

The Inter-Relationships between Vegetarianism and Eating Disorders among Females

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ABSTRACT

When individuals with a suspected or diagnosed eating disorder adopt a vegetarian diet, health care professionals might worry that this choice could function as a socially acceptable way to legitimize food avoidance. Yet only limited research has examined vegetarianism in relation to eating disorders. Our study objectives were to compare individuals with and without an eating disorder history and individuals at different stages of eating disorder recovery on past and current vegetarianism and motivations for and age at becoming vegetarian. Participants were females seen at some point for an eating disorder ($n=93$) and controls who never had an eating disorder ($n=67$). Recruitment and data collection for this cross-sectional study occurred in 2007-2008. χ^2 analyses and analyses of variance and covariance were used to examine the research questions. Compared with controls, individuals with an eating disorder history were considerably more likely to ever have been vegetarian (52% vs 12%; $P<0.001$), to be currently vegetarian (24% vs 6%; $P<0.01$), and to be primarily motivated by weight-related reasons (42% vs 0%; $P<0.05$). The three recovery status groups (fully recovered, partially recovered, and active eating disorder) did not differ significantly in percentiles endorsing a history of vegetarianism or weight-related reasons as primary, but they differed significantly in current vegetarianism (33% of active cases, 13% of partially recovered, 5% of fully recovered; $P<0.05$). Most perceived that their vegetarianism was related to their eating disorder (68%) and emerged after its onset. Results shed light on the vegetarianism-eating disorders relation and suggest intervention considerations for clinicians (eg, investigating motives for vegetarianism).

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FOLLOWING A VEGETARIAN DIET IS OFTEN ASSOCIATED with health-related benefits, such as a decreased likelihood of cardiovascular disease.^{1,2} However, when a patient with a suspected or diagnosed eating disorder becomes vegetarian, health care professionals might view the behavior with skepticism and as a “red flag.” Researchers have suggested that vegetarianism can be used by some as a socially acceptable way to legitimize food avoidance and avoid certain eating situations³ and as a “smokescreen for more severe eating pathology.”⁴ A vegetarian lifestyle can also further simplify the lives of individuals with eating pathology in terms of providing clear dos and don’ts of eating, which might facilitate efforts at restriction. However, few empirical data exist regarding vegetarianism and eating disorders and only two studies have considered vegetarianism in relation to recovery from an eating disorder.^{5,6}

Evidence suggests that among patients with anorexia nervosa (AN), about 50% report eating some form of vegetarian diet (45% to 54%),^{7,8} compared with about 6% to 34% of adolescent and young adult women overall.^{3,9,10} One study found that about half of their participants with AN reported having become vegetarian several years before the onset of the eat-

ing disorder,¹¹ while another study found this to be true for only a small minority of the vegetarians with AN (6%).⁸ Thus, the temporal ordering between the onset of an eating disorder and the onset of vegetarianism is unclear. Although motivations for vegetarianism of health, weight loss/maintenance, and animal ethics are consistently cited by young female vegetarians,^{3,9,12} no studies were found comparing reasons for becoming vegetarian in eating disorder and non-eating disorder samples. Regarding the recovery process, researchers have found that more nonremitted AN patients than remitted AN patients were vegetarian, that vegetarianism contributed considerably to nonremission from AN, and that vegetarianism was still prominent in individuals “recovered” from AN.^{5,6} Of note, past work on eating disorder recovery and vegetarianism has not used comprehensive definitions of recovery that include a psychological aspect of recovery and yield greater recovery stability.¹³

The primary objective of this study was to understand rates of vegetarianism (both past and current), motivations for vegetarianism, and age at becoming vegetarian in two sets of analyses related to eating disorders. First, women with a history of an eating disorder were compared with those with no history of an eating disorder on these aspects of vegetarian-

ism. Second, comparisons occurred for women at different stages of recovery from an eating disorder: full recovery, partial recovery, and active eating disorder. As a secondary objective, for those with a history of an eating disorder, age at becoming vegetarian was compared with age at onset of eating disorder symptoms and individuals' perceptions about the relationship between vegetarianism and their eating disorder were investigated. Given the exploratory nature of this study, hypotheses are limited to the following: individuals with a history of an eating disorder will have higher rates of vegetarianism and their vegetarianism will more likely have been motivated by weight-related reasons compared with those with no history of an eating disorder.

