



Differences between vegetarian and omnivorous yoga practitioners—Results of a nationally representative survey of US adult yoga practitioners

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ABSTRACT

Background: To examine the prevalence of vegetarianism among yoga practitioners, and to explore differences and similarities between yoga practitioners who also use vegetarian diet and those who do not.

Design and setting: Using cross-sectional data from the 2012 National Health Interview Survey (NHIS) (N = 34,525), weighted frequencies for 12-month prevalence of vegetarian diet use among yoga practitioners were analyzed. Logistic regression analyses were used to analyze sociodemographic and clinical predictors of vegetarian diet use.

Results: A total of 1.7 million US yoga practitioners have used a vegetarian diet in the past 12 months (8.3%), compared to 2.7 million non-yoga practitioners (1.3%). Yoga practitioners who were aged between 30 and 64 years as compared to being 29 years or younger were more likely to have used a vegetarian diet in the past 12 months; while those being in a relationship (OR = 0.64), overweight (OR = 0.54), smoking (OR 0.64) or having private health insurance (OR = 0.59) were less likely. Vegetarian diet practitioners more often included meditation as part of their yoga practice and more often chose yoga because it had a holistic focus, and was perceived to treat the cause and not the symptoms of their health complaint.

Conclusions: Yoga practitioners following a vegetarian diet seem to embrace yoga more as a lifestyle than as a therapy.

1. Background

The practice of Yoga, with its roots in ancient Indian culture and philosophy, has gained increased popularity in the West. Recent nationally representative estimates from the United States (US) indicate current lifetime and 12-month prevalence rates of yoga practice of 13.2% and 8.9%, respectively.¹ Notably, the one-year prevalence of yoga use has shown a linear increase over 10 years based on US national survey data from 2002, over 2007, to 2012.² Similarly, the lifetime prevalence of yoga use in Germany has been estimated to be 15.1%.³

The practice of yoga may take many forms involving various physical and energy or spiritual elements.⁴ As such, yoga cannot easily be seen separated from its perception as a health-related practice, and thus

yoga is often referred to as a mind-body-practice within the field of complementary and alternative medicine (CAM), now also often referred to as complementary and integrative health (CIH).⁵ Yoga as a spiritually rooted system promotes a lifestyle based on the practice of ‘non-violence’,⁶ which may infer ethical considerations for the yoga practitioner that can also affect decisions about eating habits and food choices. This is one potential reason as to why yoga practitioners who fully embrace yoga’s spiritual roots may prefer a vegetarian diet over an omnivorous or meat diet.

Vegetarianism, sometimes referred to as plant-based nutrition, is a broad term that captures a range of dietary patterns, such as vegan diets. The 2016 statement of the US Academy of Nutrition and Dietetics refers to a vegetarian diet as a diet free of all flesh food, which varies from one that incorporates dairy products (lacto-vegetarianism) or eggs

Abbreviations: CAM, complementary and alternative medicine; CI, confidence interval; M, mean; NHIS, National Health Interview Survey; OR, odds ratio; SD, standard deviation; US, United States

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(ovo-vegetarianism), to one that avoids all flesh, dairy and egg foods and sometimes honey (veganism).⁷

Research has indicated that a significant proportion of yoga practitioners, ranging from approximately 10% to 50%, may be categorized as vegetarians.⁸ Repeated use of yoga might influence the lifestyles of yoga practitioners, such as choosing vegetarianism, which may be even more prevalent in practitioners with a longer history of yoga practice.⁹ Long-term yoga practice also may be indicative of yoga practitioners using additional CAM therapies for health needs.¹⁰ On the other hand, practitioners who perceive and use yoga more as a form of exercise, relaxation technique, or leisure, might be less likely to include a vegetarian or vegan lifestyle into their yoga practice.

The aim of this study was to examine the prevalence of vegetarianism among yoga practitioners, as well as explore potential differences and similarities between yoga practitioners who choose a vegetarian diet and those who do not. Through a secondary analysis of the 2012 National Health Interview Survey (NHIS), sociodemographic characteristics, practice patterns, as well as reasons for and perceived benefits of using yoga were compared between vegetarian and non-vegetarian yoga practitioners.

2. Material and methods

This analysis was based on a nationally representative survey monitoring the health of the US population in 2012 (National Health Interview Survey, NHIS; <https://www.cdc.gov/nchs/nhis/>). For this analysis, data from the Family Core, the Sample Adult Core, and the Adult Complementary and Alternative Medicine questionnaire were used. Only those respondents who had used yoga in the past 12 months were selected for detailed analyses.

The Family Core and the Sample Adult Core collected data regarding participants' socio-demographic characteristics including age, gender, ethnicity, region, marital status, education, annual household income and self-perceived general health status. The Adult Complementary and Alternative Medicine (CAM) questionnaire collected data on the use of a number of interventions including special diets.

