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Short communication

Predictors of early change in bulimia nervosa after a brief psychoeducational therapy

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ABSTRACT

We aimed to examine baseline predictors of treatment response in bulimic patients. 241 seeking-treatment females with bulimia nervosa completed an exhaustive assessment and were referred to a six-session psychoeducational group. Regression analyses of treatment response were performed. Childhood obesity, lower frequency of eating symptomatology, lower body mass index, older age, and lower family's and patient's concern about the disorder were predictors of poor abstinence. Suicidal ideation, alcohol abuse, higher maximum BMI, higher novelty seeking and lower baseline purging frequency predicted dropouts. Predictors of early symptom changes and dropouts were similar to those identified in longer CBT interventions.

Introduction

About 20–30% bulimia nervosa (BN) patients are found to respond well to alternative briefer interventions than cognitive-behavioral treatment (CBT), which are commonly used as a start for standard CBT treatments for BN, i.e., a six-session psychoeducational group (Davis, Olmsted, & Rockert, 1990; Davis, Olmsted, Rockert, Marques, & Dolhanty, 1997). Psychoeducational groups have also proved to be globally effective for improving adherence to treatment or reducing general psychopathology.

There is a dearth of information on predictors of response to these commonly used initial treatments for BN. Olmsted, Kaplan, Rockert, and Jacobsen (1996) found that age (older patients) and lower severity of ED symptomatology were associated with early response to treatment. Concerning predictors of dropout or non-engagement, different clinical factors have been reported: high levels of bingeing and purging, more severe bulimic cognitions, high impulsivity, low self-directedness and personality disorders (Agras et al., 2000; Fassino, Abbate-Daga, Piero, Leombruni, & Rovera, 2003).

Early change in purging frequency during the first 4 weeks of treatment (by session 6) seems to predict the outcome of BN at the end of CBT (Agras et al., 2000) and at 8 months follow-up (Fairburn, Agras, Walsh, Wilson, & Stice, 2004). Other baseline predictors of outcome are binge and vomit frequency, duration of BN, history of body weight, level of general psychiatric symptoms, history of substance abuse and personality traits such as self-directedness (Agras et al., 2000; Fairburn et al., 2004; Turnbull et al., 1997).

There is a need for examining factors involved in the appearance of significant changes in bulimic behaviors during the first six sessions, or 4 weeks, of treatment. Therefore, the present study aimed to identify baseline predictors of response (as measured by presence of eating symptomatology and dropouts, and percentage of symptomatological reduction) both at the 4th week-session and at the end of a six-session psychoeducational treatment.

Method

Sample

The total sample included 241 BN patients consecutively admitted to an outpatient Eating Disorders Unit (University Hospital of Bellvitge; Spain). Entry into the study was between January 2002 and September 2004. All patients were female and fulfilled DSM-IV

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Table 1
Characteristics of the sample before treatment ($n = 241$).

Socio-demographical		
Age (years)	Mean (S.D.); range	26.4 (6.8); 17–57
Civil status	Single	77.7%
	Married	15.9%
	Divorced/separated	6.4%
Studies level	Primary	32.2%
	Secondary	44.3%
	University	23.5%
Employment status	Employed	57.0%
	Unemployed	16.7%
	Student	26.2%
Clinical		
Alcohol use	Present	10.0%
Substance use	Present	19.7%
Self-harm behavior	Present	30.6%
Suicidal ideation	Present	50.4%
Suicidal attempts	Present	21.4%
Weekly freq. of bingeing	Mean (S.D.)	7.4 (6.3)
[a]Weekly freq. of purging	Mean (S.D.)	11.6 (15.1)
Weekly freq. of vomiting	Mean (S.D.)	6.7 (8.0)
Weekly freq. of laxatives	Mean (S.D.)	5.0 (12.4)
[b]BMI pre-treatment	Mean (S.D.); range	24.4 (5.0); 11.2–44.3
[b]BMI: maximum achieved	Mean (S.D.)	27.4 (5.2)
[b]BMI: minimum achieved	Mean (S.D.)	19.8 (2.8)
Duration illness (years)	Mean (S.D.)	6.7 (5.3)
Age of onset	Mean (S.D.)	19.7 (6.4)
# previous treatments	Mean (S.D.)	0.7 (0.9)
Obesity in childhood	Present	9.3%
Family antecedents: AN	Present	14.2%
Family antecedents: BN	Present	9.7%
Family antecedents: obesity	Present	29.1%

[a] Purging: sum of vomiting episodes and laxatives use.
[b] Body mass index: weight (kg)/height $(m)^2$.

criteria for BN (APA, 2000). Purging subtype was present in 87.1% ($n = 210$) BN patients. Table 1 contains sociodemographical and clinical features of the sample before treatment.