METHODS

Participants and Recruitment

Attempts were made to contact all female eating disorder patients (ages 16 and older) seen at the University of Missouri Pediatric and Adolescent Specialty Clinic ($n=273$) between 1996 and 2007. This clinic is a primary care and referral clinic specializing in the care of children and adolescents (ages 10 to 25 years) that staffs physicians with eating disorders expertise. Of the 273 eating disorder patients, 96 (35.2%) were successfully contacted and recruited. Fifty-five (20.1%) of the 273 were contacted but did not participate because of other time commitments or lack of interest. Of the remaining patients, 4 (1.5%) were deceased and 118 (43.2%) could not be contacted because of absent or incorrect mailing addresses or inability to make phone contact. Earlier studies following up eating disorder patients over a range of about 10 years have reported similar rates of contact and participation,^{5,14} and results indicated that participants in the current study were not notably different from nonparticipants on eating disorder diagnoses or age at first clinic visit. They also did not differ at first clinic visit in body mass index (BMI), which can be considered a measure of relative weight. In sum, of the 151 eating disorder patients contacted, 63.6% participated.

Non-eating disorder controls were recruited from two sources: the clinic from which the eating disorder patients were recruited ($n=17$) and a convenience sample from the university campus ($n=50$). The sample from the clinic encompassed individuals identified by physicians as not having an eating disorder or other chronic condition. The sample from the university was recruited via campus fliers and psychology classes. Eligible controls were females ages 16 years and older with no current or past eating disorder symptoms. Absence of an eating disorder history was determined by screener questions administered via phone and the eating disorder module of the Structured Clinical Interview for DSM-IV¹⁵ administered in person; women were eligible as controls if both the screener and interview indicated no history of an eating disorder, threshold or subthreshold.

Study Procedures

Participants first completed a set of questionnaires and then, typically 1 week later, an interview including a diagnostic clinical interview. Recruitment and data collection for this cross-sectional study occurred over 18 months in 2007 to 2008. Most participants completed the interview in person (about 70% of the eating disorder sample and 100% of the

controls); those who lived too far away to travel to the study site did a phone interview (eg, former eating disorder patients who had moved out of state). Participants were provided financial remuneration (or, for psychology students, course credit) after completing the interview. All aspects of this study were approved by the University of Missouri Institutional Review Board, including obtaining written consent and, in the case of minors, parental written consent and the child's assent.

Measures

Measures Related to Vegetarianism. In the questionnaire portion of the study, participants were asked: "Have you ever considered yourself a type of vegetarian (eg, not eating beef but eating other meat; not eating any meat at all)?" with response options of "yes" and "no." Most of the research on vegetarianism refers to vegetarianism broadly defined, with "semi-vegetarians" (eg, those who might eat fish and/or chicken but not red meat) grouped together with strict vegetarians (ie, those who do not eat any meat)¹⁶; this is the approach used in the current study. Those who replied affirmatively to having ever been vegetarian were asked the age at which they first became some type of vegetarian, as well as the primary reason for cutting out meat from their diet with options of: "health reasons, eg, it is healthier not to eat meat (or not to eat certain kinds of meat)," "ethical reasons, eg, it is wrong to eat animals; concerns about conditions animals are kept in," "weight-related reasons, eg, cutting out meat helps lose or maintain weight," and "other (please specify)." Participants also indicated whether they were currently vegetarian. In the interview portion of the study, individuals who had ever been vegetarian reported on what relationship, if any, vegetarianism had with their eating disorder by responding to the open-ended question: "In your opinion, what relationship did vegetarianism have to your eating disorder?" They also reported the age at which their eating disorder symptoms emerged to serve as a comparison to the age of onset of vegetarianism. This set of questions was developed for this study based in part on how questions about vegetarianism have been asked in the literature.^{3,10,12}

Measures Used to Define Eating Disorder Recovery Status. The Structured Clinical Interview for DSM-IV¹⁵ was used to determine lifetime and current eating disorders (AN, bulimia nervosa [BN], and eating disorder not otherwise specified). The Eating Disorder Examination-Questionnaire (subscales included Restraint, Eating Concern, Weight Concern, Shape Concern)¹⁷ and portions of the Eating Disorders Longitudinal Interval Follow-up Evaluation¹⁸ were used to collect data on the psychological and behavioral components of full recovery, respectively, and have psychometric support as valid measures.^{17,18} Weight and height were measured (or self-reported for the minority who completed a phone interview) to determine BMI.

