Dysregulated Behaviors in Bulimia Nervosa – A case-control study

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Abstract

Background: Bulimia nervosa is often related to self-control difficulties and to self-harm behaviors. This study aimed to evaluate the frequency of self-injurious behavior, suicide attempts and other behaviors' related to impulsivity in bulimia nervosa, using two control groups (a healthy group and a general psychiatric group), and also to examine the association between sexual abuse and parasuicide behaviours in bulimia nervosa. **Method**: Women (*N* =233) aged between 13 to 38 years old were evaluated using the Risk Factors for Eating Disorders Interview Schedule (RFI; Fairburn et al., 1998). **Results:** Participants with bulimia nervosa reported more self-injurious behaviours, suicide attempts by drug intake, and poor control in smoking and drugs use compared with participants in both control groups. Bulimia nervosa group also presented more spending behaviors' compared with the general psychiatric control group. No association was found between sexual abuse and parasuicide behaviors amongst bulimia nervosa participants. **Conclusions:** This study concluded that BN is commonly related to self-harm behaviours.

Key words: Bulimia nervosa, self-injurious behaviour, suicide attempts; dysregulated behaviours.

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Eating disorders (ED) and BN in particular, appear frequently associated with impulsivity behaviors like self-injurious (Claes, Vandereycken, & Vertommen, 2001). Some of these behaviours can be considered directly harmful, such as self-injurious behaviour, others may be considered indirect as alcohol or tobacco abuse (Favazza, 1996). The self-injurious behaviours are also known in literature as self-harm behaviours and may also be associated with suicide attempts (Favaro & Santonaso, 2000). However, literature suggests that the self-injurious behaviour is distinct from the suicidal behaviour in terms of intent, frequency and method (Paul et al., 2002). Nonetheless, combined or isolated, self-injurious behaviours and suicide attempts are very common in the clinical picture of BN, particularly in the purging subtype (Claes, Klonski, Muehlenkamp, Kumps & Vandereycken, 2011). Regarding the prevalence of BN and multiple impulsive behaviour, little consensus is obtained, with some studies referring low prevalence rates (Welch & Fairburn, 1996) and others prevalence rates of 40% (Crosby, Wonderlich, Redlin, Engel , Simonich, & Jones-Paxton, 2001).

The high co-occurrence of BN with self-injurious behaviour found in some studies may be explained by shared etiological and maintenance factors (Svirko & Hawton, 2007). The conceptual risk model proposed by Svirko and Hawton (2007) identifies factors such as childhood trauma (usually in the form of abuse), low self-esteem, affective disorders, dissociation, and body dissatisfaction as the key variables in the aetiology for both, ED and self-injurious behaviour. On the other hand, both behaviours can be understood as strategies of emotional regulation. According to some authors, the tendency for the involvement in a variety of multi-impulsive behaviours may be maladaptive and associated to the need to reduce negative affect (Cyders, Smith, Spillane, Fisher, Annus, & Peterson, 2007; Whiteside & Lynam, 2001). Another study

carried out by Anestis and colleagues (2009), concludes that the emotional liability predicted impulsive behaviours such as self-injurious behaviours or sexual risk behaviours in woman's with BN.

Studies which describe BN as being related to self harm behaviours are mainly focused on the view of BN in a framework of multi-impulsivity. This perspective goes back to studies of Lacey and Evans (1986) that identified the multi-impulsivity associated with BN, defining it as a subgroup of individuals with BN who exhibited at least one impulsive behaviour in addition to food intake and purging behaviours, from a list of behaviours that included self-injurious behaviour, substance abuse, risky sexual behaviour and theft. Other authors such as Favazza and Rosenthal (1993) consider the existence of a syndrome of "repetitive self mutilation syndrome" which alternates phases of self-mutilation behaviour and phases of other impulsive behaviours such as ED. A growing number of studies have sought to understand the relationship between compulsive eating and other impulsive behaviours. For example, Thompson and colleagues (1999), concluded that women with compulsive eating and purging behaviours had more frequently aggressive behaviours compared to women without ED. According to the authors, these behaviours were associated with drug abuse and suicide attempts. Other studies also showed that compulsive eating and purging behaviours often appear linked to compulsive buying (Lejoyeux, Ades, Tassain, & Solomon, 1986) and self-injurious behaviour (Favaro & Santonastaso, 1998). Another study conducted in Spain by Fernandez-Aranda and colleagues (2006), concluded that BN subjects with impulse control disorders have personality profiles with more extreme characteristics, such as impulsivity, novelty seeking, and greater overall psychopathology, when compared with individuals with BN that is not associated with impulse control disorders.

