Food Addiction in Eating Disorders

Subjects: Psychology, Clinical

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Food addiction (FA) has been mentioned as a potential subtype of obesity, and has been associated with Eating Disorders (ED). A first approach of a phenotypic characterization of food addiction (FA) found three clusters (dysfunctional, moderate and functional).

food addiction eating disorders treatment outcome

1. Introduction

Even though food addiction (FA) has not being included as a formal mental disorder in the Diagnostic and Statistical Manual (DSM-5) [1], it is a concept of ongoing scientific interest and debate. According to the FA model, some foods, especially palatable ones, may be involved in producing both overeating and addictive-like behaviours, thus, phenomenological similarities with addictive disorders could been found [2].

FA mainly in binge spectrum disorders as bulimia nervosa (BN) [3][4] and binge eating disorder (BED) [5][6]. It has been associated with higher body mass index (BMI), binge-eating episodes, higher eating psychopathology, more impulsive personality traits, and craving for highly palatable food [7][8][9], as well as poorer response to therapy [10][11].

Additionally, other predictors of developing severe symptomatology of food addiction are presenting dysfunctional personality traits, high emotional dysregulation, and high general psychopathology [12][13], and be women [14].

In the prior study, a sample of Eating Disorders (ED) and obesity patients was included, and three clusters were obtained: (a) dysfunctional cluster (mainly represented by other specified feeding or eating disorders (OSFED) and BN), (b) moderate cluster (mainly represented by BN and BED patients) and (c) functional cluster (mainly represented by obesity and BED patients).

2. Findings of Different Clusters

Figure 1 displays the 100% stacked bar chart with the percentage of patients with a specific ED subtype within each cluster. Differences between the groups were found: The dysfunctional cluster (C1) included a high and similar distribution for BN and OSFED patients; the moderate (C2) cluster included mostly BN patients, following by a high percentage as well of BED; the functional (C3) cluster included a high proportion of BN patients, and similar percentage of BED and OSFED.

