

# Prevalence of eating disorders and picking/nibbling in elderly women

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## Abstract

**Objective:** The aim of this study was to examine the point prevalence of eating disorders and picking/nibbling in elderly women.

**Methods:** This was a two-stage epidemiological study that assessed 342 women aged 65–94 years old. In *Stage 1*, the following screening measures were used to identify possible cases: the Mini-Mental State Examination, to screen and exclude patients with cognitive impairment; Weight Concerns Scale; SCOFF (Sick, Control, One, Fat, Food) Questionnaire; Eating Disorder Examination Questionnaire—dietary restraint subscale; and three questions to screen for picking/nibbling and night eating syndrome. Women selected for *Stage 2* ( $n = 118$ ) were interviewed using the diagnostic items of the Eating Disorder Examination.

**Results:** According to the DSM-5, the prevalence of all eating disorders was 3.25% (1.83–5.7, 95% C.I.). Prevalence of binge-eating disorder was 1.68% (0.82–3.82, 95% C.I.), of other specified feeding or eating disorders was 1.48% (0.63–3.42, 95% C.I.), and of bulimia nervosa 0.3% (0.05–1.7, 95% C.I.). Binge-eating episodes were reported by 5.62% of women. No cases of anorexia nervosa or night eating syndrome were identified. The prevalence of picking/nibbling was 18.9%. Picking/nibbling was associated with increased body mass index ( $t(322) = -3.28, p < .001$ ) and binge-eating episodes ( $\chi^2(1) = 5.65, p < .017$ ).

**Discussion:** Prevalence rates of eating disorders on elderly Portuguese women were comparable to those found on young women. Our data support the literature that suggests that binge-eating disorder is particularly prevalent in older adults. Picking/nibbling was the most prevalent eating behavior and we provide further evidence for its association with weight and disordered eating.

## KEYWORDS

binge-eating episodes, eating disorders, elderly women, picking/nibbling, prevalence

## 1 | INTRODUCTION

Given the rapidly increasing elderly population worldwide, providing adequate health care services that meet the needs of the aging population has become a concern (WHO, 2012). Eating disorders are a heterogeneous category of psychiatric disorders associated with important health comorbidities and high mortality rates (Berkman, Lohr, & Bulik, 2007). In elderly populations in particular, dieting, nutritional deficits, and low weight may pose a significant threat to life (Cornali, Franzoni, Frisoni, & Trabucchi, 2005; Tayback, Kumanyika, & Chee, 1990) or

physical health (including musculoskeletal conditions, pain, diabetes, hypertension, and ulcers, among others) (Kessler et al., 2013; Mitchell, & Crow, 2006). Dietary intake and eating disorders are further linked to dementia or impaired cognitive functioning (Donini et al., 2013; Klump, Bulik, Kaye, Treasure, & Tyson, 2009; Ortega et al., 1997). On the other hand, obesity rates and associated comorbidities seem to be increasing worldwide among the elderly population (Christensen, Doblhammer, Rau, & Vaupel, 2009) and have been linked to problematic eating behaviors. Binge-eating disorder (BED) (de Zwaan, 2001), night eating syndrome (Vander Wal, 2012), loss of control eating, and

picking/nibbling (Conceição, Mitchell, Engle, et al., 2014) have been associated with weight gain and overweight in adults. However, there is a dearth of research on eating disorders and problematic eating behaviors in the elderly population.

The prevalence rates of eating disorders in Portugal are estimated to be 3.06% (Machado, Machado, Gonçalves, & Hoek, 2007), and the most prevalent DSM-5 (American Psychiatric Association, 2013) diagnosis in young women is "other specified eating and feeding disorders" (OSFED) (eating disorders not otherwise specified in the DSM-IV-TR [American Psychiatric Association, 2000]) (Machado, Machado, Gonçalves, & Hoek, 2007; Machado, Gonçalves, & Hoek, 2013). As eating disorders are commonly diagnosed among young women (Smink, van Hoeken, & Hoek, 2012), most research has focused on this age range. Nonetheless, there is evidence that eating disorders are equally clinically relevant in older as they are in younger aged. Cohort comparison studies have suggest that dietary restraint and eating attitudes, such as desire or attempts to lose weight despite normal weight, do not significantly differ between older (60–78 years old) and younger adults (18–31 years old) (Hetherington, & Burnett, 1994). Additionally, two case reports found that the clinical presentation of eating disorders in the elderly seems to be comparable to that observed in younger populations (Andersen, 1996; Hsu, & Zimmer, 1988). Altogether, these data highlight the importance of contributing further information about disordered eating behaviors in the elderly population to the current literature.