Despite the scientific community's interest in the complex association between BN and impulsive behaviours, the results of the existing studies are somewhat contradictory and inconclusive. For example, the study conducted by Welch and Fairburn (1996) with a community sample did not corroborate with other studies (cf., Santonastaso & Favaro, 2002) that showed an association between BN and deliberate self-injurious behaviours. Thus, the main objective of this study is to clarify the relation between BN and self-harm behaviours. This study aims to: (1) assess the prevalence of impulsive behaviours in a clinical sample of participants with BN, (2) compare the prevalence of these behaviours with two control groups - a healthy control group with subjects without previous and/or current history of psychiatric disorders (normal control group) and a control group with a current history of psychiatric disorders other than ED (psychiatric control group), and (3) evaluate the association between self-injurious behaviour and suicide attempts with sexual abuse history in BN sample.

Method

Participants

A total of 233 female subjects aged between 13 to 38 years old (20.82, ± 4.92) participated in the current study. The participants were divided as follows: 79 belonged to the clinical group with BN, 86 were part of the normal control group and 68 comprised the control group with other psychiatric disorders. Data on age and socio-demographic characteristics of participants can be found in Table 1.

In the general psychiatric control group, in regard to the diagnosis, 51.4% (n = 35) of the sample had anxiety disorders diagnosis, 47.1% (n = 32) a mood disorder diagnosis and 1.5% (n = 1) a somatoform disorder not otherwise specified diagnosis.

Weight in BN ranged between 42.70 and 76kg (*M* = 56.09, *SD* = 7.20), the height ranged between 1.50 and 1.78m (*M* = 1.63, *SD* =. 06) and the BMI between 17.58 and 26.30 (*M* = 21:15, *SD* = 2.19). NC group ranged between 43 and weight 80kg (*M* = 55.86, *SD* = 7.81), the height between 1.49 and 1.79m (*M* = 1.64, *SD* =. 06) and BMI between 17.01 and 29.73 (*M* = 20.77 and *SD* = 2.56). Finally, with regard to the PC group, weight ranged between 42 and 80kg (*M* = 55.71, *SD* = 6.94), and BMI between 15.81 and 30.82 (*M* = 21.04, *SD* = 2.56).

(Insert Table 1 around here)

Measures

Diagnostic assessment – Current and lifetime psychiatric disorders were assessed with Structured Clinical Interview for DSM-IV axis I disorders (SCID-I; Spitzer, Williams, Gibbon & First, 1992). Eating disorder diagnosis and psychopathology were assessed through the diagnostic items of Eating Disorder Examination (EDE; Fairburn & Cooper, 2000) and Eating Disorder Questionnaire (EDE-Q; Fairburn & Beglin, 1994) was used as a primary screening instrument for potential healthy controls.

Structured Interview for the Assessment of Risk Factors in Eating Disorders (Risk Factors for Eating Disorders: Interview Schedule - RFI, Fairburn et al., 1998). Semi-structured interview, designed with the objective of identifying the biological, psychological and social variables that according to literature, place the individual at risk for developing ED. In the interview several risk factors are evaluated, which appear categorized into three domains: Domain I (personal vulnerability factors): Factors in individuals or family that may increase the risk of developing a psychiatric disorder in

general; Domain II (environmental factors): adverse circumstances; Domain III (vulnerability factors for dieting): Factors that may raise concerns with weight, body shape, or eating habits, and therefore increase the risk of dieting. Within each domain the authors also consider various sub-domains that reflect certain types of exposure. The interview also considers risk factors to assess loss of control in some behaviours, such as smoking, medication use, drug use, emotional outbursts and tantrums, nail biting, gambling, spending, uncontrolled sexual behaviour and alcohol abuse. The assessment of these behaviours is held during the last 4 weeks preceding assessment, before the onset of eating problems and ever. The present study considered the lifetime prevalence ("ever") for each behaviour. The interview also allows evaluating the history of self-injurious behaviour and suicide attempted by drug overdose. Sexual abuse is also assessed during the interview. Is rated occurring at any time with separate rating to indicate whether or not it occurred before index age.

