Eating Behaviors 19 (2015) 24–27

Contents lists available at ScienceDirect

Eating Behaviors

Increased prevalence of vegetarianism among women with eating pathology

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ARTICLE INFO

Article history:
Received 25 February 2015
Accepted 16 June 2015
Available online 2 July 2015

Keywords:
Disordered eating
Vegetarianism
Eating disorders
Risk factors

ABSTRACT

Objective: Prior research has established a link between vegetarianism and disordered eating but has typically sampled vegetarians. This study examined prevalence of and variables related to vegetarianism in three samples with varying severity of eating pathology.
Method: Sample 1 consisted of female undergraduates who denied history of or current disordered eating (i.e., nonclinical; $n = 73$), or engaged in disordered eating over past month (i.e., subclinical; $n = 136$). Sample 2 included 69 female patients receiving residential treatment at an eating disorder center (i.e., clinical sample). Differences between groups were analyzed using Fisher's exact test.
Results: The prevalence of lifetime vegetarianism was lowest in the nonclinical group (6.80%) and highest in the clinical group (34.80%), with the subclinical group falling in between (17.60%). According to Fisher's exact test, all pairwise comparisons between groups were statistically significant (p's $< .05$). Regarding current vegetarian status, the clinical group was more likely (11.10%) than both other groups to self-identify as current vegetarians.
Discussion: Endorsement of vegetarianism was highest among females with severe eating pathology. Future research should use longitudinal data to examine the temporal relationship between these variables, or other underlying factors that may contribute to the co-occurrence of eating pathology and vegetarianism. Clinically, endorsement of vegetarianism may also be an important variable to consider in treatment disordered eating.

1 . Introduction

Vegetarian diets may be beneficial in promoting health (Tonstad, Butler, Yan, & Fraser, 2009; Rosell, Appleby, Spencer, & Key, 2006). However, a link between vegetarianism and disordered eating attitudes and behavior (Trautmann, Rau, Wilson, & Walters, 2008; Lindeman, Stark, & Latvala, 2000; Klopp, Heiss, & Smith, 2003; Bardone-Cone et al., 2012) has been identified, and some research has suggested that vegetarianism may mask the presence of eating pathology (Klopp et al., 2003; Martins, Pliner, & O'Connor, 1999).

Much of the research examining the relationship between disordered eating and vegetarianism has sampled vegetarians, typically from larger convenience samples (Trautmann et al., 2008; Klopp et al., 2003; Timko, Hormes, & Chubski, 2012). Nevertheless, the prevalence of vegetarianism among those with eating disorder symptoms remains understudied. Some research exists on the increased prevalence of vegetarianism among women with anorexia nervosa (O'Connor, Touyz, Dunn, & Beumont, 1987; Kadambari, Gowers, & Crisp, 1986) or a history of an eating disorder (Bardone-Cone et al., 2012); however, these studies did not consider a greater range of severity in disordered eating symptoms (i.e., only considered clinical samples). This investigation addressed a gap in the literature by examining the prevalence of vegetarianism within three female samples with varying severity of eating disorder symptoms (i.e., nonclinical, subclinical, clinical). We hypothesized that vegetarianism would be more prevalent in samples with more severe eating pathology. We also conducted exploratory analyses on variables related to vegetarianism (e.g., reasons for choosing these diets).

2. Methods

2.1. Participants and procedure

Participants were recruited from locations in the southeastern United States, and all procedures were approved by a university IRB. Sample 1 included 209 female undergraduates from a large university

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http://dx.doi.org/10.1016/j.eatbeh.2015.06.017
1471-0153/

who were recruited as part of a larger study on disordered eating (Zuromski & Witte, 2015). Participants were included in the nonclinical group ($n = 73$) if they denied any lifetime eating pathology and were included in the subclinical group ($n = 136$) if they endorsed any eating pathology (i.e., fasting, binge eating, self-induced vomiting, laxative use, excessive exercise) in the past 28 days. Participants completed a battery of computer-administered questionnaires, and height and weight measurements in exchange for course credit. Sample 2 included a subset of female patients receiving residential treatment at an eating disorder treatment center ($n = 69$) who were administered the vegetarianism questionnaire described below. After obtaining informed consent, participants completed a battery of questionnaires at admission to the facility. Diagnoses were derived by reviewing intake interview data, which provided sufficient information to diagnose anorexia nervosa (AN; 33.30%) and bulimia nervosa (BN; 29.00%) according to *DSM-5* (American Psychiatric Association, 2013) criteria. Participants who did not meet criteria for AN or BN were included in the eating disorders not otherwise specified Eating Disorder Not Otherwise Specified (EDNOS) diagnostic category based on *DSM-IV* (American Psychiatric Association, 1994) criteria (37.70%); this category includes people who would be diagnosed with binge eating disorder in *DSM-5*.

Mean age across groups was as follows: nonclinical $M = 19.41$ ($SD = 2.34$), subclinical $M = 19.45$ ($SD = 1.54$), and clinical $M = 26.83$ ($SD = 7.38$). Across all three groups, the majority were non-Hispanic/Latino (range of 97.10–98.60% across groups) and of white/European origin (range of 87.70–94.20% across groups).