To date, few studies have reported on eating disorders in elderly women (above 65 years old, according to the WHO [WHO, 2016]). Three studies have assessed community samples (Gagne et al., 2012; Hay, Mond, Buttner, & Darby, 2008; Mangweth-Matzek et al., 2006). Mangweth-Matzek et al. (2006), using a self-report measure, estimated that 3.8% of Austrian women (60–70 years old) presented an eating disorder, with eating disorders not otherwise specified being the most frequently reported. Body checking, regular physical activity, fasting, laxative/diuretic misuse, vomiting, and spitting food were weight control behaviors endorsed by 86% of these women. Gagne et al. (2012) conducted an online survey of a sample of women 65 years old or older and documented that 3.1% self-reported engaging in binge eating at least once a week. Weight control strategies and body checking behaviors were also endorsed by approximately half the sample. Regarding compensatory behaviors, vomiting was a rare occurrence (1%), misuse of laxatives/diuretics was self-reported by 2.2%/2.1%, respectively, and diet pills were used by 5.2% of these women. Similarly, Hay, Mond, Buttner, & Darby (2008), in the only study using face-to-face interviews to assess eating disorders in elderly women, found that 6.2% of women older than 65 years reported binge-eating episodes at least once a week in the previous 3 months, 20.1% reported purging behaviors, and 5.3% underwent a strict diet or fasting. The authors did not report prevalence estimates for full-syndrome eating disorders for this age range. Guerdjikova et al. (2012) assessed a sample of 20 women aged between 65 and 77 years who had BED and described a mean frequency of 2.9 binge-eating episodes a week. Mood disorders and obesity were comorbid conditions in this sample.

Night eating syndrome has been included as an OSFED in the fifth edition of the DSM (American Psychiatric Association, 2013). It is estimated that 1.5% of individuals in the general population present night eating syndrome (Rand, Macgregor, & Stunkard, 1997). In a sample aged between 14 and 85 years old, based on the night eating questionnaire (Allison et al., 2008), the prevalence of night eating syndrome was 1.1%; 6.2% of the sample reported eating >25% of their daily caloric intake after dinner (De Zwaan, Müller, Allison, Brähler, & Hilbert, 2014). Andersen, Stunkard, Sørensen, Petersen, & Heitmann, (2004) found that 9.1% of women aged 55 years or older reported getting up during the night to eat. To date, no prevalence data have been published regarding night eating syndrome in women aged 65 years or older.

Picking/nibbling is an eating behavior generally characterized by the ingestion of moderate quantities of food throughout the day in a repetitive and unplanned manner (Conceição, Mitchell, Engle, et al., 2014). Studies with general and clinical populations suggest that this is a relatively common behavior: picking/nibbling is thought to occur in 91% of university women at least once in the previous month and in 5% every day (Reas, Wisting, Kapstad, & Lask, 2012). Conceição et al. (2013) found that 44% of patients with BED, 57.6% of patients with bulimia nervosa, and 34.3% of patients with anorexia nervosa report picking/nibbling. Among the bariatric population, the presence of picking/nibbling is thought to reach approximately 45% postoperatively (Conceição, Mitchell, Vaz, et al., 2014). The findings regarding the association between picking/nibbling and weight are mixed. No association with body mass index (BMI) has been reported for university women (Conceição, Mitchell, Vaz, et al., 2014) or clinical populations (Conceição et al., 2013). However, these findings are limited by the small sample size ( $n = 58$ ) (Reas, Wisting, Kapstad, & Lask, 2012) or by the clinical status of the eating disorder itself, which highly affects weight regulation (Conceição et al., 2013). On the other hand, picking/nibbling has been associated with weight regain after bariatric surgery, and an overlap between picking/nibbling and loss of control eating has also been observed (Conceição, Mitchell, Vaz, et al., 2014). Other studies assessing picking/nibbling-type behavior (grazing (Colles, Dixon, & O'Brien, 2008), nibbling (Kofman, Lent, & Swencionis, 2010), and snack-eating [Faria, Kelly, Faria, & Ito, 2009]) have also suggested an association with less weight loss and increased weight regain following bariatric surgery. Although there are no studies of picking/nibbling in the elderly, Shahar, Shai, Vardi, & Fraser (2003) reported that 36% of women  $\geq 65$  years old reported eating between meals. Because of its potential impact on weight, further study of picking/nibbling is warranted.