The Ethics Committee of our Institution approved this study and informed consent was obtained from all participants (Ref. project 00/285).

Assessment

- Eating Attitudes Test (EAT-40) (Garner & Garfinkel, 1979): 40-item questionnaire of common symptoms and behaviors in eating disorders. The Spanish adaptation yielded high internal consistency (Cronbach's alpha = 0.93) (Castro, Toro, Salamero, & Guimerá, 1991).
- Eating Disorders Inventory-2 (EDI-2) (Garner, 1991): 91-item questionnaire measuring different characteristics of AN and BN. The Spanish adaptation (Garner, 1998) provided a mean internal consistency (alpha) of 0.63.
- Bulimic Investigatory Test Edinburgh (BITE) (Henderson and Freeman, 1987): 33-item questionnaire measuring presence and severity of bulimic symptoms. It shows high internal consistency (Cronbach's alpha: 0.96) and has been adapted to the Spanish population (Rivas, Bernabé, & Jiménez, 2004).
- Symptom Check-List 90 items-revised (SCL-90-R) (Derogatis, 1977): 90-item questionnaire measuring general psychological distress and psychopathology. The Spanish adaptation (Derogatis, 2002) yielded a mean internal consistency of 0.75 (alpha).
- Temperament and Character Inventory-revised version (TCI-R) (Cloninger, 1999): 240-item questionnaire that measures seven dimensions of personality: four temperament and three character dimensions. Reliability was good in the Spanish adaptation, ranging between 0.77 and 0.84 (Gutierrez et al., 2001).
- Weekly binge eating and purging frequencies: patients kept a food diary (Fernandez-Aranda & Turon, 1998) where they recorded episodes of binge eating and purging along treatment. Patients were trained by the therapists on the fulfillment of these diaries through a standardized training program that guaranteed the concordance between the patients' reports and the expert therapists. Weekly binge and purge frequency was determined by examination of the food diaries by the clinicians. The validity of these diaries was assessed by examining their consistency (correlation) with the BITE Symptomatology scale, which measures both bingeing and purging behavior. Both correlations were significant (0.46 [$p < 0.01$] for binges, 0.25 [$p < 0.01$] for purging).
- Evaluation of lifetime substance use and suicidal behavior: lifetime alcohol and drug abuse was assessed with the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I) (First, Spitzer, Gibbon, & Williams, 1997), Suicidal behavior and ideation was assessed by structured clinical interview. A suicide attempt was defined as a lifetime self-destructive act with some degree of intent to end one's life.
- Motivational stage of change: this was assessed through a visual analog scale. The scales range from 0 to 8 and have previously been described and applied elsewhere in a broader sample of ED (Casasnovas et al., 2007).

Procedure

Experienced psychologists–psychiatrists completed the case history and diagnosed patients during two structured face-to-face interviews. Height and weight were directly measured by the interviewer. Additional demographical data, presence of childhood overweight or obesity, motivation to receive treatment and parental occupation was also recorded. Childhood obesity/overweight was established by asking directly the patient for the presence of overweight/obesity during childhood (confirmation by relatives was obtained, and the terms "overweight" and "obesity" were previously explained to patients). The psychometric battery was administered previously to (pre-), and after (post-) treatment. The therapeutic approach was explained and therapeutic materials were provided during these initial sessions. Treatment outcome was registered at 4 weeks (4th session) and at the end of treatment (6th week-session). Definition of abstinence rate at both time points was a minimum of 2 (consecutive) weeks abstinent from bingeing and purging (laxatives and/or vomiting). The information of food diaries was used as a therapeutic tool during the treatment sessions, i.e., this information was discussed with the therapist and the rest of members of the group in every session in order to increase awareness about bulimic symptoms. In every session, patients were reinstructed and encouraged to comment any doubts on the fulfilment of the diaries. Weekly supervising sessions with all members of our Unit were carried out in order to code bingeing episodes according to DSM-IV criteria.