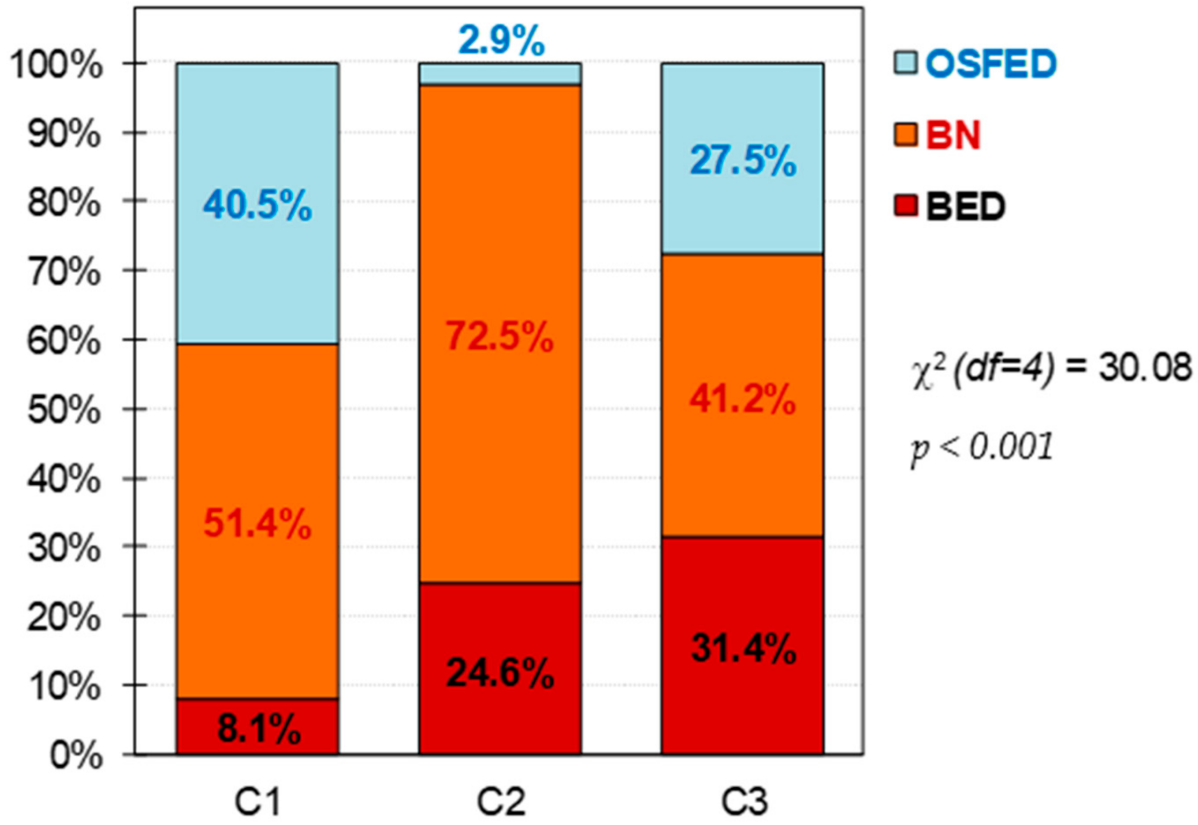

Figure 1. Composition of the clusters. Note. C1: cluster 1, dysfunctional cluster. C2: cluster 2, moderate cluster. C3: cluster 3, functional cluster. BED: binge eating disorder. BN: bulimia nervosa. OSFED: other specified feeding eating disorder. df = degrees of freedom. Sample size: *n* = 157.

The upper part of **Table 1** shows the comparison between the clusters at baseline, and the lower part of the table shows the comparison for the CBT treatment outcomes. FA levels was higher in the moderate cluster (C2), followed by the dysfunctional one (C1), while the C3 (functional) presented the lower levels of FA. According to clinical characteristics, the dysfunctional cluster (C1) was characterized by the lowest mean for the BMI, the highest ED symptom levels (except for the EDI-2 bulimia scale), the worst psychopathology global state, and the highest levels in the personality domains of harm avoidance and self-transcendence. This cluster was also the one with the lowest percentage of participant with full remission (see also **Figure 2**). The functional cluster (C3) was the cluster with the lowest ED severity level, best psychological state, the lowest score in harm avoidance, and the highest scores in the personality traits of reward-dependence, persistence, self-directedness and cooperativeness. As well, this cluster also had the highest percentage of patients with full remission (**Figure 2**). C2, the moderate one, present intermediate levels of these clinical characteristics; however, it had the highest levels of dropouts.