Prevalence of vegetarian diet use was determined with the following question: *Have you EVER used any of the following special diets for two weeks or more for health reasons: vegetarian, including vegan?* Those who answered 'Yes' were presented with an additional question asking whether they also had used a vegetarian diet during the past 12-months.

The prevalence of yoga practice was queried with the question: *Have you EVER practiced yoga?* Those who answered 'Yes' were presented with an additional question regarding the use of yoga in the past 12-months: *DURING THE PAST 12 MONTHS, did you practice yoga for yourself?* Those who had practiced yoga in the past 12 months (the sample) were further queried about whether they attended yoga classes or received formal yoga training; the number of yoga classes they attended, the costs associated with yoga classes; and the use of breathing exercises and/or meditation as part of their yoga practice. Further questions concerned reasons for yoga practice; the medical conditions yoga was used for (a total of 88 possible conditions); disclosure of yoga use to their personal health care provider and reasons for non-disclosure; perceived benefits of yoga use, and information sources about yoga.

2.1. Statistical analyses

A total of 42,366 households were eligible and 34,525 adults provided data on complementary medicine use (response rate: 79.7%).¹¹ Overall, 33,402 (78.8%) adults responded to the questions on yoga use, with 2974 (8.9%) reporting to have used yoga within the past 12 months. Population-based estimates were calculated using weights calibrated to the 2010 census-based population estimates for age, gender,

and ethnicity of the US civilian non-institutionalized population.

The 12-month prevalence of vegetarian diet use among yoga practitioners was analyzed descriptively, as were details on yoga use, reasons for yoga practice and outcomes. Results were reported as means and standard deviations, medians and ranges, weighted frequencies and distributions as appropriate. Socio-demographic characteristics were compared between those yoga practitioners who had used a vegetarian diet within the last 12 months and those yoga practitioners who had not using chi square tests. Independent predictors of vegetarian diet use in the past 12 months were identified using multiple logistic regression analysis. The following socio-demographic predictors were considered: age (categories: 18–29; 30–39; 40–49; 50–64, 65 or older), gender (categories: female; male), ethnicity (categories: non-Hispanic White; Hispanic; African American; Asian; Other), region (categories: West; Northeast; Midwest; South), marital status (categories: not in relationship; in relationship), education (categories: less than college; some college or more), and annual household income (categories: less than \$20,000; \$20,000 to \$34,999; \$35,000–\$64,999; \$65,000 or more). Additionally, health-related factors such as general health status (categories: excellent or very good; good; fair or poor), body mass index (categories: 18.5–25; < 18.5; 25–30; 30 or more), health behaviors such as smoking (categories: non-smoker, smoker), alcohol consumption (categories: alcohol abstainer; light drinker; regular or heavy drinker), and exercise behavior (categories: low level exerciser, moderate level exerciser, high level exerciser); chronic medical conditions/diseases (categories: no chronic condition; one chronic condition; two chronic conditions; three and more chronic conditions); health insurance (categories: no health insurance; public health insurance; private health insurance) were also used as potential predictors.

A backward stepwise procedure with a likelihood-ratio-statistic p-value of ≤ 0.05 was chosen, and adjusted odds ratios with 95% confidence intervals were calculated. Only those variables associated with vegetarian diet use at a p-value of ≤ 0.005 (chi-square test) were included in the regression analyses. Statistical analysis was performed using the Statistical Package for Social Sciences software (IBM SPSS Statistics for Windows, release 22.0. Armonk, NY: IBM Corp.).

3. Results

A total of 1.7 million US adult yoga practitioners have used a vegetarian diet in the past 12 months (8.3%), compared to 2.7 million non-yoga practitioners (1.3%). This equals 1.7 million (39.4%) adult vegetarian diet users who also have practiced yoga, compared to 19.2 million (8.6%) non-vegetarian diet users who have practiced yoga.

Predictors for having used a vegetarian diet in the past 12 months are presented in Table 1. Yoga practitioners aged between 30 and 64 years, as compared to being 29 years or younger, were more likely to have used a vegetarian diet; while those in a relationship (OR = 0.64), overweight (OR = 0.54), smoking (OR 0.64) or with private health insurance (OR = 0.59) were less likely to have used a vegetarian diet in the past 12 months.

Differences in yoga practice among omnivores and vegetarians can be found in Table 2. About half of yoga practitioners received formal yoga training, with higher number of yoga classes attended by vegetarian diet users. Twice as many yoga classes among vegetarian diet users were covered by insurance, with two thirds reporting full cover. Non-vegetarian diet users had a lower prevalence of full insurance coverage; however, an additional 40% of subjects had at least partial coverage, compared to none of the vegetarian diet users. The out-of-pocket cost of yoga was substantially larger in the vegetarian user group, with nearly double the average costs paid per visit. Vegetarian users also more frequently reported having bought self-help books or materials than non-vegetarian diet users. Table 2 indicates that vegetarian diet users also more frequently used a variety of information sources on yoga, including the internet, books, magazines or newspapers, scientific articles and health food stores. Yogic practice included

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