The treatment consisted of a brief group psychoeducational intervention (GPI) based on Davis et al. (1990) model. This intervention consists of 6 weekly outpatient sessions (90 min each) with a total of 8–10 patients per group. The main objective was to offer information and psychoeducation about BN without going into detail on individual problems. Many of the components of the GPI seem to correspond to those treated during the first stage of CBT (first 6–8 sessions) such as education about BN and procedures for establishing a pattern of regular and healthy eating and reducing dieting (Wilson, Fairburn, & Agras, 1997).

Statistical analysis

The statistical analysis was carried out with the SPSS, version 15.0. Type-I inflation was controlled by Finner's correction (modification of the Bonferroni–Holm procedure which has recently demonstrated to be a uniformly more powerful test method [Finner & Strassburger, 2002]).

Table 2
Predictors of abstinence from bingeing–purging and percentage of reduction of eating symptomatology at 4th week and at the end of treatment.

Logistic regression: abstinence from bingeing and purging				
		OR	*p*	95%CI (OR)
4th week	Presence of childhood obesity	0.079	0.001	0.010; 0.632
	BITE: symptoms score	1.14	0.042	1.00; 1.30
End of treatment	No			
Multiple regression: % of reduction of bingeing and purging				
		B	*p*	95%CI (*B*)
Bingeing: 4th week	Presence of childhood obesity	−71.52	0.001	−111.2; −31.8
	BMI (baseline)	5.62	0.005	1.77; 9.48
	Weekly freq. of bingeing (baseline)	4.46	0.004	1.47; 7.45
	Family's concern about the disorder	5.84	0.049	0.04; 11.6
Purging: 4th week	BMI (baseline)	4.49	0.020	0.73; 8.25
	Weekly freq. of purging (baseline)	1.38	0.044	0.04; 2.71
Bingeing: end of treatment	Weekly freq. of bingeing (baseline)	1.79	0.010	0.44; 3.13
Purging: end of treatment	Age (years)	−7.99	0.005	−13,5; −2,47
	Patient's concern about the disorder	20.73	0.036	1.34; 40.1

We used abstinence of bingeing/purging and dropouts during treatment as criteria for the measurement of treatment response. Logistic regression methods (STEPWISE procedure) were applied in order to identify sociodemographic, clinical history, baseline values (BMI...), and psychometric predictors of abstinence and dropouts, both at 4th week-session and at the end of treatment. Multiple linear regressions (STEPWISE procedure) were also applied in order to explore the association between these variables and the percentage of reduction of bingeing and purging frequency, both at 4th week and at the end of treatment.

The analyses of abstinence measures and the comparisons of pre- versus post-variables were focused only in patients with available pre- and post-data (completer analysis). No imputation method was used for non-valid data in the post-treatment. Significant predictors (0.05 level) were retained in the final selected models.

Results

Abstinence from bingeing/purging

Logistic regression models (see Table 2) revealed that no childhood obesity/overweight and higher BITE Symptoms score were statistically significant predictors of abstinence from bingeing and purging at 4th week of treatment. No statistically significant predictors of abstinence at the end of therapy were found.

Regarding the percentage of reduction from bingeing and purging frequency through treatment, multiple regression models (see Table 2) revealed that absence of childhood obesity/overweight, higher baseline BMI and bingeing frequency, and higher level of family's concern about the disorder were statistically associated with higher reduction of bingeing frequency at 4th week. At the end of treatment, only baseline bingeing frequency was (positively) associated with higher reduction of bingeing episodes. Higher reductions in the percentage of purging were positively associated with baseline BMI and baseline purging frequency at week 4. At the end of treatment, younger patients and those with higher levels of concern about the disorder showed higher percentage of reduction of purging episodes.

Dropouts

The risk of dropout before the week 4 was 27.4% (95%CI: 21.9–33.5%). Alcohol abuse (OR = 3.46, 95%CI: 1.38–8.67; $p = 0.008$), suicidal ideation (OR = 1.02; 95%CI: 1.00–1.04; $p = 0.017$) and lower baseline purging frequency (OR = 0.92; 95%CI: 0.85; 0.99; $p = 0.031$) were associated with higher probability of dropout during this period. The risk of dropout during the whole treatment was 34.0% (95%CI: 28.1–40.4%). Presence of suicidal ideation (OR = 2.94; 95%CI: 1.51–5.72; $p = 0.001$), higher maximum BMI ever achieved (OR = 1.1; 95%CI: 1.02–1.15; $p = 0.014$) and higher TCI-R Novelty Seeking scores (OR = 1.02; 95%CI: 1.00–1.04; $p = 0.031$) were associated with higher risk of dropout during the whole treatment.

