



Orthorexic eating behavior in vegans is linked to health, not to animal welfare

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Received: 12 December 2018 / Accepted: 15 March 2019 / Published online: 9 April 2019
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Abstract

Purpose This study aimed to analyze the association between the importance of several reasons to follow a vegan diet and the degree of orthorexic eating behavior in a sample of vegan individuals ($N=65$, 53.8% women, age: $M=28.22$ ($SD=9.13$) years, BMI: $M=22.91$ ($SD=3.44$) kg/m²).

Results The results reveal that orthorexic eating behavior is associated with the importance of the underlying motives health, esthetics and healing, whereas animal welfare, politics and ecology are not linked to orthorexia.

Conclusion Hence, this study reveals that a vegan lifestyle is not per se associated with orthorexic eating behavior, but rather that it varies with the underlying motivation for following a vegan diet.

Keywords Orthorexic eating behavior · Orthorexia · Veganism · Motives · Health

Introduction

Orthorexic eating behavior is discussed as a potential new variant of disordered eating behavior, presenting itself as a fixation on only eating foods perceived as healthy [1, 2]. Since every orthorexic individual establishes own rules and criteria for a healthy diet, there are several variants of orthorexic eating behavior [1], e.g., with a focus on a sugar-free or a gluten-free diet, the rejection of foods containing additives or the abandonment of products of animal origin, like meat, dairy products and eggs.

A recent study revealed that orthorexic eating behavior¹ is more pronounced in individuals following a vegan or vegetarian diet [3], with no differences in orthorexia levels between vegans and vegetarians. However, underlying motives for following a vegan or vegetarian diet were not investigated. Another recent study [4] confirmed higher levels of orthorexic eating behavior in vegans and vegetarians.

Additionally, the results suggest that vegan individuals following a meat-free diet for health reasons were more prone to higher levels of orthorexic eating behavior. The authors concluded that ethical reasons for following a vegan diet might serve as a protective factor regarding the development of orthorexia [4]. This raised the question whether a vegan or vegetarian lifestyle itself is associated with higher levels of orthorexia or whether levels of orthorexic eating behavior vary with underlying motives for following a vegan or vegetarian diet. Hence, the aim of the presented study was to investigate the importance of several underlying motives for following a vegan diet and to analyze the relation to orthorexic eating behavior in a sample of vegan individuals. Although vegan and vegetarian sub-groups did not differ in their orthorexic eating behavior in the previous study [3], the current study focused only on vegan individuals, ensuring a more homogenous sample and the investigation of the type of diet that is more restrictive.

According to The Vegan Society [5], veganism is defined as “a way of living which seeks to exclude as far as is possible and practicable, all forms of exploitation of, and cruelty to, animals for food, clothing or any other purpose”, resulting in a plant-based diet. Thus, per definition, animal

This article is part of Topical collection on Orthorexia Nervosa.

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¹ Please note that by using the term “orthorexic eating behavior” we do not want to imply that orthorexia is a disordered eating behavior. We use this term to describe the continuum of the fixation on eating healthfully.

welfare is supposed to serve as a main motive for following a vegan lifestyle. The current state of research, however, reveals other motives that also play a role in the decision of excluding products of animal origin from the diet [see 6, 7]. Animal welfare seems to be a main motive for a vegan diet, but also other aspects, like distaste for products of animal origin, sustainability and ecology, influence the decision for a vegan diet [6]. However, according to [6], the second most important motivation seems to be that individuals go vegan for health reasons. The ongoing debate regarding the potential harmful effects of the red meat consumption on human health [see, i.e., 8] suggests that health concerns might also influence the decision to go vegan. A tentative assumption is that individuals following a vegan diet due to health-related reasons display elevated levels of orthorexic eating behavior. However, since usually there is not only one motive for choosing a vegan diet, a correlational design was preferred. Using a list of possible underlying motives retrieved from a literature research, the study aimed to analyze the relation of the importance of these reasons to the degree of orthorexic eating behavior in a sample of vegan individuals. Based on the results of the previous study [4], we assume that health- and healing-related motives would be associated more closely with orthorexia than other motives, such as animal welfare or politics.