Demographic Variables. Age, race/ethnicity, and parents' highest level of education in years were assessed via self-report. Parents' highest level of education attained was used as a proxy for socioeconomic status with, for example, 16 years reflecting 4 years of post-secondary schooling.

Table 1. Demographic characteristics of females with and without a history of an eating disorder^a

Demographic variable	No eating disorder history (n=67)	Eating disorder history (n=93)	Test statistic	P value
Age (y), mean ± SD ^b	19.46 ± 1.88	23.61 ± 4.80	<i>t</i> (158) = -6.71	<0.001
Ethnicity (white), n (%)	60 (89.6)	86 (92.5)	$\chi^2(1, n=160)=0.42$	0.519
Socioeconomic status (y), ^c mean ± SD	16.52 ± 2.65	16.70 ± 2.84	<i>t</i> (158) = -0.41	0.682
BMI, ^d mean ± SD	23.74 ± 3.57	21.93 ± 3.84	<i>t</i> (157) = 3.02	0.003

^aMeans and standard deviations are reported for age, socioeconomic status, and body mass index, which are continuous variables. χ^2 statistics are reported for ethnicity with percentiles representing those identifying as white.

^bSD=standard deviation.

^cDefined by parents' highest level of education attained in years, which is used here as a proxy for socioeconomic status.

^dBMI=body mass index.

Data Analysis

For comparisons between those who had a history of an eating disorder (n=93) and those who never had an eating disorder (n=67), χ^2 analyses were used for history of vegetarianism, current vegetarianism, and weight-related motivations as the primary motivation for vegetarianism. Analysis of covariance was used to compare age at becoming vegetarian because the eating disorder group was significantly older than the controls (see Table 1). Of note, the history of an eating disorder group was reduced from 96 to 93 because for three cases there were discrepancies in the questionnaire and interview data regarding vegetarianism (eg, a participant endorsed having been vegetarian in the questionnaire, but not in the interview).

For comparisons among those at different stages of recovery from an eating disorder, groups were created using data from the Structured Clinical Interview for DSM-IV, the Eating Disorders Longitudinal Interval Follow-up Evaluation, The Eating Disorder Examination-Questionnaire, and BMI following the guidelines proposed by Bardone-Cone and colleagues.¹³ There were 52 active eating disorder cases, 19 individuals meeting criteria for full recovery (ie, no current eating disorder; minimum BMI of 18.5; no binge eating, purging, or fasting in the previous 3 months; and within 1 standard deviation of community norms on each of the Eating Disorder Examination-Questionnaire subscales), and 15 meeting criteria for partial recovery, meaning all the criteria for full recovery except for psychological recovery (ie, at least one Eating Disorder Examination-Questionnaire subscale >1 standard deviation of age-matched norms). (For analyses involving stages of recovery, 86 of the 93 individuals contributed data by meeting criteria for one of the three stages of recovery.) Of the 52 active cases, 17.3% (n=9) currently met criteria for AN, 5.8% (n=3) for BN, and 76.9% (n=40) for eating disorder not otherwise specified, most with a bulimic-type presentation. The eating disorder recovery groups did not differ in their pattern of lifetime eating disorder diagnoses, the number of years since the emergence of the eating disorder symptoms, age or BMI at start of treatment, or current age (fully recovered: mean of 24.47 ± 5.02; partially recovered: mean of 23.53 ± 5.80; active eating disorder: mean of 23.20 ± 4.43). These three groups were compared using χ^2 analyses and analysis of variance. All statistical analyses were conducted using SPSS software (version 19.0, 2010, IBM SPSS Inc).

RESULTS

A total of 160 women ranging in age from 16 to 40 years (93 with an eating disorder history, 67 without an eating disorder history) were included in the analyses comparing those with and without an eating disorder history. Data on the demographic variables for these samples are provided in Table 1.

