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Picking and nibbling: Frequency and associated clinical features in bulimia nervosa, anorexia nervosa and binge eating disorder

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Abstract

Picking and nibbling (P&N) is a newly studied eating behavior characterized by eating in an unplanned and repetitious manner in between meals and snacks. This behavior seems to be related to poorer weight loss outcomes after bariatric surgery for weight loss in severely obese patients, but clarification is still required regarding its value in other clinical samples.

Objective: The purpose of this study was to investigate the frequency of P&N across different eating disorder samples, as well as to examine its association with psychopathological eating disorder features.

Methods: Our sample included treatment-seeking adult participants, recruited for five different clinical trials: 259 binge eating disorder (BED); 264 bulimia nervosa (BN) and 137 anorexia nervosa (AN). Participants were assessed using the Eating Disorders Examination interview before entering the clinical trials.

Results: P&N was reported by 44% of the BED; 57.6% of the BN and 34.3% of the AN participants. No association was found between P&N and BMI, the presence of compensatory behaviors, binge eating or any of the EDE subscales.

Discussion: This study suggests that P&N behavior is highly prevalent across eating disorder diagnoses. Our findings suggest that P&N is not associated with psychopathology symptoms or other eating disordered behaviors.

Keywords

Picking and nibbling; eating behaviors; eating disordered behaviors

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Picking and nibbling (P&N) is a newly studied eating behavior, increasingly cited in the literature in relation to weight loss treatments, particularly in the area of bariatric surgery. P&N was added to the Eating Disorder Examination (EDE v14.3) by Fairburn and Cooper[1] and described as an eating pattern characterized by eating in an unplanned and repetitious manner in between meals and snacks.

Despite the inconsistent definitions of this concept ("grazing", [2,3] "snacking eating",[4] or simply "nibbling"[5]), the existing literature seems to point to a high prevalence of such a behaviors,[6-9] and support its association with loss of control eating,[2,3,10] less weight loss[2,3] and/or long-term weight regain[8] among obese patients undergoing bariatric surgery for weight loss. Only a few studies have assessed P&N and grazing in non-bariatric surgery samples. Reas and colleagues[11] evaluated a non-clinical sample and found that 91% of 58 college girls reported P&N. Masheb et al[12] reported a prevalence of P&N occurring in 56.8%, 50.4%, and 31.8% during the past 28 days for participants with bulimia nervosa (BN), binge eating disorder (BED), and controls, respectively, who were recruited from a community sample with online questionnaires. No associations with BMI or psychological features were found in either of these studies. The question remains as to whether P&N is a disordered eating behavior, a maladaptive or perhaps even normative eating behavior outside the spectrum of eating disorder behavior.

This study aimed to investigate the frequency of P&N across different types of eating disorder diagnostic groups, including BED, BN, and anorexia nervosa (AN) as well as its association with compensatory behaviors and psychopathological eating disordered features and BMI.

Methods

Sample and procedure

Participants were BED, BN and AN adults, mostly Caucasian (>93.4%) with at least some college experience (>87.9%), who were recruited in the context of five other clinical studies (for detailed information on the procedures of the different clinical trials, please refer to the original articles). Data from baseline testing were used in this study. Patients were interviewed by trained therapist in the EDE and under supervision.

Bulimia nervosa sample – BN participants were 255(96.6%) women and 9 (3.4%) men, aged between 18-61 (M=26.12;SD=8.32). Participants were recruited for three different research projects including two treatment studies,[13,14] and an ecological momentary assessment (EMA) study.[15]

Anorexia nervosa sample – AN participants included 137 women, aged between 18 - 58 (M= 25.39; SD= 8.39). Participants were recruited for a research project designed to examine the use of EMA in studying the AN symptoms.[16]

Binge eating disorder sample – BED participants were 227(87.6%) woman and 32(12.4%) men, aged between 19.7-66.1 (M=46.9; SD=10.2), who were recruited to examine various treatment models in a randomized trial.[17]

Measures

All participants were assessed face-to-face using the Eating Disorder Examination – 16.0D (EDE)[18] to determine the ED diagnosis. The EDE is a semi-structured, investigator-based interview that assesses both frequency and severity of the specific ED symptoms over the preceding 28 days. It uses a 7-point Likert scale rating the number of days where the behavior(s)/attitude(s) were present or the severity of symptoms. The interview generates four subscale scores: Dietary Restraint, Weight Concern, Shape Concern, Eating Concern, and a Global Score. Additionally, a set of diagnostic items to assesses the presence/ frequency of subjective/objective binge eating, subjective/objective overeating episodes, P&N and compensatory behaviors. P&N was rated using a 7-point Likert scale: 0)“absent”; 1)“feature present on 1 to 5 days”; (…); 6)”feature present every day”. The EDE defines P&N as picking at (or nibbling) food in between meals, in an unplanned and repetitious way. The amount eaten should not be trivial and should be uncertain at the outset of the episode. P&N should be distinguished from a meal/snack and is not associated with the experience of loss of control.