Overall, the existing literature on disordered eating and problematic eating in elderly women is limited by the small number of studies and by the suboptimal methodology used to diagnose eating disorders. Most studies use only self-report measures (Gagne et al., 2012; Mangweth-Matzek et al., 2006) and do not include a two-stage epidemiologic design. Additionally, there are no studies in the elderly Portuguese population, and epidemiological research is warranted. Thus, this study aimed to investigate the prevalence of eating disorders and picking/nibbling in elderly women  $\geq 65$  years old.

## 2 | METHODS

### 2.1 | Design and participants

This was a two-stage epidemiological study on the prevalence of eating disorders and picking/nibbling in elderly women. The study was conducted in a specific catchment area (Terceira Island, Azores, Portugal) with a population of 56,000 inhabitants, 4,782 of whom are elderly women (INE IP, 2012) (65 years old or more, according to the definition of the WHO) (WHO, 2016). Data collection was conducted in 23 (out of 31) elderly day community centers in different parishes of the only two municipalities on the island (Praia da Vitória and Angra do Heroísmo), including both urban and rural areas. Participants were also recruited from the senior University of Angra do Heroísmo. Each site was visited once, with the exception of 4 sites in the city centers with a high number of attendant women, which were visited twice.

The participants invited were those who attended the centers on the day of the researcher's visit. Only women who were not engaged in any activity were invited to be interviewed. Elderly community centers are government funded and are part of the community system, and they are exclusively managed by elderly citizens, who are responsible for all the activities that are provided at these sites. These elderly community centers develop mainly recreational and occupational activities. Senior universities are also government funded, offer no academic degree, and do not have specific admission requirements. Classes are open to anyone interested in the available courses and cover a wide range of subjects from philosophy and history to sewing and tapestry.

Permission to collect data was requested from all institutions involved, and the protocol was discussed with the administrative board of each institution. The inclusion criteria were as follows: being 65 years or older, female, Portuguese, and fully autonomous in their food intake and food choice. The exclusion criteria were dementia, cognitive impairment, or deafness.

The protocol was approved by the Institutional Review Boards involved.

### 2.2 | Measures

The *sociodemographic questionnaire* assessed age, marital status, educational level, household family members, anthropometric variables, and health status (Please refer to Supporting Information for further details).

#### 2.2.1 | Stage 1 screening measures

The *Mini-Mental State Exam* (MMSE) (Folstein, Folstein, & McHugh, 1975) is a screening measure for cognitive impairment and dementia. It includes 30 questions organized in six domains: orientation, registration, attention and calculation, recall, language, and visual construction. It has shown good psychometric properties in the Portuguese population, with a Cronbach's alpha of 0.89 (Guerreiro et al., 1994). Illiterate participants with scores  $\leq 15$ ; patients with up to 11 years of education scoring  $\leq 22$ ; and patients with  $> 11$  years of education scoring  $\leq 7$  were excluded from the study.

The *Weight Concerns Scale* (WCS) (Killen et al., 1994) is a five-item questionnaire that assesses body and shape-related concerns and behaviors, fear of gaining weight, past diet, feelings of being fat, and importance of weight. The scale presented adequate internal consistency in our sample (Cronbach's alpha = .69).

The *Sick, Control, One, Fat, Food Questionnaire* (Morgan, Reid, & Lacey, 1999) (SCOFF) is a five-item screening measure for eating disorders that asks about the main features of eating disorders and has a dichotomous rating scheme. It possessed adequate internal consistency in our sample, with a Cronbach's alpha of 0.6.

