.4)</td>
<td>6.9 (6.7)</td>
<td>2.9 (2.5)</td>
<td>4.7 (4.2)</td>
<td>2.8 (2.8)</td>
</tr>
<tr>
<td>Drug-therapy (%)</td>
<td>32.0</td>
<td>68.0</td>
<td>37.5</td>
<td>62.5</td>
<td>12.5</td>
</tr>
<tr>
<td>PIT (%)</td>
<td>66.6</td>
<td>29.4</td>
<td>0.0</td>
<td>10.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

* = improvement, Chr = chronicity, Evol = evolution, PIT = periods of inpatient treatment.

* p < 0.05.

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**Table 3**

Multivariable Cox analysis of prognosis variables.

<table>
<thead>
<tr>
<th></th>
<th>β</th>
<th>p</th>
<th>Odds ratio</th>
<th>95%CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>−0.96</td>
<td>0.018</td>
<td>0.909</td>
<td>0.839–0.984</td>
</tr>
<tr>
<td>Drug therapy</td>
<td>−1.97</td>
<td>0.0001</td>
<td>0.140</td>
<td>0.053–0.369</td>
</tr>
</tbody>
</table>

β = regression coefficient.
Finally, data on the rate of dropout are scarce in most clinical series.\textsuperscript{17,21,32} In the present study, we observed 4% dropout during the study period. All these cases belonged to the group of EDNOS and this could be explained because it is a more heterogeneous group of patients and, according to the experience of other authors, it usually presents as less severe forms of ED.\textsuperscript{33}

We can conclude that the treatment response to CBT, nutritional support and psychopharmacotherapy was favorable in the majority of our patients with ED, and it was similarly effective in the different types of ED. Furthermore, a young age and no use of psychotropic drugs predict a favorable outcome in patients with ED.

Conflict of interest
The authors declare no conflict of interest.

Acknowledgements

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