

Full Length Research Paper

Occurrence and relevance of orthorexic eating behaviour in clients of complementary and alternative medicine

Friederike Barthels*, Sandra Gahlmann, Tabitha Schwabe and Reinhard Pietrowsky

Department of Clinical Psychology, Institute of Experimental Psychology, Heinrich Heine University, Düsseldorf, Germany.

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Orthorexia is put forward as a new variant of disordered eating behavior, characterized by a fixation on only eating food that is considered to be healthy. First studies evaluating its clinical relevance revealed that orthorexic individuals seek help from health professionals and nutritionists. However, practitioners of complementary and alternative medicine (CAM) have not been considered yet. Hence, the aim of this study was to survey German CAM practitioners regarding the relevance and occurrence of orthorexic eating behavior in their clients. Two hundred and seventy-six participants filled in an online questionnaire that included questions on (1) level of awareness and participants' evaluation of orthorexia, (2) prevalence, symptoms and comorbidities of orthorexia among their clients and (3) diagnostic assessment and treatment approaches. The results revealed that CAM practitioners considered orthorexia nervosa to be of clinical relevance. Seventy percent of the participants had been consulted by individuals with orthorexic eating behavior. However, only 20% of the participants reported that orthorexic eating behavior was the main symptom of the clients. It can be concluded that orthorexic eating behavior is a relevant condition in complementary and alternative medicine and that more research is needed in order to provide health care professionals with profound information regarding its symptomatic features and recommendations regarding its treatment.

Key words: Orthorexia nervosa, orthorexic eating behavior, eating disorders, disordered eating behavior, complementary and alternative medicine.

INTRODUCTION

The term "orthorexic eating behavior" is used to describe individuals pursuing a strict diet according to their own definition of healthy eating habits, which could potentially lead to malnutrition and psychological distress

(Bratman and Knight, 2000). A recent review (Cena et al., 2019) revealed that scientific publications used the following terms to define orthorexia nervosa: (1) obsession, indicating persistent cognitions regarding

*Corresponding author. E-mail: friederike.barthels@uni-duesseldorf.de. Tel: +49 211 - 81 - 12269. Fax: +49 211 - 81 - 14261.

healthy eating, (2) fixation, referring to ritualized behavior, and (3) concern/preoccupation, pointing out pronounced worries and a biased focus of attention regarding healthy eating. The scientific community has not yet commonly agreed on proposed diagnostic criteria (Barthels et al., 2015; Moroze et al., 2015; Dunn et al., 2016; Setnick, 2017), and it is still under debate as to whether orthorexic eating behavior is a distinct mental disorder at all (Strahler and Stark, 2020). Considering only studies using psychometrically sound questionnaires, 1 to 7% (Cena et al., 2019; Strahler and Stark, 2020) of the investigated samples display orthorexic eating behavior. A relevant and still unanswered question is in how far orthorexic individuals perceive impairments in their lives due to their eating behavior. One approach to answer this question is to investigate in how far orthorexic individuals seek professional help. To date, there are four studies that surveyed health professionals regarding the occurrence of orthorexic eating behavior in their clients (Vandereycken, 2011; Barthels et al., 2019; Reynolds and McMahon, 2019; Ryman et al., 2019). They come to the conclusion that indeed orthorexic individuals seek help from professionals and that orthorexia seems to be a relevant phenomenon in the health care system. However, one group of health professionals has not been investigated yet, namely practitioners of *Complementary and Alternative Medicine* (CAM).

The aim of this study was to survey a German sample of CAM practitioners in order to (1) investigate the level of awareness and the participants' professional evaluation of orthorexia nervosa, (2) estimate the prevalence rate, occurrence of orthorexic features and comorbid symptoms of orthorexic eating behavior in their clients and (3) reveal diagnostic assessment and treatments used. Finally, a non-systematic qualitative analysis to categorize comments of the participants entered in a free text field was conducted, in order to assess aspects that the questionnaire failed to capture.

METHODOLOGY

Study design

The presented study follows a descriptive design, using an online-questionnaire distributed among a non-randomized sample of German CAM practitioners.

Data collection

Ten German organizations of CAM practitioners were asked to distribute the link to the online questionnaire among their members using a standardized instructional text. Five of them agreed to cooperate and published the link in their newsletter (three organizations), on their website (two organizations) or in their printed member's journal (one organization). Collection of the data took place from September 29th to November 25th, 2019.

Description of the sample

Two hundred and seventy-six CAM practitioners participated in the study, 39 (14.1%) of them were males, 236 (85.5%) were females and one (0.4%) did not report their gender. Mean age was 52.95 (SD = 7.74) years and mean years of work experience were 11.96 (SD = 5.53) years.