Inter-rater reliability analyses were conducted for the frequency of P&N. Participants were randomly selected when entering the protocol and a digital recording of the EDE was sent to a different rater to complete reliability ratings. Intraclass correlation coefficients (ICC) in the BED ($F(107)=15.62$, $p<.01$; ICC=.88, 95%CI (.83-.92)) and BN participants ($F(16)=61.88$, $p<.01$; ICC=.97, 95%CI .92-.99) were found to be good. For the AN sample, ICC were moderate($F(30)=3.80$, $p<.01$; ICC=.58, 95%CI(.29-.78)).

Statistical analysis

Chi-square analysis was conducted to test the differences between proportions of P&N across the different samples. Spearman's rank correlation coefficient and Pearson’s R test were used to test associations between frequency of P&N and objective binge eating (OBE), subjective binge eating (SBE), compensatory behaviors, EDE global score and subscales. Multiple linear regression analysis was conducted to test the association between P&N and BMI, controlling for age. One-way ANOVA tested the differences in age across the samples. The study was approved by the Ethical Committee of each of the institutions involved. P values <.05 were considered significant.

Results

Table 1 presents the age, BMI and EDE global score, as well as the proportion of participants reporting P&N, OBE and SBE.

The presence of P&N across the different samples

The three different samples differed significantly in the proportion of participants reporting P&N at least once in the previous 28 days ($\chi^2(2)=21.57$, $p<.001$). The BN group reported the highest percentage, followed by the BED and the AN group. Post-hoc analyses with Bonferroni correction revealed significant differences between BN and AN groups ($\chi^2(1)=19.5$, $p=.001$), BN and BED ($\chi^2(1)=9.6$, $p<.01$), but not between BED and AN

($\chi^2(1)=3.5$, $p=.06$). Of the participants reporting this behavior, most reported P&N occurring on from 1 to 5 days or from 6 to 12 days in the previous 28 days (*Table 2*).

P&N and its association with eating disorder symptoms and BMI

The three groups differed significantly in BMI ($F(2,641)=330.40, p<.001$). (*Table1*) No association was found between the presence of P&N and BMI for any of the groups (BN:$F(2,246)=2.46$,p=.08; AN:$F(2,134)=2.82$,p=.06; BED:$F(2,256)=.03$,p=.97), while controlling for age.

The BN group of participants presented the highest scores in the EDE global score when compared with the AN, and BED samples ($F(2,653)=16.50.07$, $p<.001$). (*Table 1*) Post-Hoc analyses revealed that only the BN group scores were significantly different from AN or BED. Within each group of participants, no correlation was found between P&N and EDE global score (BN: $R_{Sp}=-.009$; AN: $R_{Sp}=.05$; BED: $R_{Sp}=-.04$); the Restraint Subscale Score (BN: $R_{Sp}=-.05$; AN: $R_{Sp}=.04$; BED: $R_{Sp}=-.09$); the Eating Concern Subscale Score (BN: $R_{Sp}=-.03$; AN: $R_{Sp}=.13$; BED: $R_{Sp}=-.03$); the Shape Concern Subscale Score (BN: $R_{Sp}=-.001$; AN: $R_{Sp}=.08$; BED: $R_{Sp}=-.05$) or the Weight Concern Subscale Score (BN: $R_{Sp}=-.04$; AN: $R_{Sp}=.05$; BED: $R_{Sp}=-.04$).

No association was found between P&N and OBE across the BED, BN and AN group of participants ($R_{Sp}=-.05$; $R_{Sp}=-.03$ and $R_{Sp}=-.02$, respectively). No association was also found between P&N and SBE across the BN, AN and BED group of participants ($R_{Sp}=.10$; $R_{Sp}=.10$; and $R_{Sp}=-.08$, respectively).