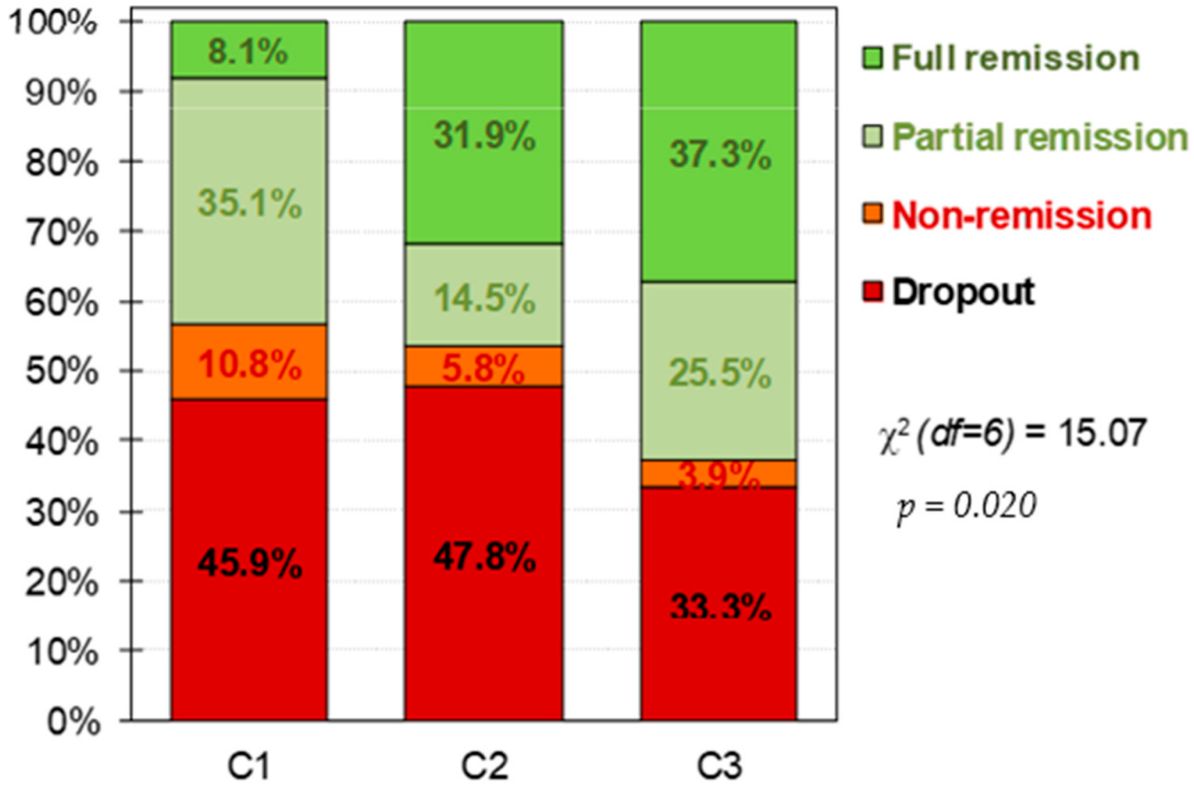

Figure 2. Distribution of the CBT outcomes within the clusters. Note. C1: cluster 1, dysfunctional cluster. C2: cluster 2, moderate cluster. C3: cluster 3, functional cluster. df = degrees of freedom. Sample size: *n* = 157.

Table 1. Comparison of clusters at baseline and CBT outcomes.

		Cluster-1 (*n* = 37)		**Cluster-2 (*n* = 69)**		**Cluster-3 (*n* = 51)**		**Cluster-1 vs. Cluster-2**		**Cluster-1 vs. Cluster-3**		**Cluster-2 vs. Cluster-3**	
	α	Mean	SD	Mean	SD	Mean	SD	*p*	|*d*|	*p*	|*d*|	*p*	|*d*|
BMI-FA													
BMI (kg/m^2)		25.96	7.44	29.42	8.54	30.77	10.15	0.057	0.43	**0.013 ***	**0.54** †	0.411	0.14
YFAS total score	0.939	8.46	2.38	9.48	1.99	7.53	2.72	**0.034 ***	0.46	0.068	0.36	**0.001 ***	**0.82** †
EDI -2 Drive-thinness	0.767	18.03	2.71	15.94	4.77	14.14	4.94	**0.022 ***	**0.54** †	**0.001 ***	**0.98** †	**0.029 ***	0.37
EDI-2 Body-dissatisfac.	0.850	21.30	5.73	20.59	6.52	16.96	7.17	0.600	0.11	**0.003 ***	**0.67** †	**0.003 ***	**0.53** †
EDI-2 Int-awareness	0.798	18.22	5.67	15.46	5.36	8.00	5.71	**0.016 ***	**0.50** †	**0.001 ***	**1.80** †	**0.001 ***	**1.35** †