Discussion

We examined sociodemographic, clinical and personality predictors of change in BN symptoms, both early in treatment and at the end. Our results showed that lower baseline BITE Symptoms score acted as a risk factor for poor early response during the GPI, as measured by the presence of bingeing and purging episodes at week 4. As well, absence of childhood obesity or overweight was associated with abstinence from bingeing/purging at week 4. However, no predictors of abstinence at the end of treatment were identified. Then, early change (as measured by abstinence of eating symptomatology at week 4) during treatment seemed to be more informative than either change at the end of treatment. In agreement with previous studies, the absence of childhood obesity/overweight acted as a predictor of good treatment outcome (i.e., risk factor for poor outcome). Increased body weight has been associated with higher sensitivity to food-reward (Davis et al., 2008), so we may speculate that people who has suffered from overweight or obesity is less able to achieve or maintain abstinence from binge eating during treatment. Lower baseline bulimic symptoms were also associated with poorer outcome. This finding is not in concordance with those reported by Bulik et al. (1999), who found that low frequency of bingeing at baseline was associated with rapid and sustained treatment response. The present result could be explained in the context of motivational aspects, i.e., patients with more severe presentation of their disorder might be more aware of their symptoms, and then more motivated for treatment than those patients with a less severe presentation (Casasnovas et al., 2007). The influence of motivational aspects on treatment response is well-known, especially in addictive disorders (Miller & Rollnick, 2002). However, the inconsistency of the present findings with previous reports of predictors of treatment response (Bulik et al., 1999) requires further research.

Concerning the degree of reduction of eating symptomatology early in treatment, absence of childhood obesity/overweight, higher baseline BMI, higher bingeing frequency, and higher family concern about the disorder predicted higher reduction of bingeing. Early reduction of purging frequency was also (positively) predicted by higher baseline BMI and higher baseline purging frequency. At the end of treatment, the degree of reduction of bingeing frequency was only (positively) predicted by baseline bingeing frequency, while reduction of purging was predicted (negatively) by age and (positively) patients' concern about their disorder. In fact, higher frequency of bingeing at baseline has been found to predict higher symptomatology change even after short interventions for BN (Agras et al., 2000).

In conjunction with the abovementioned result, Turnbull et al. (1997) suggested that individuals with longer duration of illness and then higher severity of the ED might show higher motivation to change, and therefore larger symptomatological change after brief interventions. In addition, our GPI yielded higher reductions of eating symptomatology in those BN patients who were younger and showed higher baseline BMI and higher level of concern (family and own) about the disorder, as well as no childhood obesity/overweight. Low BMI is considered as a risk factor for poor outcome in ED, especially in anorexia nervosa (Hebebrand et al., 1996). Higher patient concern on the disorder suggests an increased awareness on their problems, i.e., a more advanced motivational stage. Our results suggest that brief group interventions may not be sufficient for older patients who had childhood obesity/overweight and/or a low baseline BMI, as well as low motivation to change.

Alcohol abuse, suicidal ideation and lower baseline purging frequency acted as predictors of early dropouts (4th week), while higher maximum BMI ever achieved (suggesting possible obesity), higher novelty seeking score and, again, suicidal ideation acted as risk factors for dropout at the end of treatment. Most of these predictors have also been reported in other outcome studies (Agras et al., 2000; Steel et al., 2000) suggesting that patients with these characteristics would benefit from more intensive or alternative interventions.

Limitations of this study include: (a) the validity of some assessment measures (b) the lack of some relevant baseline assessment measures previously associated with BN outcome (e.g., Axis I and Axis II comorbid disorders); (c) the additional use of food diaries as a therapeutic tool supervised weekly to calculate binge eating and purging abstinence, which may have contributed to increase a demand characteristic bias; (d) the lack of follow-up data to confirm the maintenance of changes.

Summarizing, BN patients who showed a successful symptomatological change were younger, with higher baseline eating symptomatology and no obesity or overweight during childhood. However, those with higher novelty seeking, higher maximum BMI, comorbid substance abuse and suicidal ideation were more likely to dropout. Unlike Bulik et al. (1999) report, no personality predictors of abstinence were identified. Additional research is required to determine the optimal approach to treatment of BN.

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