Association between P&N and compensatory behaviors was tested for BN and AN groups of patients, since BED diagnosis excludes the frequent use of these methods. No correlation was found between P&N and 'vomiting related to weight/shape control' among of the BN and AN groups of participants (BN: $R_{Sp}= -.03$; AN: $R_{Sp}=.07$); the use of diuretics (BN: $R_{Sp}=-.06$; and AN: $R_{Sp}= -.07$), laxatives misuse (BN: $R_{Sp}=.02$; and AN: $R_{Sp}=.14$,), or excessive exercise (BN: $R_{Sp}=-.01$; and AN: $R_{Sp}=-.06$).

Discussion

This is the first study to utilize a face-to-face interview to assess P&N in different clinical samples. Our findings suggest that P&N is a reasonably frequent eating behavior among AN, BN and BED participants. Epidemiological and comparative research with non-clinical samples is still required, but the prevalence data found by Reas et al[11] (91% in a college sample) suggests that ED patients report less P&N than non-clinical population. The fact that ED patients present high eating concerns, dietary restraint, and often engage in fasting or rigid eating schedules, may account for the lower frequency of repetitive eating patterns. In line with other authors,[11,12] the lack of association with ED psychopathology, compensatory behaviors or BMI, support the concept that P&N is outside the spectrum of what are usually considered eating disorder behaviors.

Several questions remain regarding the definition of P&N. Loss of control over eating is ruled out as a criterion in the EDE[18] definition of P&N, which may account for the non-

significant association with psychopathology. Additionally, the distinction between frequent eating and P&N warrants attention since some patients (e.g., AN or bariatric surgery candidates) might engage in repetitive eating of small amounts of food, as a strategy for restrictive eating.

A limitation of this study is that P&N was rated using a 0-7 Likert scale, limiting the analysis to these categories. The DSM-5 requires the occurrence of binge eating episodes at least once a week for three months for BN and BED, but no data are available regarding the adequacy of this criterion for P&N. Thus, P&N was considered present when reported at least once in the previous 28 days (category: 1-5 days). Other rating scheme would be desirable for future works to investigate the minimum frequency of P&N with relevant impact on psychological distress or other symptoms (eg, BMI, eating disordered psychological symptoms, eating disordered behaviors).

Generally, our findings suggest that P&N is not associated with increased psychological impairment or other eating disordered behaviors, which raises questions about the clinical significance of P&N among ED participants. Still, its relevance among the bariatric surgery patients highlights the need to better investigate these eating patterns characterized by a repetitive eating of small amounts of food.

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References

1. Fairburn, CG.; Cooper, Z. Eating Disorder Examination (14th ed., version 14.3). University of Oxford; Oxford, UK: 2000.
2. Saunders R. “Grazing”: A High-Risk Behavior. Obes Surg. 2004; 14:98–102. [PubMed: 14980042]
3. Colles SL, Dixon JB, O’Brien PE. Grazing and Loss of Control Related to Eating: Two High-risk Factors Following Bariatric Surgery. Obesity. 2008; 16:615–622. [PubMed: 18239603]
4. Brolin RE, Robertson LB, Kenler HA, Cody RP. Weight Loss and Dietary Intake After Vertical Banded Gastroplasty and Roux-en-γ Gastric Bypass. Ann Surg. 1994; 220:782–790. [PubMed: 7986146]
5. Busetto L, Segato G, De Marchi F, Foletto M, De Luca M, Caniato D, et al. Outcome Predictors in Morbidly Obese Recipients of an Adjustable Gastric Band. Obes Surg. 2002; 12:83–92. [PubMed: 11868305]
6. Burgmer R, Grigutsch K, Zipfel S, Wolf AM, de Zwaan M, Husemann B, et al. The Influence of Eating Behavior and Eating Pathology on Weight Loss after Gastric Restriction Operations. Obes Surg. 2005; 15:684–691. [PubMed: 15946461]
7. Saunders R. Binge Eating in Gastric Bypass Patients Before Surgery. Obes Surg. 1999; 9:72–76. [PubMed: 10065590]
8. Kofman MD, Lent MR, Swencionis C. Maladaptive Eating Patterns, Quality of Life, and Weight Outcomes Following Gastric Bypass: Results of an Internet Survey. Obesity. 2010; 18:1938–1943. [PubMed: 20168309]
9. de Zwaan M, Hilbert A, Swan-Kremeier L, Simonich H, Lancaster K, Howell L, Monson T, Crosby RD, Mitchell JE. Comprehensive interview assessment of eating behavior 18-35 months after gastric bypass surgery for morbid obesity. Surg Obes Rel Dis. 2010; 6(1):79–85.