		Cluster-1 (*n* = 37)		Cluster-2 (*n* = 69)		Cluster-3 (*n* = 51)		Cluster-1 vs. Cluster-2		Cluster-1 vs. Cluster-3		Cluster-2 vs. Cluster-3	
EDI-2 Bulimia	0.726	8.54	5.78	11.52	3.91	7.33	4.89	**0.002** *	**0.60** †	0.239	0.23	**0.001** *	**0.95** †
EDI-2 Interper-distrust	0.813	9.08	5.24	6.97	4.65	3.49	3.60	**0.022** *	0.43	**0.001** *	**1.24** †	**0.001** *	**0.84** †
EDI-2 Ineffectiveness.	0.848	17.38	6.55	14.88	5.70	6.88	4.68	**0.031** *	0.41	**0.001** *	**1.84** †	**0.001** *	**1.53** †
EDI-2 Maturity-fears	0.752	12.27	5.03	9.17	5.32	6.51	5.17	**0.004** *	**0.60** †	**0.001** *	**1.13** †	**0.006** *	**0.51** †
EDI-2 Perfectionism	0.740	6.95	5.12	6.14	4.24	4.65	3.97	0.371	0.17	**0.016** *	**0.50** †	0.066	**0.36**
EDI-2 Impulse-regulat.	0.730	13.22	5.28	7.57	4.37	3.18	3.18	**0.001** *	**1.17** †	**0.001** *	**2.30** †	**0.001** *	**1.15** †
EDI-2 Ascetic	0.702	10.35	2.99	8.77	2.92	5.61	3.11	**0.010** *	**0.54** †	**0.001** *	**1.56** †	**0.001** *	**1.05** †
EDI-2 Social Insecurity	0.752	12.76	4.78	9.41	4.17	4.49	2.82	**0.001** *	**0.75** †	**0.001** *	**2.11** †	**0.001** *	**1.38** †
EDI-2 Total score	0.923	148.1	27.28	126.4	20.73	81.24	22.63	**0.001** *	**0.89** †	**0.001** *	**2.67** †	**0.001** *	**2.08** †
SCL-90R GSI	0.966	2.67	0.33	2.07	0.35	1.28	0.36	**0.001** *	**1.80** †	**0.001** *	**4.03** †	**0.001** *	**2.22** †
SCL-90R PST	0.966	81.81	6.10	72.46	7.78	55.98	11.90	**0.001** *	**1.34** †	**0.001** *	**2.73** †	**0.001** *	**1.64** †
SCL-90R PSDI	0.966	2.94	0.33	2.58	0.36	2.04	0.34	**0.001** *	**1.05** †	**0.001** *	**2.70** †	**0.001** *	**1.54** †
TCI-R Novelty-seeking	0.806	103.5	16.07	98.4	17.27	102.7	15.88	0.133	0.31	0.811	0.05	0.168	0.26
TCI-R Harm-avoidance	0.887	133.7	14.52	126.4	17.00	109.0	16.24	**0.028** *	0.46	**0.001** *	**1.60** †	**0.001** *	**1.05** †
TCI-R Reward.depend.	0.831	97.5	17.30	98.3	14.06	104.8	15.59	0.797	0.05	**0.029** *	0.44	**0.023** *	0.44
TCI-R Persistence	0.896	102.8	22.46	100.8	20.27	108.4	19.78	0.633	0.09	0.213	0.26	**0.048** *	0.38
TCI-R Self-	0.840	96.9	14.94	102.9	13.17	125.3	16.89	0.053	0.42	**0.001**	**1.78** †	**0.001**	**1.48** †

3. Current Insights

The functional cluster (C3), do present better treatment response and lower dropout rates than the moderate (C2) and dysfunctional (C1) clusters.

