Self-reported vegetarianism may be a marker for college women at risk for disordered eating

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ABSTRACT

The purpose of this study was to determine whether differences exist in eating attitudes and behaviors of vegetarian and nonvegetarian college women. The Eating Attitudes Test (EAT) and a questionnaire were used to gather information on eating attitudes and behaviors of 143 female college students. Thirty participants were self-reported vegetarians, and 113 participants were nonvegetarians. There was no significant difference between the vegetarians and nonvegetarians in height, weight, age, or body mass index. The median EAT score of the vegetarians (16.5) was significantly higher ($P<.0001$) than that of the nonvegetarians (9.0). A significantly higher ($P<.0001$) proportion of the vegetarians (37%) compared with nonvegetarians (8%) had EAT scores greater than 30 (indicating eating disorder risk). There was no difference in supplement use or meal skipping between the two groups. In conclusion, self-reported vegetarian college women may be more likely to display disordered eating attitudes and behaviors than nonvegetarians. *J Am Diet Assoc. 2003;103:745-747.*

Vegetarianism is a behavior that has been associated with disordered eating attitudes and behaviors according to some studies (1-5) but not others (6-8). A vegetarian diet is adopted by some young women as a means of weight control (1,5,9). Adolescent vegetarians were significantly more likely to exhibit bulimic behaviors than nonvegetarians in a Minnesota study (3). Similarly, in an Australian study of 2,000 teenagers, vegetarians were more concerned with being slim, and they restricted energy intake more often than nonvegetarians (4). A study of 131 college undergraduates revealed that vegetarians displayed higher dietary restraint than nonvegetarians, complicating the normalization of eating (5). Therefore, vegetarian practices may be a marker to help identify those with disordered eating tendencies or weight preoccupation.

Early detection of disordered eating is vital so that preventive action or intervention can be implemented before behaviors become entrenched. It is therefore important to determine identifiable factors associated with eating disorders. The purpose of this study was to determine whether differences exist in eating attitudes and behaviors of self-reported vegetarian and nonvegetarian college women.

METHODS

Approval for this study was granted by the California Polytechnic State University (Cal Poly) Human Subjects Approval Committee, and all subjects provided written informed consent. Participants were volunteers enrolled in four general education courses at Cal Poly, San Luis Obispo, CA. Courses included two introductory nutrition classes, an introductory psychology class, and a political science class. Participants completed a questionnaire detailing demographic information and eating attitudes and behaviors. Participants indicated whether they were vegetarian and, if so, which type: semivegetarian (consumes some chicken and fish), ovo-vegetarian (consumes eggs), lacto-ovo-vegetarian (consumes dairy and eggs), or vegan (consumes no animal origin foods). A total of 278 students completed the questionnaire, 135 males and 143 females, for a response rate of 97%. Only data from females were used because an inadequate number of male vegetarians responded for data analysis.

The Eating Attitudes Test (EAT), a 40-item questionnaire (10), was used to assess eating disorder tendencies. For this test, a score of greater than 30 indicates weight preoccupation and an increased risk for eating disorders.

Descriptive statistics were performed on demographic information and EAT scores. The Kruskal-Wallis test (11) was used to compare median EAT scores between the vegetarians and the nonvegetarians because of unequal sample sizes. ANOVA and χ^2 test were used to compare demographic variables, supplement use and meal skipping, and answers to individual EAT questions between the two groups. The Statistical Package for Social Sciences software was used for data analysis (SPSS, Inc., version 9.1., 1999, Chicago, IL).

RESULTS AND DISCUSSION

Most participants were white (81.8%), followed by Asian (9.8%), and Hispanic (4.9%). Thirty participants were self-reported vegetarians, and 113 participants were nonvegetarians. There was no difference in the proportion of self-re-

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Table 1
Characteristics of self-reported vegetarian and nonvegetarian college women

Characteristic	Vegetarian[d] (N = 30)	Nonvegetarian (N = 113)	*P* value
Age (y)[a]	19 ± 1	19 ± 1	NSD[b]
Height (in)[a]	66 ± 3	66 ± 3	NSD
Weight (lb)[a]	129 ± 18	132 ± 19	NSD
BMI (kg/m^2)[a]	21 ± 2	20 ± 2	NSD
EAT score[c]	16.9 (9-68)	9.0 (3-67)	.0001
% with EAT score >30	36.7	8.8	.0001

[a]Data presented as mean ± standard deviation.
[b]NSD = no significant difference between the groups.
[c]Data presented as median (range).
[d]Twenty-three subjects reported being semivegetarian (willing to consume chicken and/or fish, but not red meat). Seven reported being lacto-ovo vegetarian.

ported vegetarians between whites and nonwhites.

Demographic and anthropometric characteristics of the participants are shown in Table 1. There was no significant difference in height, weight, or age between the vegetarians and nonvegetarians.

Twenty-three of the participants reported being semivegetarian, and seven reported being lacto-ovo-vegetarian. No one reported being a vegan. The most common reason given for choosing vegetarianism was health/nutrition (37.5%), followed by weight control (18.8%) and animal ethics (14.6%). Other reasons reported included ecologic, taste preferences, and parental influence. No one reported religious belief as a reason for adopting vegetarianism.

A majority of the self-reported vegetarians classified themselves as "semivegetarians," willing to consume chicken and/or fish but not red meat. Red meat avoidance is often the first step taken by those desiring a vegetarian lifestyle (12). Red meat is perceived by many to be high in fat, and this perception may lead individuals to believe that eliminating red meat will result in a lower fat diet (13).

Weight control was the second most frequently chosen reason for being a vegetarian. The desire for thinness among many vegetarians was recognized by Worsley and Skrzypiec (4), who found that vegetarians were more concerned with being slim and with restricting calories than nonvegetarians. Other studies confirm vegetarianism as a means for weight control in young women (1,5,9). However, two studies report no difference in concern about weight and weight-loss efforts by vegetarians and nonvegetarians (6,7).