The *Eating Disorder Examination Questionnaire* (Fairburn, & Beglin, 2008) (EDE-Q) dietary restraint is a 28-item questionnaire that assesses eating disorder symptoms present in the past 28 days within 4 subscales. For the purposes of this study, and because we wished to screen for restraint eating in stage 1, only the dietary restraint subscale (5 items) was used. This scale has shown good psychometric properties in the Portuguese population (Machado et al., 2014), and the dietary restraint subscale had good internal consistency in our sample (Cronbach's alpha = 0.76).

*Picking/nibbling and night eating syndrome*: three short general and short questions with yes/no responses were asked for this purpose: (1) In the past month, did you eat small amounts of food in a repetitive and unplanned manner? (2) Do you eat large amounts of food or do you crave eating food after dinner and before going to bed? (3) Do you wake up during the night, at least once, to eat?

#### 2.2.2 | Stage 2 assessment measures

*Eating disorder examination (EDE) 16.0* (Fairburn, Cooper, & O'Connor, 2008): The diagnostic items of this investigator-based clinical interview were used to diagnose eating disorders according to the DSM-5. These items assess the frequency of different disordered eating episodes, associated compensatory behaviors, and the importance of body weight and shape. For the purpose of this study, we also asked about the same compensatory behaviors that were practiced but not used to regulate weight. The frequency and duration of each criterion/behavior were recorded for later determination of DSM-5 diagnoses.

The varied disordered eating episodes assessed were generally defined as follows. *Objective binge-eating episodes*: eating unambiguously large amounts of food, with an accompanying sense of loss of control. *Subjective binge-eating episodes*: eating, with a sense of loss of control, amounts of food that are perceived as large by the respondent but not by others. *Picking/nibbling*: repeatedly eating modest amounts of food that are not meals or snacks in an unplanned manner. For *night eating syndrome*, questions addressing the 6 criteria described in the DSM-5 (American Psychiatric Association, 2000) for night eating syndrome were added to this interview.

### 2.3 | Procedure

Elderly women attending the institutions on the day of the researcher's visit were invited to participate in the study, and the objectives of the study were presented. Those who agreed to participate signed an informed consent form and underwent the initial screening for

**TABLE 1** Number and percentage of the 338 participants that met each selection criteria for Stage 2. Descriptive data for the scores on the questionnaires used at Stage 1

N = 338	n (%)	Mean (SD)	Min–Max
EDE-Q (dietary restraint)	10 (2.96%)	0.47 (0.79)	0–4.40
SCOFF	47 (13.91%)	0.23(0.65)	0–4
WCS	2 (0.59%)	–4.38(19.16)	–25–65
P&N	68 (20.12%)	-	-
NES	1 (0.29%)	-	-

Note. 118 participants met at least one selection criterion for Stage 2. For each measure, cut-points for selection to second stage are the following: EDE-Q – eating disorder examination – questionnaire (score  $\geq 3$ ); SCOFF – sick, control, one, fat, food questionnaire (at least 1 positive item); WCS – Weight Concerns Scale (score  $\geq 52$ ); P&N – picking or nibbling screening questions and NES – night eating syndrome screening questions (at least one positive answer in picking/nibbling NES screening questions); M – M mean; SD – standard deviation. Note: A few women met more than one of the criteria for Stage 2; hence, the sum of patients meeting each criterion is higher than the total number of participants.

dementia and cognitive impairment with the MMSE. Participants without severe cognitive impairment met the inclusion criteria for the study. The Stage 1 assessment screened for possible eating disorders or picking/nibbling through face-to-face interviews. The researcher clarified any doubts regarding the questions. We chose a wide set of selection criteria to ensure that no possible cases would be dismissed. Women who met at least one of the following selection criteria progressed to Stage 2: (a) at least one positive item on the SCOFF and (b) at least one positive answer on the picking/nibbling or night eating syndrome screening questions; a score of 52 or higher on the WCS; and a score of 3 or higher on the EDE-Q dietary restriction subscale.

Women who advanced to Stage 2 were interviewed by a psychologist with formal training in the EDE, who administered the EDE diagnostic items. Final diagnoses were reached upon discussion and consensus between the authors of this work.

As a considerable percentage of the patients presented difficulties reading/writing, all participants responded orally to all questions in a face-to-face interview setting.