In Germany, one needs to pass an exam at the local health department in order to receive the permission to apply CAM methods. The majority of the participants ($n = 232$, 84.1%) acquired their knowledge to pass this exam at an alternative practitioner school. 16 (5.8%) participants took correspondence courses, 13 (4.7%) participants self-taught to prepare for the exam, and 12 (4.3%) stated to have used other methods, e.g. intensive courses and medical training. While 179 participants (64.9%) worked full time as CAM practitioners, 97 (35.1%) worked part time. The majority ($n = 234$, 84.8%) worked in their own practice and 22 (8.0%) worked in a group practice. $N = 7$ (5.8 %) reported other employments, e.g. consultancy in a pharmacy or a lecture position and $n = 4$ (1.4%) did not answer. While 109 participants (39.5%) reported to have specialized in one area of the CAM spectrum (psychotherapy: $n = 52$, 18.8%; osteopathy: $n = 14$, 5.1%; naturopathy: $n = 13$, 4.7%; physical therapy: $n = 9$, 3.3%; other: $n = 21$, 7.6%), the majority ($n = 150$, 54.4%) reported to have not specialized in one CAM area ($n = 17$, 6.2% abstained).

Materials

The online questionnaire contained general information on voluntariness and anonymity of the participation as well as information on data protection according to privacy policy. Participants were informed that they could cancel their participation in the study at any time and without declaring any reasons. Completion of the survey and sending the data by using the send button was taken as informed consent to participate in the study.

First, questions regarding age, gender, years of work experience, education and additional qualifications were presented. Then, specific questions concerning orthorexic eating behavior followed. The majority of the questions included a set of predefined response categories to ensure a short processing time.

Additionally, each question contained text fields, allowing the participants to add their own comments. The first question assessed level of awareness of the terms "orthorexia nervosa" and "orthorexic eating behavior". Then, participants were asked to estimate the number of orthorexic individuals they had seen in their practice in the last 12 months, to define their sociodemographic characteristics (gender, age, weight status) and to declare which symptoms they had displayed. If orthorexic eating behavior was not reported to be the main feature, participants were asked to specify frequent comorbidities. Next, eight statements were used to assess the participants' professional opinion on orthorexia by using a four-point scale (1 = "strongly disagree", 2 = "disagree", 3 = "agree", 4 = "strongly agree", (Figure 1)). Finally, participants were asked to state which diagnostic assessments and treatments they used and were given the opportunity to add additional comments on orthorexia nervosa in a text field.

Statistical analysis

To analyze the data, IBM SPSS Statistics for Windows, version 26, was used. Means (M), standard deviations (SD), absolute and relative frequencies are reported. Since several questions allowed multiple answers, these results are reported by stating how many