2.2. Measures

2.2.1. Eating Disorder Examination—Questionnaire (EDE-Q) (Fairburn & Beglin, 2008; Fairburn & Beglin, 1994)

The EDE-Q is a 28-item questionnaire with four subscales (i.e., Restraint, Weight Concern, Shape Concern, and Eating Concern). The instrument also assesses frequency of specific behaviors (i.e., fasting, binge eating, self-induced vomiting, laxative use, excessive exercise) over the past 28 days. Items assessing specific behaviors were used as inclusion criteria for the subclinical group. Internal consistencies for the subscales were adequate across samples ($\alpha = .69$–$.80$ for nonclinical; $\alpha = .81$–$.91$ for subclinical; $\alpha = .76$–$.89$ for clinical), with the exception of the Eating Concern subscale for the nonclinical sample ($\alpha = .35$); this low value is likely due to restriction of range (Sackett & Yang, 2000).

2.2.2. Lifetime disordered eating items

Several items were generated for this study to assess for lifetime fasting, self-induced vomiting, laxative use, binge eating, and excessive exercise. These items were used as exclusion criteria for the nonclinical group.

2.2.3. Body mass index

Height and weight were assessed by trained research assistants (Sample 1) or at admission by medical staff (Sample 2) and were used to calculate body mass index (BMI; Center for Disease Control and Prevention, 2011).

2.2.4. Vegetarianism questionnaire

This questionnaire was generated for the purposes of the current study (see Table 2). Items assess for self-reported current and lifetime vegetarianism, reasons for choosing vegetarianism, and reasons for stopping vegetarianism. It also assesses regular consumption of various food items (e.g., eggs, beef), which we used to derive several vegetarian groups (i.e., vegans, lacto-ovo vegetarians, pesco-vegetarians, and non-vegetarians (Tonstad et al., 2009)), even if participants did not self-identify as vegetarian or vegan.

3. Results

Analyses were conducted using IBM SPSS version 21 and an online calculator for Fisher's exact test (Stangroom, 2014). Missing data were limited in both samples (i.e., between 0% and 13% missing data on all variables) and were handled using pairwise deletion. In order to characterize the three samples, we provide descriptive statistics for eating pathology variables in Table 1. Results of Tukey's post-hoc comparisons revealed that the clinical group had the highest means on the EDE-Q subscales, followed by the subclinical group, then the clinical group. Generally, the clinical group exhibited the highest endorsement of disordered eating (all differences were statistically significant in t-test comparisons), with the exception of excessive exercise, which did not differ between the clinical and subclinical groups. The clinical group had lower average BMI than the other groups; the nonclinical and subclinical groups did not differ.

3.1. Vegetarianism across samples

Descriptive statistics for vegetarianism variables can be found in Table 2. Generally, the nonclinical group ate a wider variety of foods compared to the other groups. The prevalence of self-identified, lifetime vegetarianism was lowest in the nonclinical group (6.80%) and highest in the clinical group (34.80%), with the subclinical group falling in between (17.60%). According to Fisher's exact test, all pairwise comparisons between groups were statistically significant for self-identified, lifetime vegetarianism (p's $< .05$). Regarding self-identified, current vegetarianism, the nonclinical (2.70%) and subclinical (2.20%) groups did not differ from one another ($p > .99$); however, the clinical group (11.10%) was more likely than both other groups to self-identify as current vegetarians (p's $\leq .05$). The pattern of results was similar for the derived, current vegetarianism variable. Specifically, the nonclinical and subclinical groups were more likely to be non-vegetarian (97.3% and 95.6%, respectively) than the clinical group (71.00%; p's $< .01$), although they did not differ from one another ($p = .72$). The clinical group was also more likely to be classified as lacto-ovo vegetarians (18.80%) than both the subclinical and control groups (2.90% and 2.70%, respectively; $p < .01$), and more likely to be vegan than the control group (8.70% vs. 0.00%; $p < .01$). Other pairwise comparisons on the derived vegetarian groups were not statistically significant.

Among participants who self-identified as current or lifetime vegetarians, the primary reasons for choosing vegetarianism were similar across groups, with ethical reasons, dislike of meat and dairy products, and wanting a healthier diet as the most frequently endorsed reasons (see Table 2). Although not depicted in the table, examination of an open-ended question assessing for reasons participants stopped being vegetarians demonstrated that the discontinuation of vegetarianism was frequently related to disordered eating within the clinical sample. More specifically, 43.75% of the clinical group who identified as former vegetarians indicated their discontinuation of vegetarianism was related to eating disorders (e.g., *started treatment for an eating disorder*). No participants in the other groups endorsed disordered eating as a reason for discontinuing vegetarianism.

4. Discussion

In line with predictions, the group with the highest degree of eating pathology (i.e., the clinical group) also had the highest rate of lifetime self-identified vegetarianism, current self-identified vegetarianism, and current derived vegetarianism. These results are consistent with past research demonstrating the relationship between disordered eating and vegetarianism among vegetarian samples and women with a history of an eating disorder (Trautmann et al., 2008; Klopp et al., 2003; Bardone-Cone et al., 2012). Additionally, the subclinical group had higher lifetime, but not current (self-identified or derived), vegetarianism compared to the nonclinical group. Across groups, motivations