Significantly more individuals with a history of an eating disorder reported ever having been a vegetarian, as well as currently being vegetarian, compared with individuals with no eating disorder history (see Table 2). For example, although about half of those with a history of an eating disorder reported having been vegetarian at some point, this was true for only about one tenth of the controls. Although none of the controls who had ever been vegetarian reported becoming vegetarian primarily for weight-related reasons, almost half of those with an eating disorder history and some experience with vegetarianism reported being primarily motivated by wanting to lose or maintain weight (see Table 2). After controlling for current age, age at becoming vegetarian was not significantly different across groups, $F(1, 53)=.88, P=0.351$.

The women in the different stages of eating disorder recovery did not differ significantly in whether they had ever been vegetarian or in whether weight was the primary motivation for becoming vegetarian. However, they did differ in current vegetarianism status, with the active eating disorder group having the most current vegetarians (about one third) and the fully recovered group having the fewest (about 5%) (see Table 3). Age at becoming vegetarian was not significantly different across the recovery groups, $F(2, 41)=2.38, P=0.105$.

Of individuals with an eating disorder history and experiences with vegetarianism, most (68.1%) believed there was a relation between vegetarianism and their eating disorder. Those who reported there was a relation reported that being vegetarian helped them lose weight and maintain the eating disorder and provided another way to eliminate calories and feel in control. When comparing age at becoming vegetarian with age at the emergence of first eating disorder symptoms (both self-reports), most (59.6%) reported that the starting age for vegetarianism came at least 1 year after the first eating disorder symptoms.

DISCUSSION

Women with a history of an eating disorder had significantly different vegetarianism-related experiences than women

Table 2. Proportions of females with and without a history of an eating disorder endorsing vegetarian experiences and weight-related motivations for vegetarianism

Vegetarian variable	No eating disorder history (n=67)	Eating disorder history (n=93)	χ^2	P value
	← n (% ^a) →			
Ever vegetarian	8 (11.9)	48 (51.6)	χ^2 (1, n=160)=26.94	<0.001
Current vegetarian	4 (6.0)	22 (23.7)	χ^2 (1, n=160)=8.95	0.003
Primary reason for becoming vegetarian was weight-related	0 (0)	19 (42.2)	χ^2 (1, n=53)=5.27	0.022 (Fisher's exact test, P=0.040) ^b

^aThe percentages represent the percentage endorsing "yes" to having ever been vegetarian (broadly defined, involving cutting out some or all meat from one's diet) and "yes" to currently being vegetarian, as well as the percentages who reported that they became vegetarian primarily for weight-related reasons.

^bWhen one or more cells had an expected count <5, Fisher's exact test is reported in addition to χ^2 statistics.

Table 3. Proportions of females in each eating disorder recovery status group (fully recovered, partially recovered, active eating disorder) endorsing vegetarian experiences and weight-related motivations for vegetarianism

Vegetarian variable	Fully recovered (n=19)	Partially recovered (n=15)	Active eating disorder (n=52)	χ^2	P value
	← n (% ^a) →				
Ever vegetarian	11 (57.9)	5 (33.3)	28 (53.8)	χ^2 (2, n=86)=2.40	0.301
Current vegetarian	1 (5.3)	2 (13.3)	17 (32.7)	χ^2 (2, n=86)=6.87	0.032 (Fisher's exact test P=0.033) ^b
Primary reason for becoming vegetarian was weight related	2 (22.2)	2 (50.0)	13 (46.4)	χ^2 (2, n=41)=1.78	0.411 (Fisher's exact test P=0.471)

^aThe percentages represent the percentage endorsing "yes" to having ever been vegetarian (broadly defined, involving cutting out some or all meat from one's diet) and "yes" to currently being vegetarian, as well as the percentages who reported that they became vegetarian primarily for weight-related reasons.

^bWhen one or more cells had an expected count <5, Fisher's exact test is reported in addition to χ^2 statistics.

without an eating disorder history. Rates of ever having been vegetarian among those with an eating disorder history were similar to rates of vegetarianism in samples with AN^{7,8} and higher than rates among those without an eating disorder history. The finding regarding differences in motivations for becoming vegetarian is novel, never before having been examined in groups distinguished by a history of an eating disorder.