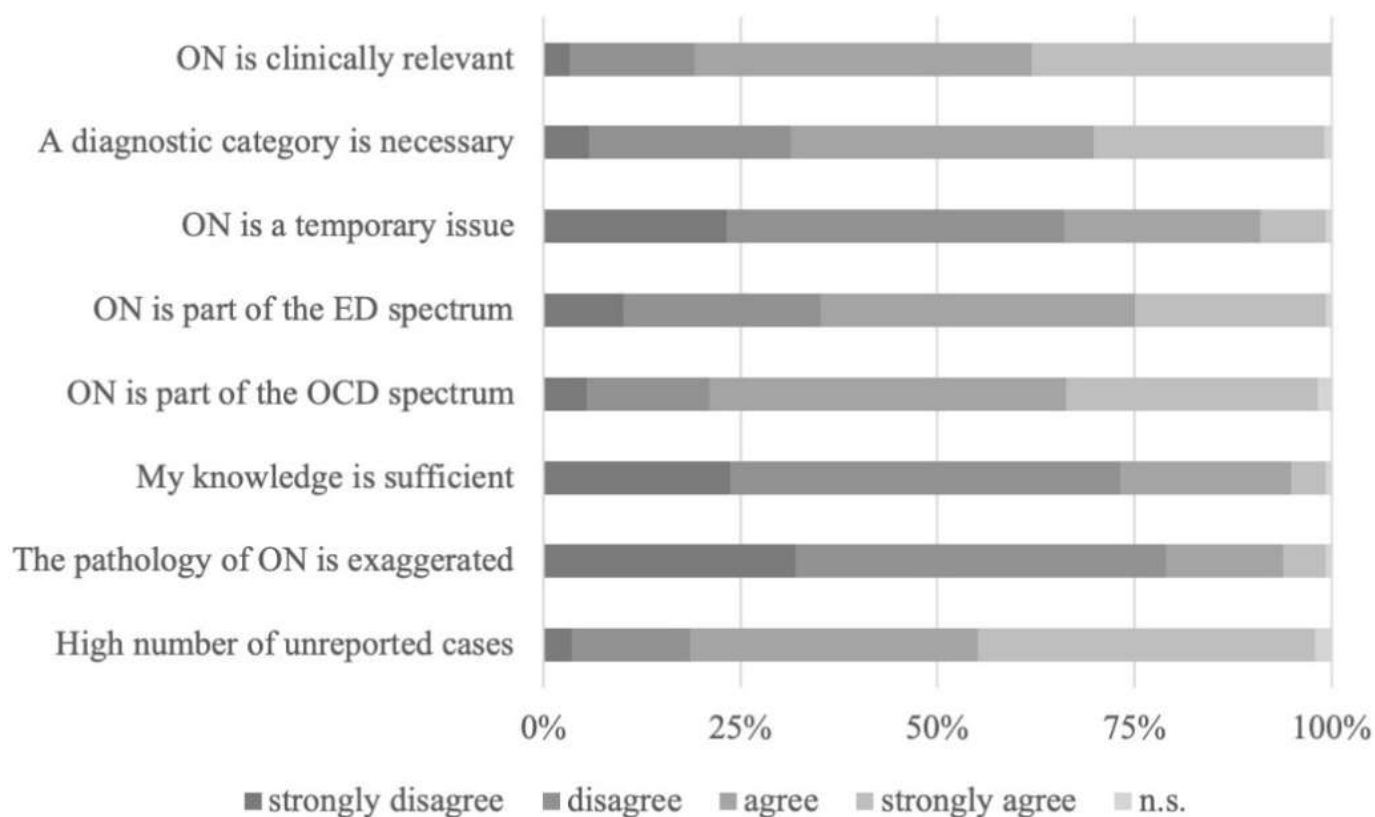


Figure 1. Mean percentages of the CAM practitioners' agreement to eight statements regarding orthorexic eating behavior ($N = 27$). CAM = Complementary and Alternative Medicine, ON = Orthorexia Nervosa, OCD = Obsessive-Compulsive Disorder, ED = Eating Disorder, n.s = not specified.

times a response category was selected. Consequently, for these questions, the sum of the percentages does not add up to 100. Microsoft Excel 2016 for Windows was used to sum the total number of affected individuals and their sociodemographic data (gender, age, weight). For these data, minimum (*MIN*), maximum (*MAX*), median (*MD*) and percentages (%) are reported. Without claiming to be complete, data of the comment field are reported as a brief, non-systematic qualitative analysis.

RESULTS

Level of awareness and participants' evaluation of orthorexia

One hundred and forty eight (148) of the participants (53.6%) knew the terms "orthorexic eating behavior" or "orthorexia nervosa" before participating in the study and 112 (40.6%) declared to have not known these terms (remainder: not specified).

The practitioners tended to agree with the statements "Orthorexic eating behavior is a phenomenon of clinical relevance" ($M = 3.16$, $SD = 0.81$, $n = 276$) and "A unique diagnostic category is needed in order to classify

orthorexic eating behavior" ($M = 2.92$, $SD = 0.89$, $n = 273$). The participants tended not to agree with the statement "Orthorexic eating behavior is a temporary issue, due to the recent trend regarding organic food" ($M = 2.19$, $SD = 0.89$, $n = 274$). Regarding the statement "Orthorexic eating behavior does belong to the other eating disorders, even though weight control and body image disturbances do not seem to be characteristic features of orthorexia", the participants tended to agree ($M = 2.79$, $SD = 0.93$, $n = 274$). However, the participants also tended to agree with the statement "Orthorexic eating behavior is part of the obsessive-compulsive spectrum" ($M = 3.06$, $SD = 0.84$, $n = 271$). The participants tended not to agree with the statements "I consider my state of knowledge regarding orthorexia nervosa to be sufficient" ($M = 2.07$, $SD = 0.79$, $n = 274$) and "It is exaggerated to call orthorexic eating behavior a pathological condition" ($M = 1.94$, $SD = 0.83$, $n = 274$). Finally, participants tended to agree with the statement "I believe that there is a large number of unreported cases of individuals with orthorexic eating behavior not seeking professional help" ($M = 3.21$, $SD = 0.84$, $n = 270$ (Figure 1)).

Prevalence, symptoms and comorbidities

Two hundred and one (72.8%) of the CAM practitioners declared that during the past 12 months, they had been consulted by at least one individual pursuing a very healthy diet, resembling the description of orthorexic eating behavior. 70 (25.4%) participants stated that they had not seen any clients that would fit in this description and five (1.8%) did not answer this question. The following questions were only answered by the participants who reported to have seen orthorexic individuals ($n = 201$).

In total, the practitioners reported 2,307¹ individuals presumably displaying orthorexic eating behavior who had sought help in the past 12 months, resulting in a mean number of 8.36 orthorexic individuals per participant. Gender, age, and suspected weight status are displayed in Table 1.