Procedure

After informed consent was obtained, eligible individuals were invited to participate in diagnostic interviews, a self-report instrument and a risk factor interview. Height and weight were measured by researchers.

BN subjects were recruited on specialized ED treatment settings. Subjects were previous diagnosed by clinicians and then were interviewed with the Eating Disorders Examination (EDE; Fairburn & Cooper, 2000) by researchers. PC group were also recruited in treatment settings with a previous diagnosis by a clinician, however true case status was established and confirmed by Structured Clinical Interview for DSM-IV (SCID-I; Spitzer, Williams, Gibbon & First, 1992). The potential NC group was recruited in schools and in a university campus using the Eating Disorders Examination

– Questionnaire (EDE-Q; Fairburn & Beglin, 1994); they were also interviewed with the SCID-I (Spitzer et al., 1992) to confirm psychopathology absence. Subjects of both control groups were interviewed with EDE diagnostic items (Fairburn & Cooper, 1993) and all the subjects of the study were interviewed using the Oxford Risk Factor Interview (RFI; Fairburn & Welch, 1990).

This study was approved by the ethical committee of the two treatment settings and schools / university campus.

Data analysis

The statistical analysis was conducted with SPSS, version 13 for Windows (SPSS, Chicago).

First we explored the prevalence of self-injurious behavior and suicide attempts amongst the three groups. Second, to determine the association between self-injurious behavior and suicide attempts and self-injurious and sexual abuse across individuals with BN, chi-square tests were conducted. Finally, self-injurious behavior, suicide attempts by drug intake (overdose) and the other dysregulated behaviors, was compared across the 3 groups using binary logistic regression analysis.

Results

Prevalence of self-injurious behavior and suicide attempts by drug intake in BN and both case control groups

Data on self-injurious behaviours and suicide attempts by drug intake are presented in Table 3. Thirty two subjects (40.5%; 95% CI, 29.1% -50.6%) of the BN sample reported self-injurious behaviour. With regard to suicide attempts by drug ingestion, 40 (51%; 95% CI, 39.2% -63.3%) of BN subjects reported suicide attempts.

Comparing the three populations evaluated, the prevalence of self-injurious behaviour in BN was significantly higher than that found in NC group (40.5% vs. 2.3%, p <.001) and PC group (40.5% vs. 8.8%, p <.001). The prevalence of suicide attempts by drug intake in BN subjects was significantly higher than the one found in the PC group (50.6% vs. 17.6%, p <.001) (Table 2)

(Insert Table 2 around here)

Association between self-injurious behavior and suicide attempts by drug ingestion in BN

Table 3 presents data on the frequency of self-injurious behaviour and suicide attempts in bulimia nervosa subjects. Twenty-two people (55%) with BN reported suicide attempts and self-injurious behaviour. There is also a significant association between self-injurious behaviour and suicide attempts, $\chi 2$ (1) = 07.07, p = .007.

(Insert Table 3 around here)

Association between self-injurious behaviour and history of sexual abuse in BN

In order to evaluate possible association between self-injurious behaviour and history of sexual abuse in BN subjects, we also performed chi-square test. No association was found between the self-injurious behaviour and history of sexual abuse, $\chi 2$ (1) = 1.00, p = .43.

Association between suicide attempts by drug intake and history of sexual in BN

Likewise, in order to evaluate a possible association between suicide attempts and history of sexual abuse in BN subjects, we also performed chi-square test. There was no association between suicide attempts and history of sexual abuse, $\chi 2$ (1) =. 004, p = .58.

Dysregulated behaviours in BN subjects and both case-control groups

Table 8 shows frequency of loss of control in different behaviours in the three groups. Regarding the frequency of lack of control in certain specific behaviours, the results showed significant differences between BN and NC group in smoking (43% vs. 18.6%, p =. 001) and drug use (17.7% vs. 4.7%, p =. 012). Compared with the PC group, BN subjects showed, in the same way, higher frequency of impulsive behaviours such as smoking (43% vs. 16.2%, p =. 001), drug use (17.7% vs. 4.4%, p =. 02) and compulsive buying (22.8% vs. 1.5%, $\chi 2$ (1) = 14.75, p =. 004). For the remaining behaviours evaluated significant differences were not found between groups (see Table 4).