Methods

Sample

Inclusion criterion was a predominantly vegan diet, i.e., the abandonment of meat, poultry, fish, dairy products, eggs, and gelatin on a daily basis. Exclusion criteria were any other diet with vegan exceptions. To ensure that participants met these criteria, the questionnaire was directly addressed to vegan individuals and the study team explicitly asked interested persons to what extent they follow a vegan diet. In total, 113 questionnaires were distributed in universities, vegan cafés and social media. Sixty-nine individuals completed and returned the questionnaire to the study team. Due to missing data, 65 individuals were included for further analyses. Hence, the sample consisted of 35 women and 30 men, with a mean age of 28.22 ($SD = 9.13$) years and a mean body mass index (BMI) of 22.91 ($SD = 3.44$) kg/m². On average, participants followed a vegan diet for 3.03 ($SD = 3.32$, range 0.01–20.00) years. Prior to vegan eating, 80% of the participants followed a vegetarian diet, which lasted on average 5.91 ($SD = 5.83$, range 0.25–29.00) years. Individuals were informed about protection of their data and voluntariness of their participation in the study. After that, they gave verbal informed consent to participate in the study.

Measures

The questionnaire assessed socio-demographic factors (age, gender, weight, height) and details regarding the vegan lifestyle (“How long are you following a vegan diet?” and “Have you been following a vegetarian diet before going vegan?”). Furthermore, participants indicated on a 4-point-scale from “unimportant” to “very important” how relevant the following 15 motives are to them in their decision of being vegan: allergy to animal products, esthetics (e.g., improve skin appearance), indulgence (e.g., distaste for animal products), health (e.g., “A vegan diet is healthier.”), weight loss, habit/upbringing (e.g., “I grew up eating a vegan diet.”), healing (e.g., “Due to my vegan diet, I was able to heal an illness.”), lifestyle, ecology (e.g., CO₂ emission of cattle), politics (e.g., world hunger, soy as animal food), religion, athletics (e.g., “I want to improve my performance.”), animal welfare, vegan friends. Motives were presented in alphabetical order of the German words, some with the short explanation presented above in parentheses.

The Duesseldorf Orthorexia Scale [DOS; 9] was used to assess orthorexic eating behavior. The questionnaire comprises 10 items and a 4-point-rating-scale [“does not apply to me” (1) to “applies to me” (4)], resulting in sum scores from 10 to 40 points. The preliminary cutoff score for orthorexic eating behavior is 30 points.

Analysis

The study follows a correlative design. Analyses were conducted using IBM SPSS Statistics 20 for Windows. As descriptive data, means (M), standard deviations (SD), range, and absolute frequencies are reported. For all analyses, a p value of 0.05 was used. Pearson correlations were used to determine the relation between orthorexic eating behavior and the importance of the motive for following a vegan diet.

Results

With a mean of 20.49 ($SD = 5.1$, range 10–35) points, DOS score of the vegan sample falls within the 70th percentile of the normal population [10]. With a mean of 3.77 ($SD = 0.58$), animal welfare receives the highest importance rating (see Table 1). Ecology ($M = 3.32$, $SD = 0.79$) and politics ($M = 3.32$, $SD = 0.89$) are rated equally important. With a mean of 3.06 ($SD = 0.95$), health is also rated as a “rather important” motive for eating a vegan diet. Means of the other motives fall below a mean score of 2 and are, therefore, rated to be rather unimportant.

Table 1 Means (*M*) and standard deviations (*SD*) of the importance rating of several motives for following a vegan diet in a sample of vegans (*N*). Pearson correlation coefficients (*r*) and level of significance (*p*) for the motives with orthorexic eating behavior

Motive	Importance rating			Correlation with ON	
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>r</i>	<i>p</i>
Animal welfare	65	3.77	0.58	−0.16	0.227
Ecology	65	3.32	0.79	0.04	0.765
Politics	65	3.32	0.89	0.08	0.533
Health	65	3.06	0.95	0.47	<0.001
Friends	63	1.92	0.94	−0.18	0.175
Athletics	65	1.91	1.00	0.35	0.005
Esthetics	65	1.85	0.94	0.46	<0.001
Indulgence	65	1.75	0.92	0.08	0.555
Healing	65	1.75	0.92	0.44	<0.001
Weight loss	64	1.72	0.97	0.31	0.016
Lifestyle	63	1.41	0.59	0.03	0.828
Allergy	65	1.32	0.73	0.33	0.011
Habit/upbringing	65	1.26	0.59	0.34	0.008
Religion	65	1.14	0.56	0.07	0.613

Orthorexic eating behavior in vegans is most closely related to the importance of the motives health ($r=0.47$, $p<0.001$), esthetics ($r=0.46$, $p<0.001$) and healing ($r=0.44$, $p<0.001$), with medium to large correlation coefficients. Athletics, habit/upbringing, allergy, and weight loss are associated with the DOS to a lower extent. Between the DOS and the other motives, no correlations are present.