### 3 | RESULTS

#### 3.1 | Stage 1

In Stage 1, 342 women  $\geq 65$  years old were invited to participate in the study. All women agreed to participate in our study, but 4 (1.16%) showed significant cognitive impairment and were excluded. Of the 338 women interviewed in Stage 1, 118 (34.91%) met the criteria for the Stage 2 interview.

Table 1 presents the number of patients meeting each selection criterion needed to advance to Stage 2 as well as the mean and standard deviation of the scores of each assessment measure for the entire population.

The mean age of our participants was 72.5 years old (SD = 6.5; range: 65–94 years old). Most women were married (or living with a partner) (54.17%) or widowed (36.41%), and 93.83% had children. As for educational level, 62.10% had completed 4 years of basic school; 23.09% were illiterate; 6.79%, 3.62%, and 36.4% had completed 6, 9, and 12 years of school; and 0.91% had a college degree. Regarding daily occupation, the participants usually spent the day with their partners (31.12%), in elderly day care centers (25.36%), alone (15.66%), or with friends or family (22.21%), and 0.88% had a job. Most women (83.44%) reported health problems such as hypertension, with 41.11% reporting more than one health problem.

BMI ranged between 18.43 and 69.34 kg/m<sup>2</sup> (M = 29.44; SD = 5); 0.29% (n = 1) were low weight (BMI < 18.5); 12.13% (n = 41) were normal weight (18.5  $\leq$  BMI < 25.0); 43.49% (n = 147) were overweight (25  $\leq$  BMI < 30.0); 28.40% (n = 96) were obese class I (30  $\leq$  BMI < 35); 6.51% (n = 22) were obese class II (35  $\leq$  BMI < 40); and 3.25% (n = 11) were obese class III (BMI  $\geq$  40).

#### 3.2 | Stage 2

##### 3.2.1 | Disordered eating and picking/nibbling

Table 2 presents the number of women in Stage 2 who reported each eating episode or compensatory behavior, as assessed by the EDE. Picking/nibbling was the most commonly endorsed behavior (18.93% of the total sample), followed by objective binge-eating episodes (3.55% of the total sample) and subjective binge-eating episodes (2.37% of the total sample). Altogether, 5.62% of women reported bulimic episodes (objective binge-eating and/or subjective binge-eating episodes). Of these women, the mean number of episodes of objective binge-eating and/or subjective binge-eating episodes per month was 8 (SD = 6) and 7.5 (SD = 8), respectively. Inappropriate behaviors to control weight were also reported by women, with the exception of misuse of diuretics and excessive physical exercise. Of interest, all the behaviors traditionally considered compensatory behaviors (with the exception of excessive exercising) were endorsed by a high proportion of women (44.07%) at least once in the previous month, although not with the purpose of controlling their weight (vomiting, n = 6; laxatives, n = 22; diuretics, n = 10). The reasons for these behaviors included vomiting to address physical discomfort after eating, fasting as a normal habit/eating pattern, not being willing to eat alone/cook for herself, not feeling hungry, using laxatives for obstipation, and using diuretics for health reasons (hypertension) with a medical prescription. Although no women reported excessive exercise, 48 (14.20%) used to exercise (not excessively) regularly.

The prevalence of picking/nibbling at least once in the previous month was 18.93% (15.12–23.45, 95% C.I.), and 16.27% (12.72–20.58, 95% C.I.) reported picking/nibbling at least once a week in the previous 3 months. Of the 64 and 55 women presenting picking/nibbling at least once in the previous month or once a week in the previous 3 months, the mean number of days picking/nibbling was 13.70 (SD = 6.5) and 12.71 (SD = 7.3), respectively. Of interest, women who reported picking/nibbling at least once in the previous month had a significantly higher BMI (M = 31.24; SD = 6.97) than their counterparts