There were fewer differences related to vegetarianism when eating disorder recovery groups were examined. One exception was the higher rates of current vegetarianism in the active eating disorder group compared to the fully recovered group. This finding is in contrast to earlier work that found vegetarianism still prominent among those recovered from AN.^{5,6} Different definitions of recovery could explain this discrepancy.

Most of the eating disorder sample with a history of vegetarianism reported that the eating disorder preceded the adoption of a vegetarian diet, as was found in some earlier work.⁸ This finding is in line with research suggesting that vegetarian diets can be used to facilitate ongoing restriction rather than cause eating pathology^{3,19}; however, prospective research is needed for etiological clarity.

In addition to longitudinal work, diagnostic differences (eg, AN, BN) should also be considered in the future, given the

centrality of food restriction in AN and the finding that zinc deficiency resulting from vegetarianism among individuals with AN can influence eating disorder chronicity.²⁰ Perhaps vegetarianism has a different meaning and is related differently to eating disorder tenacity among individuals with AN compared with those with BN.

The study findings have several practice-based implications. The finding that none of the controls who had ever been vegetarian were primarily motivated by weight-related reasons, in contrast to almost half of those with an eating disorder history, suggests the importance of attending to primary motives for becoming vegetarian. From an eating disorders perspective, individuals who are sincerely motivated to adopt vegetarianism for primarily nonweight reasons (eg, ethics) might be less concerning than individuals with weight-based motives. Practitioners might also want to be mindful that vegetarianism is more likely adopted by individuals with pre-existing disordered eating attitudes/behaviors, rather than being the cause of such pathology. When an adolescent begins a vegetarian diet or expresses interest in making this dietary choice, a close examination of his or her general eating attitudes/behaviors might shed light on whether concern is warranted. Exploration of existing patterns of eating, attitudes about food, and the function vegetarianism might serve would shed light on the trajectory of the individual's relation-

ship with food and whether vegetarianism might provide the individual with additional “good food”/“bad food” dichotomies that would simply his or her life. Collaboratively exploring whether a vegetarian lifestyle is an avoidance strategy for food might prompt a practitioner to challenge distorted thoughts surrounding “forbidden” foods. To the extent that becoming vegetarian signals more extreme weight-control behavior⁹ and eating disorder chronicity,^{8,20} practitioners would be well advised to engage individuals in frank discussions regarding their eating habits. If an individual is firm in the decision to become vegetarian, she or he should be provided with psychoeducation and guidance in becoming a healthful vegetarian. Lastly, practitioners should take heed of the different rates of current vegetarianism between the fully recovered and active eating disorder groups. In cases when an individual working toward eating disorder recovery is still adhering to a vegetarian diet, practitioners might wish to engage her or him in a discussion regarding how a restricted food repertoire, including vegetarianism, can affect the recovery process.

This exploratory study contributes to the very limited literature on vegetarianism and eating disorders and is novel in being the first to examine aspects of vegetarianism using a comprehensive definition of eating disorder recovery. The examination of multiple aspects of vegetarianism (ie, history of, primary reason for, and age at, becoming vegetarian) is also a strength. Limitations include the cross-sectional design, the small sample size, the lack of differentiation of eating disorder diagnoses, the group differences in age and interview modality, the definition of vegetarianism, and the lack of a validated measure for assessing aspects of vegetarianism. Given the small number of vegetarians in the recovery groups, the findings for stages of recovery should be considered preliminary and need to be replicated in larger samples. In addition, asking about vegetarianism using more precision (eg, semi-vegetarian, vegan, etc) would help identify whether certain types of vegetarianism are more strongly connected to eating disorders or eating disorder recovery.

CONCLUSIONS

Having a history of an eating disorder is associated with greater likelihood of having been (or currently being) vegetarian and having been primarily motivated by weight-related reasons. Results indicated that a history of vegetarianism is not associated with recovery status because percentiles having ever been vegetarian were similar across recovery groups; however, rates of current vegetarianism differed considerably by recovery status. Future research should examine vegetarianism and eating disorders/eating disorder recovery longitudinally in order to better understand how eating disorder symptoms and vegetarianism can propel each other over time and whether transitioning from a vegetarian diet might facilitate full recovery.

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STATEMENT OF POTENTIAL CONFLICT OF INTEREST

No potential conflict of interest was reported by the authors.

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