		Cluster-1 (*n* = 37)		Cluster-2 (*n* = 69)		Cluster-3 (*n* = 51)		Cluster-1 vs. Cluster-2		Cluster-1 vs. Cluster-3		Cluster-2 vs. Cluster-3	
directed.										*		*	
TCI-R Cooperativeness	0.861	127.8	20.24	133.7	17.15	139.3	11.88	0.082	0.31	**0.002 ***	**0.69** †	0.067	0.38
TCI-R Self-transcend.	0.862	77.1	12.09	62.1	14.38	63.2	16.37	**0.001 ***	**1.13** †	**0.001 ***	**0.97** †	0.672	0.07
CBT outcomes		*n*	%	*n*	%	*n*	%	*p*	|*h*|	*p*	|*h*|	*p*	|*h*|
Dropout		17	45.9%	33	47.8%	17	33.3%	**0.010 ***	0.04	**0.016 ***	0.26	0.286	0.30
Non-remission		4	10.8%	4	5.8%	2	3.9%		0.18		0.27		0.09
Partial remission		13	35.1%	10	14.5%	13	25.5%		**0.51** †		0.21		0.28
Full remission		3	8.1%	22	31.9%	19	37.3%		**0.62** †		**0.74** †		0.11

Note. Cronbach's-alpha in the study. Custer 1: dysfunctional cluster; Cluster 2: Moderate cluster; Cluster 3: Functional cluster. SD: standard deviation; BMI: Body Mass Index; FA: food addiction; EDI: Eating Disorders Inventory; SCL: Symptom Checklist; GSI: Global Gravity Index; TCI: Temperament and Character Inventory; CBT: cognitive–behavioural therapy. * Bold: significant comparison (0.05). † Bold: effect size into the ranges mild-moderate to the high-large.

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characteristics (except FA), while the moderate (C2) group differs from the functional (C3) and dysfunctional cluster (C1) by a higher severity of FA, and the functional cluster (C3) differ from the dysfunctional (C1) and moderate (C2) one by the low severity of its clinical profile.

Low levels of full remission and higher rates of dropouts in the dysfunctional cluster (C1) were found. This subgroup was highly represented for OSFED patients, which have been reported to present low harm avoidance and self-directedness, as well as higher severity of ED symptomatology, aspects identified as predictors of high drop-outs and low full remission rates [16]. Additionally, similar personality traits that imply difficulties in following goals and higher levels of anxiety levels have been found in BN patients (also present in this cluster) [17]. This has also been associated with low levels of full remission after cognitive behavioural treatment (CBT) [18]. Therefore, patients within this cluster may benefit from treatments that target the reduction of the ED symptomatology and general distress, as well as favour the improvement in the establishment and following of objectives. It is also important to mention that younger patients with an earlier onset of the disorder were particularly present in this cluster; therefore, these aspects could be added as indicators of a more dysfunctional profile. Of note, early onset of the disorder has already been mentioned as a predictor of a longer maintenance of the ED [19].

In the moderate cluster (C2), the highest dropout rates were found, as well medium rates of full remission in comparison with the dysfunctional (C1) and functional clusters (C3). This cluster was characterized by the presence of binge spectrum ED patients and by the higher levels of FA, both aspects that could be involved in the response to treatment of the participants in this cluster. It is possible that the higher presence of FA symptomology in binge spectrum ED (relative to non-binge ED) may reflect the more frequent binge eating episodes and food craving associated with FA [20][21].

Finally, the functional cluster (C3) presents the higher levels of full remission and the lowest of drop out, as well as had the lowest levels of severity of FA. Further, this cluster is clinically speaking the most functional, presenting low ED severity and general psychopathology. It also had the highest levels of self-directedness and persistence, which may be associated with good compliance with the treatment.

4. Conclusions

The dysfunctional cluster had the lower rates in full remission, while the functional cluster had the higher proportions of full remission and the lowest of dropouts. Even though the moderate cluster presented the highest rate of dropouts, a higher percentage of participants in this cluster could reach full remission of their symptoms. Even though all participants presented FA symptoms, the differential characteristics of each cluster may be important to defining proper treatment approaches for ED patients with FA. For example, the dysfunctional cluster may benefit from treatments that target aspects of high severity ED symptoms and psychological distress; the moderate cluster may be specifically benefited by a focused treatment for the reduction of FA symptoms; finally, the functional cluster could continue with traditional approaches.

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