TABLE 2 Prevalence of disordered eating and picking/nibbling

	At least one in the previous month			At least once a week in the previous 3 months		
	<i>n</i>	% of stage 2 participants ( <i>n</i> = 118)	% of all participants ( <i>n</i> = 338)	<i>n</i>	% of stage 2 participants ( <i>n</i> = 118)	% of all participants ( <i>n</i> = 338)
<b>Bulimic episodes</b>	19	16.10	5.62	12	10.17	3.55
OBE	12	10.16	3.55	6	5.08	1.78
SBE	8	6.78	2.37	4	3.39	1.18
<b>Compensatory behaviors</b>	5	4.24	1.48	3	2.54	0.89
Fasting	3	2.54	0.89	2	1.69	0.59
Self-induced vomiting	1	0.85	0.29	1	0.85	0.29
Laxatives	1	0.85	0.29	0	0	0
Diuretics/excessive exercise	0	0	0	0	0	0
<b>Picking/nibbling</b>	64	54.2	18.93	55	46.61	16.27

Note. **OBE**, objective bulimic episodes; **SBE**, subjective bulimic episodes; **NES**, night eating syndrome.

( $M = 28.91$ ;  $MD = 4.42$ ;  $t(325) = -3.32$ ,  $p < .001$ ;  $g_{Hedges} = .465$ ). An overlap between picking/nibbling and binge-eating episodes was observed ( $\chi^2(1) = 5.65$ ,  $p < .017$ ). In fact, participants reporting binge-eating episodes (objective or subjective) presented 2 times the risk of engaging in picking/nibbling (OR = 2.4, 95% C.I. [1.149, 5.193]).

### 3.2.2 | Prevalence of eating disorders

Considering the DSM-5 criteria for eating disorders, and based on the observed rates of our sample ( $n = 338$ ), the prevalence of eating disorders was 3.25% (1.83–5.7, 95% C.I.). BED was diagnosed in 1.68% ( $n = 6$ ) (0.82–3.82, 95% C.I.) of the sample. If we consider subjective binge-eating episodes, two additional cases would be included, corresponding to a prevalence of BED of 2.37% (1.20–4.60, 95% C.I.).

Only one woman met the DSM-5 criteria for bulimia nervosa with mild severity, for an estimated prevalence of 0.3% (0.05–1.66, 95% C.I.). This participant engaged in fasting as a means to compensate for previous binge-eating episodes. If we consider subjective binge-eating episodes, one additional case would be included, corresponding to a prevalence of bulimia nervosa of 0.59% (0.16–2.13, 95% C.I.). No cases of night eating syndrome were identified.

Five women (1.48%, 0.63–3.42, 95% C.I.) met the DSM-5 criteria for OSFED. Of those, BED of low-frequency or limited duration of binge-eating episodes was identified in four women (1.18%, 0.46–3.00, 95% C.I.), and bulimia nervosa of low-frequency of binge-eating episodes in one (0.30%, 0.05–1.66, 95% C.I.).

## 4 | DISCUSSION

We found that the prevalence of eating disorders in elderly Portuguese women ( $\geq 65$  years old) was 3.25%, which is comparable to that in young Portuguese women (3.06%) (Machado, Machado, Gonçalves, & Hoek, 2007). However, the distribution of the different eating disorder categories in elderly women differed from the distribution in younger ages. OSFED are thought to be the most prevalent eating disorders in

young adult women, followed by BED, anorexia nervosa and bulimia nervosa (Machado, Gonçalves, & Hoek, 2013). Our study showed that BED was the most prevalent eating disorder (1.68%), followed by OSFED (1.48%) and bulimia nervosa (0.30%). The prevalence rates reported for younger women are slightly higher for OSFED (1.97%) and bulimia nervosa (0.59%) but lower for BED (0.62% [Machado, Gonçalves, & Hoek, 2013] or 0.5% [Ribeiro, Conceição, Vaz, & Machado, 2014]). Our data add to the current literature suggesting that BED is more prevalent in older adults (Kessler et al., 2013; Wilfley, Schwartz, Spurrell, & Fairburn, 2000). As for anorexia nervosa, which is estimated to be present in 0.69% of young Portuguese women (Machado, Gonçalves, & Hoek, 2013), no cases were identified in our sample, which is in line with a previous study on older samples (Mangweth-Matzek et al., 2006).