10. Busetto L, Segato G, De Luca M, De Marchi F, Foletto M, Vianello M, et al. Weight Loss and Postoperative Complications in Morbidly Obese Patients with Binge Eating Disorder Treated by Laparoscopic Adjustable Gastric Banding. Obes Surg. 2005; 15:195–201. [PubMed: 15802061]
11. Reas DL, Wisting L, Kapstad H, Lask B. Nibbling: Frequency and relationship to BMI, pattern of eating, and shape, weight, and eating concerns among university women. Eat Behav. 2012; 13:65–66. [PubMed: 22177400]
12. Masheb RM, Grilo CM, White MA. An Examination of Eating Patterns in Community Women with Bulimia Nervosa and Binge Eating Disorder. Int J Eat Disord. 2011; 44:618–624. [PubMed: 21997425]
13. Mitchell J, Crosby R, Wonderlich S, Crow S, Lancaster K, Simonich H, et al. A randomized trial comparing the efficacy of cognitive-behavioral therapy for bulimia nervosa delivered via telemedicine versus face-to-face. Behav Res Ther. 2008; 46:581–592. [PubMed: 18374304]
14. Wonderlich S, Engel S, Peterson C, Robinson M, Crosby R, Mitchell J, et al. Examining the conceptual model of integrative cognitive-affective therapy for BN: Two assessment studies. Int J Eat Disord. 2008; 41:748–754. [PubMed: 18528869]
15. Smyth JM, Wonderlich SA, Heron KE, Sliwinski MJ, Crosby RD, Mitchell JE, et al. Daily and momentary mood and stress are associated with binge eating and vomiting in bulimia nervosa patients in the natural environment. J Consult Clin Psychol. 2007; 75:629–638. [PubMed: 17663616]
16. Le Grange D, Crosby RD, Engel SG, Cao L, Ndungu A, Crow SJ, et al. DSM-IV-Defined Anorexia Nervosa Versus Subthreshold Anorexia Nervosa (EDNOS-AN). Eur Eat Disorders Rev. 2013; 21:1–7.
17. Peterson CB, Mitchell JE, Crow SJ, Crosby RD, Wonderlich SA. The efficacy of self-help group treatment and therapist-led group treatment for binge eating disorder. Am J Psychiatry. 2009; 166(12):1347–54. [PubMed: 19884223]
18. Fairburn, C.; Cooper, Z.; O'Connor, M. Eating disorder examination (Edition 16.0D). In: Fairburn, C., editor. Cognitive Behavior Therapy and Eating Disorders. Guilford Press; New York: 2008.

Table 1

Descriptive measures for the Binge Eating Disorder (BED; n=259), Bulimia Nervosa (BN; n=264) and Anorexia Nervosa (AN; n=) group: BMI and EDE total score; P&N, OBE and SBE.

	Age	BMI	EDE	P&N	OBE	SBE
	M(SD)	M(SD)	M(SD)	n(%)	n(%)	n(%)
BN	26.1(8.3)	23.6(5.1)[b,c]	3.2(1.2)[b,c]	152(57.6)	240(92.3)[*]	175(67.3)
AN	25.4(8.4)	17.1(1.1)[a,c]	2.7(1.3)[a]	47(34.3)	42(30.9)	65(47.4)
BED	46.9(10.3)[a,b]	38.9(7.8)[a,b]	2.6(.9)[a]	114(44.0)	249(99.6)	121(46.7)

P&N – number and percentage of participants reporting P&N at least once in the previous 28 days; **OBE** – number and percentage of participants reporting OBE at least once in the previous 28 days; **SBE** – number and percentage of participants reporting SBE at least once in the previous 28 days;

[a] Significantly different from BN;

[b] Significantly different from AN;

[c] Significantly different from BED;

[*] A subgroup of patients presented with subclinical BNs not reporting OBE in the last month, but presenting SBE and/or OBE in the preceding 3 months.

Table 2

Number and percentage of participants reporting P&N across the different frequency categories over the past 28 days for Binge Eating Disorder (BED), Bulimia Nervosa (BN) and Anorexia Nervosa *[AN]* group.

	Frequency category	BN (n=264)	AN (n=137)	BED (n=259)
n(%)	**Not present**	112(42.4)	90(65.7)	145(56)
	1 to 5 days	54(20.5)	18(13.1)	23(8.9)
	6 to 12 days	43(16.3)	17(12.4)	40(15.4)
	13 to 15 days	18(6.8)	3(2.2)	20(7.7)
	16 to 22 days	15(5.7)	5(3.6)	15(5.8)
	23 to 27 days	16(6.1)	1(0.7)	7(2.7)
	Everyday	6(2.3)	3(2.2)	9(3.5)