Discussion

The aim of the present study was to analyze the relation between orthorexic eating behavior and the importance of several underlying motives for following a vegan diet. It first can be stated that mean levels of orthorexic eating behavior in this sample are comparable to the sample of our other study investigating orthorexic eating behavior in vegan individuals [3]. The replication of this result suggests again that orthorexic eating behavior seems to be somewhat more pronounced in vegan individuals, but does not exceed preliminary cutoff score for orthorexia.

The results further reveal that animal welfare is the most important motive for eating a vegan diet, followed by ecology and politics. Health also receives a rather high importance rating. These results are in line with the results reported by [7] and by [6], suggesting that our sample is qualified for an analysis of the relation between the importance of these motives and orthorexic eating behavior.

While the importance of the motives health, esthetics and healing is significantly linked to orthorexic eating behavior,

animal welfare, politics and ecology are not associated with the fixation on eating healthfully. Hence, the results confirm our previous stated hypotheses and support the assumptions by [4] that ethical reasons for a vegan diet might serve as a protective factor regarding the development of orthorexic eating behavior. Interpretation of these results indicates two aspects. First, underlying motives for excluding products of animal origin vary with the occurrence of orthorexic eating behavior and not a vegan diet in general. Second, interpreting these results on a more general level, this study serves as a first indicator that not a particular eating behavior per se, but the underlying motivation affects whether it might turn into a possible pathological fixation on healthy eating behavior. As [1] already assumed, health and healing serve as motives of major importance in the context of orthorexia. This study further indicates that also esthetics, an appearance-related aspect, seems to influence orthorexic eating behavior in vegans. However, the mean importance rating is fairly low, so for the majority of participants esthetics do not play an important role as a motive for following a vegan diet. The same is true for the motive of healing. A tentative explanation might be that individuals who give these motives a high importance rating also display high levels of orthorexic eating behavior, possibly indicating that these vegan individuals are at a particular high risk of developing an orthorexic way of eating.

Future studies should investigate motives for orthorexic eating behavior in other samples to reveal more details on the relation between motivations and different variants of eating behavior in the context of orthorexia. Especially, the relation of orthorexic eating behavior and aspects of esthetics and body image should be investigated in depth, since also this study points out that there might be a more close relation than previously assumed [1, 10].

While interpreting the results it must be taken into account that usually, not only one reason motivates a vegan lifestyle and that these motivations might change over time [6]. Therefore, it is nonetheless plausible that in an individual with the previous motivation of animal welfare, the motive of health becomes more important over time and does, therefore, increase the risk for developing an orthorexic eating behavior. Future studies should investigate motivations for orthorexic eating behavior in detail to identify possible risk factors. From the results of this study, it can be concluded that underlying motives and not observable eating behavior form risk factors for developing an orthorexic eating behavior.

Limitations

Limitations of this study are the non-representative character of the sample, the briefness of the questionnaire and that due to the cross-sectional design, no conclusions regarding

cause and effect can be drawn. Furthermore, it must be taken into account that individuals rated the importance of several motives and that possibly, various aspects motivate their eating behavior and not only one. Possibly, a combination of several motives might contribute most to an orthorexic eating behavior.

Conclusions

Orthorexic eating behavior in vegan individuals is linked to the importance of the motives health, esthetics and healing. Thus, common and most important motives for following a vegan diet (i.e., animal welfare, politics and ecology) are not associated with orthorexic eating behavior. Hence, to identify orthorexic eating behavior, health care professionals should focus on the investigation of underlying motivations instead of inferring orthorexia from a supposedly highly restricted eating behavior.

Acknowledgements The authors sincerely thank Timo Falkenberg for his valuable assistance with language revision.

Funding The study has not been funded.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. In Germany, in the case of studies only involving questionnaires on general topics, a formal approval from a research ethics committee is not required.

Informed consent All individual participants included in the study were informed about protection of their data and voluntariness of the participation and gave their consent.

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