Recently, eating disorder researchers and clinicians have debated about the clinical relevance of considering loss of control eating regardless of the amount of food ingested. Several authors have advocated that loss of control is the hallmark feature of binge-eating episodes and that subjective binge-eating episodes are associated with similar psychological distress to that of objective binge-eating episodes (Mond, Latner, Hay, Owen, & Rodgers, 2010; Palavras, Morgan, Borges, Claudino, & Hay, 2013). Thus, if we consider subjective binge-eating episodes, the prevalence of eating disorders would slightly increase to 2.57% for BED and 0.59% for bulimia nervosa. Considering the different eating episodes assessed by the EDE, our results show that 5.62% of women engaged in bulimic episodes (objective binge-eating and/or subjective binge-eating episodes) at least once in the previous month, but only 1.78% reported objective binge-eating episodes at least once a week in the previous 3 months. These proportions are markedly lower than those reported by Hay, Mond, Buttner, & Darby (2008) (6.2%) and Gagne et al. (2012) (3.2%) also in community samples.

To the best of our knowledge, this is the first study investigating the prevalence of night eating syndrome in elderly women. No cases of this syndrome were detected, which could be explained by the small

sample size. A previous study by de Zwaan, Müller, Allison, Brähler, & Hilbert (2014) estimated a prevalence of 1.1% in a sample aged between 18 and 85 years using a self-report measure, and Rand, Macgregor, & Stunkard (1997) found a prevalence of night eating syndrome of 1.5% in a community sample aged 18 years and older. However, no information was provided regarding the age of night eating syndrome cases, and the self-report measures used tended to overestimate the prevalence rates, generating a high number of false positives (Celio, Wilfley, Crow, Mitchell, & Walsh, 2004). Future research should add to this literature to provide more consistent data on night eating syndrome in the elderly population.

Picking/nibbling was the most prevalent eating behavior in our study, with a prevalence rate of 18.93%. In our sample, participants with picking/nibbling had a BMI that fell within the obesity range ( $BMI > 30$ ) and nonpicking/nibbling individuals within the overweight range ( $25 < BMI < 30$ ). Our results add further support to the extant literature on the bariatric population (Conceição, Mitchell, Vaz, et al., 2014), which suggests that picking/nibbling and similar eating behaviors (e.g., grazing, nibbling, or snacking) are associated with difficulties in weight maintenance (Colles, Dixon, & O'Brien, 2008; Faria, Kelly, Faria, & Ito, 2009; Kofman, Lent, & Swencionis, 2010). Moreover, our data provide further support for the co-occurrence of binge-eating episodes and picking/nibbling previously reported in the bariatric population (Conceição, Mitchell, Vaz, et al., 2014). As this is the first study to report prevalence rates of this problematic eating behavior in elderly women, future research should replicate these findings and further investigate the underlying mechanisms that affect weight control.

The greatest strength of this study is that it used face-to-face interviews to assess different disordered eating behaviors and picking/nibbling. Additionally, as *Stage 1* and *Stage 2* were consecutive, there was no attrition between stages (which is typically a major limitation of two-stage epidemiological studies). Finally, we were able to interview a heterogeneous sample of the only two cities on the island, corresponding to approximately 7% of the total elderly population of Terceira Island. Limitations of this study include the small sample size, which, together with high variability in the presentation of the different eating behaviors, produced large confidence intervals. Additionally, the small sample size did not allow us to explore the distribution of eating behaviors across age groups. Another limitation of this study is that we could not determine whether the presence of these eating behaviors or disorders reflected the onset, re-emergence, or maintenance of previous clinical conditions. A few reports argue that the onset of eating disorders can occur throughout the entire lifespan (Andersen, 1996; Mitchell, Hatsukami, Pyle, Eckert, & Soll, 1987), but this claim is still regarded with skepticism. Some authors believe that late eating disorders are a manifestation/reemergence of these disorders from a younger age (Scholtz, Hill, & Lacey, 2010). Future studies should investigate the history of these eating behaviors and disorders in this population. Finally, elderly individuals are more prone to having teeth problems and (ill-fitting) dentures, and their senses of smell and taste may deteriorate. These aspects may highly influence eating behaviors and limit these individuals' choices of food, ultimately shaping the presentation of eat-

ing episodes. Unfortunately, our study did not assess these aspects, and future research should explore how these problems could affect eating behaviors in elderly women.

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## CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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#### SUPPORTING INFORMATION

Additional Supporting Information may be found in the online version of this article.

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