Table 2
Specific EAT items answered significantly differently between self-reported vegetarian and nonvegetarian college women[a]

EAT item	*P* value
Items addressing dieting	
14. Feel extremely guilty after eating[b]	.025
15. Am preoccupied with a desire to be thinner[b]	.003
30. Eat diet foods[b]	.030
38. Like my stomach to be empty[b]	.004
39. Enjoy trying new rich foods[c]	.027
Items addressing bulimia and food preoccupation	
31. Feel that food controls my life[b]	.023
34. Give too much time and thought to food[b]	.027
40. Have the impulse to vomit after meals[b]	.033
Other items	
16. Exercise strenuously to burn off calories[b]	.004
17. Weigh myself several times a day[b]	.013
19. Enjoy eating meat[c]	.0001
28. Take laxatives[b]	.005

[a]Vegetarians N=30; nonvegetarians N=113.
[b]Vegetarians scored higher (indicating stronger agreement) than nonvegetarians.
[c]Vegetarians scored lower (indicating greater lack of agreement) than nonvegetarians.

EAT scores of vegetarian and nonvegetarian participants are shown in Table 1. The median EAT score of the vegetarians was significantly higher than that of the nonvegetarians (16.9 and 9.0, respectively, $P<.0001$). A significantly greater proportion of the vegetarians scored higher than 30 on the EAT compared with the nonvegetarians ($P<.0001$). Therefore, the vegetarians in the present study displayed an increased risk for weight preoccupation and eating disorders compared with nonvegetarians. This confirms conclusions from other studies (1-5,9) that the practice of vegetarianism may be associated with eating disturbances.

χ^2 Analysis was performed on each of the 40 EAT items. When comparing vegetarian and nonvegetarian responses for each item, significant differences between the groups were found on 12 items listed in Table 2. Vegetarians in the present study were more likely to feel extremely guilty after eating, have a preoccupation with a desire to be thinner, have a tendency to eat diet food, and like the feeling of an empty stomach. In addition, the vegetarians were more likely not to enjoy trying new, rich foods. Also, the vegetarian participants had a greater tendency to feel that food controls their lives, give too much time and thought to food, and have the impulse to vomit after meals compared with nonvegetarians.

Individual EAT responses also indicated that vegetarians in the present study were more inclined to exercise strenuously to burn off calories, weigh themselves frequently throughout the day, and take laxatives compared with nonvegetarians. As expected, nonvegetarians enjoyed eating meat more often than vegetarians.

No difference existed between vegetarians and nonvegetarians in supplement use or in frequency of skipping meals. Likewise, no substantial difference existed between supplement use or meal-skipping frequency in those with EAT scores greater than 30 compared with those with lower scores. Similar results were found when vegetarian participants were analyzed separately. It may seem logical that those at increased risk for serious eating concerns would skip meals more frequently than those not at risk with the rationale of reducing calories from the diet, but purging behavior may be used as a way to reduce calories rather than meal-skipping.

Although the present study reinforced findings from a number of studies conducted on eating behaviors in young, fe-

male, adult vegetarians (1-5,9), limitations of this study must be addressed. Because the study involved a convenience sample of volunteer participants from general education classes at one university, subject selection was not random. Therefore, generalizations drawn about participants' eating attitudes and behaviors should be limited.

Early detection of disordered eating is vital so that preventive action or intervention can be implemented before behaviors become entrenched

A broad definition of vegetarianism (including semivegetarianism) was used in this study, as in several similar studies (5,7,9). In fact, most of the vegetarians (77%) in this study were semivegetarians, so generalization of results to all vegetarians should be avoided. It is possible that semivegetarians have different eating attitudes than lacto-ovo vegetarians, so it would be ideal to compare eating attitudes of semivegetarians, lacto-ovo-vegetarians, and nonvegetarians; however, the number of lacto-ovo-vegetarians (n=7) in the present study was not large enough to separate the types of vegetarians for appropriate statistical analyses. When Perry and colleagues (9) compared characteristics of more restricted vegetarians (vegans, lacto-vegetarians, and lacto-ovo-vegetarians) with semivegetarians, the semivegetarians were more likely to engage in weight control practices (healthy and unhealthy), were less likely to be overweight, and exercised less than the more restricted vegetarians, but there was no difference between the groups in behaviors related to eating disorders, diagnosis of eating disorders, body dissatisfaction, and concern about controlling weight.

Also, the self-reported format of the questionnaire and EAT may reveal some response bias. Also, because some of the EAT inquiries may be considered sensitive for certain female participants who have serious eating concerns, denial of the problem may result in inaccurate responses.

Why might female vegetarian college students be at a higher risk of disordered eating behaviors than female nonvegetarians? Because vegetarianism is a socially acceptable lifestyle, admitting to being a vegetarian may be an acceptable method to eliminate entire food groups from the diet. Martins and colleagues (14) found that for some individuals, adoption of a vegetarian diet is an attempt to mask dieting behaviors from other people, although Janelle and Barr (8) found that vegetarians actually exhibited less dietary restraint than nonvegetarians. Elimination of foods from the diet may yield a sense of power and control over food, which is a desire of those with eating disorders (15). Vegetarianism could also represent a food ritual, and rituals are common among those with eating disorders (16).

APPLICATIONS

■ Although many people follow a vegetarian diet as part of a healthy lifestyle, the results from this study indicate that the practice of vegetarianism may be a marker for college female students at risk for weight preoccupation and eating disorder tendencies. Clinicians need to be aware of subpopulations at increased risk for eating disorder tendencies to aid in the early detection of those with true eating disorders.

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