(Insert Table 4 around here)

Discussion

This study aimed to understand the relationship between BN and some self harm behaviours. Therefore, the current study evaluated three groups of participants, a group of participants with BN, a group of participants with no history or current psychiatric disorders (NC group) and a group of participants with current history of psychiatric disorder other than eating pathology (PC group), at the level of self-injurious behaviour,

suicide attempts and other impulsive behaviours. Was also evaluated the association between self-injurious behaviour and/or suicide attempts and history of sexual abuse.

Like some other studies support (e.g., Birmingham et al., 2005; Claes et al. 2001; Favaro et al., 2008; Paul et al., 2002; Santonaso & Favaro, 2000; Solano, et al., 2005), our results also confirm the high prevalence of suicidal behaviour and self-injurious behaviour in BN subjects,. About 51% of BN participants reported, at least, a drug overdose with suicide intent. On the other hand, 40.5% reported self-injurious behaviour like cutting and/or bruising. According to a literature review, Svirko and Hawton (2007) estimated that the occurrence of self-injurious behaviour in BN ranged between 26% and 55.2%. In comparison with control samples, both behaviours are significantly more frequent in BN. Welch and Fairburn (1996) showed that the prevalence of self-injurious behaviour in BN is higher than the one found in comparison with case-control groups. Additionally, self-injurious behaviours appear, in our study, associated with suicide attempts by drug overdose. These results corroborate previous studies showing that compulsive eating and purging behaviours are associated with suicide attempts (Surgenor & Snell, 1998).

Unlike other studies that suggest sexual abuse as a common etiologic factor in BN and self-injurious behaviour (eg, Favaro & Santonastaso, 1998; Svirko & Hawton, 2007), our results found no association between these behaviours and history of sexual abuse in the BN subjects. In a recent meta-analysis carried out by Klonsky and Moyer (2008), only a small association between self-injurious behaviour and sexual abuse in childhood was found. The inconsistency of the results at this level raises the question whether the experiences of childhood abuse have a direct or indirect effect on the development of self-injurious behaviour, and what processes may be involved in the observed associations (Muehlenkamp, Claes Smits, Peat, & Vandereycken, 2011).

On the other hand, the comparison between the clinical group with BN and the two case-control groups, concerning other specific behaviours, showed that the bulimic group presented more difficulties in controlling smoking and drug use. Compared with PC group, BN subjects reported also more difficulties in controlling compulsive buying. The results of our study are in line with the results of other studies that show that the behaviours of binge eating and purging behaviours are associated with drug use (Favaro & Santonastaso, 1998, Welch & Fairburn, 1996) and compulsive buying (Lejoyeaux, Ades, Tassain, & Solomon, 1996). These results together may support the fact that there are deficits in impulse control in BN and that this is often characterized by a multi-impulsive framework (Wiederman & Pryor, 1996). As in the study of Welch and Fairburn (1996), our results also showed that loss of control on alcohol consumption was not higher in patients with BN compared with two case-control groups.

This study has several methodological limitations, including: (1) retrospective methodology, (2) the use of clinical samples in treatment (in BN group and PC group), (3) use of single informants, and (4) the use of a interview by a clinician aware of the status of the person being assessed (i.e., BN, NC group, PC group). According to Stice (2001), retrospective studies do not allow the demonstration of temporal precedence of the factors studied, in relation to early feeding problems. Due to these limitations, it seems important to carry out future studies with a prospective methodology. The samples should be preferably collected in the community, as to prevent the inherent bias in populations in clinical settings. A clinical sample may not be fully representative of the clinical picture of BN, since research shows that the majority of individuals with BN do not seek help for their ED (Hoek, 2002). On the other hand, the strengths of this study are: (1) using a semi-structured interview to assess self-harm behaviours, and (2) the use of two case-control samples.

In summary, this study concluded that BN is commonly related to self-harm behaviours. Compared with both control groups, BN subjects had significantly more self-injurious behaviour, suicide attempts, smoking, drug use and even overspending behaviours. The clinical implications of this study emphasize, above all, the attention that should be given by clinicians to the multi-impulsive spectrum that arises so often associated with BN.

Key points: Bulimia nervosa is commonly related to self-harm behaviours; Bulimia nervosa patients also present others self-control difficulties like smoking, drug abuse and overspending behaviors; Clinicians must take into account the multi-impulsive spectrum of bulimia nervosa.

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Table 1. Socio-demographic characteristics for bulimia nervosa and both case-control groups.

	Bulimia Nervosa (*n*=79)		**Healthy control group (*n*=86)**		**Psychiatric control group (*n*=68)**	
Age	Amp	*M (SD)*	Amp	*M (SD)*	Amp	*M (SD)*
	15-38	22.37 (5.15)	14-33	20.08 (4.24)	13-33	19.79 (4.74)
Marital status	N (%)		N (%)		N (%)	
Single	67 (84.8)		81 (94.2)		62 (91.2)	
Married / Living together	11 (13.9)		5 (5.8)		4 (5.9)	
Divorced	1 (1.3)		-		2 (2.9)	
Occupation						
Students	49 (62.1)		73 (84.9)		60 (88.2)	
Graduates	9 (11.5)		12 (14.1)		8 (11.8)	
Administrative	6 (7.8)		1 (1.2)		-	
Technicians	3 (3.8)		-		-	
Specialized workers	5 (6.5)		-		-	
Specialized manual workers	4 (5.1)		-		-	
Unemployed	3 (3.8)		-		-	
Qualifications						
7-9 years	30 (38)		25 (29.1)		28 (41.1)	
10-12 years	38 (48.1)		47 (54.7)		29 (42.6)	
Graduation	11 (13.9)		14 (16.3)		7 (10.3)	
Postgraduate	-		-		4 (5.9)	
TOTAL	79 (100)		86 (100)		68 (100)	

Table 3. Relation between self-injurious behavior and suicide attempts in bulimia nervosa

	Suicide attempts *n* (%)	**No suicide attempts *n* (%)**	χ^2
No self-injurious behavior	29 (74.4)	18 (45.0)	7.07*
Self-injurious behavior	10 (25.6)	22 (55.0)	

*p<.01

Table 2. Self-injurious behavior and suicide attempts by drug intake in bulimia nervosa and both case control groups

			BN vs. Healthy control group				BN vs. Psychiatric control group		
	Bulimia nervosa n (%)	**Healthy control group n (%)**	***p***	**OR**	**95%CI**	**Psychiatric control group n (%)**	***p***	**OR**	**95%CI**
Self-injurious behavior	32 (40.5)	2 (2.3)	**<.001**	.14	.01-.15	6 (8.8)	**<.001**	.14	.06-.37
Suicide attempts by drug intake	40 (50.6)	0	.99	.00	.00	12 (17.6)	**<.001**	.21	.09-.45

Table 4. Dysregulated behaviors in bulimia nervosa and both case control groups

			BN vs. Healthy Control Group				BN vs. Psychiatric Control Group		
	Bulimia nervosa n (%)	**Healthy Control Group n (%)**	***p***	**OR**	**95%CI**	**Psychiatric Control Group**	***p***	**OR**	**95%CI**
Smoke	34 (43.0)	16 (18.6)	**.001**	.30	.15-.61	11 (16.2)	**.001**	.26	.18-.56
Psychotropics	9 (11.4)	0	.99	.00	.00	0	.99	.00	.00
Drugs	14 (17.7)	4 (4.7)	**.012**	.23	.07-.72	3 (4.4)	**.02**	.21	.06-.78
Tantrums/Emotional outburts	1 (1.3)	0	1.00	.00	.00	0	1.00	.00	.00
Nail bitting	26 (32.9)	25 (29.1)	.59	.83	.43-1.62	24 (35.3)	.76	1.11	.56-2.20
Game	2 (2.5)	0	.99	.00	.00	0	.99	.00	.00
Compulsive buying	18 (22.8)	0	.99	.00	.00	1 (1.5)	**.004**	.05	.007-.39
Sex	4 (5.1)	0	.99	.00	.00	0	.99	.00	.00
Alcohol	3 (3.8)	0	.99	.00	.00	0	.99	.00	.00