Regarding orthorexic symptoms, 92.5% of the participants ($n = 186$) reported to have observed a strict selection of food according to specific criteria in their orthorexic clients, 84.1% ($n = 169$) reported rigid adherence to self-imposed nutritional rules and 78.1% ($n = 157$) reported a cognitive fixation on healthy eating. The fear of falling ill due to unhealthy eating behavior was mentioned by 73.1% ($n = 147$) of the participants and the individual's belief of his/her diet being the only right way to eat was mentioned by 68.2% ($n = 137$) of the participants as a symptom. 49.2% ($n = 99$) of the participants reported intake of dietary supplements as a symptom of orthorexic clients and 34.8% ($n = 70$) reported malnutrition. The following symptoms were mentioned by a third or less of the participants: social isolation ($n = 62$, 30.9%), meal planning a few days ahead of time ($n = 51$, 25.4%), ritualized preparation of meals ($n = 49$, 24.4%) and dieting to promote weight loss ($n = 41$, 20.4%, multiple selections possible). Additionally, 15.9% of the participants ($n = 32$) reported to have observed other symptoms, e.g. negative influences on social life (37.5%, $n = 12$), anxieties (28.1%, $n = 9$) and physical symptoms (21.8%, $n = 7$), such as intolerances and underweight (multiple answers possible).

While 59 (21.4%) participants reported to have seen individuals with orthorexic eating behavior being the main symptom, the majority ($n = 143$, 51.8%) reported that orthorexia occurred in combination with other symptoms or disorders. 69.9% ($n = 100$) of the participants reported orthorexic symptoms to occur in combination with obsessive-compulsive disorder, 50.4% ($n = 72$) reported a combination with eating disorders not otherwise

specified, 33.6% ($n = 48$) reported anorexia nervosa as a comorbid disorder, 21.0% ($n = 30$) reported a combination with bulimia nervosa and 14.7% ($n = 21$) reported binge eating disorder to be comorbid with orthorexic eating behavior. 21.7% ($n = 31$) of the participants were not able to identify the comorbid disorder (multiple selections possible). Additionally, 39.9% ($n = 57$) of the participants mentioned other comorbid disorders. The majority of them (84.2%, $n = 48$) reported physical diseases, namely digestive problems, chronic diseases and hormonal imbalances. 34 (59.6%) participants mentioned mental disorders, e.g. illness anxiety and other anxieties as well as affective disorders. Some of these participants ($n = 12$, 21.1%) reported general problems in the context of nutrition, e.g. allergies and intolerances and 19.3% ($n = 11$) mentioned general symptoms of impaired health, e.g. sleep disorders, tiredness, poor concentration and nervousness (multiple answers possible).

Diagnostic assessment and treatment approaches

47.5% ($n = 131$) of the practitioners declared that a reason for consulting them was a request for health-promoting CAM treatments and 30.8% ($n = 85$) mentioned the request for counseling interviews regarding physical health. Psychotherapeutic counseling or treatment (11.6%, $n = 32$) and counseling interviews regarding mental health (11.2%, $n = 31$) were also mentioned. 52 participants (18.8%) added other reasons, e.g. physical complaints (46.1%, $n = 24$) such as digestive problems and pain, or the desire for a specific naturopathic treatment (26.9%, $n = 14$, multiple answers possible). 242 (87.7%) of the participants reported to usually pay attention to symptoms of a fixation on healthy eating when seeing new clients. 32 (11.6%) declared that they did not pay attention to this aspect (remainder: not reported).

While 150 (54.3%) participants stated to have treated orthorexic individuals, 118 (42.8%) stated to have not treated any patients with orthorexia (remainder: not reported). The most frequently used methods from the CAM spectrum applied by the participants, who had already treated individuals with orthorexic eating behavior were homeopathy ($n = 64$, 42.7%), naturopathy ($n = 48$, 32.0%) and microbiological therapy ($n = 32$, 21.3%). 50% ($n = 75$) mentioned to have used various other methods: About half of these answers concerned methods specifically related to eating behavior, e.g. nutrition counseling, orthomolecular medicine and laboratory diagnostics (52.2%, $n = 39$), and the other half was related to methods treating the whole body, e.g. visceral osteopathy, acupuncture or therapist massage (49.3%, $n = 37$, multiple answers possible).

With regard to psychotherapeutic methods, relaxation techniques ($n = 67$, 44.7%), client-centered therapy ($n =$

¹For this calculation, the sum of the reported number of female and male individuals with orthorexic eating behavior was used, as this seemed to be most reliable since it was a relatively easy criterion to observe.

Table 1. Gender, age and weight status of clients with supposed orthorexic eating behavior reported by the CAM practitioners who have been consulted by at least one orthorexic individual in the past 12 months ($n = 201$).

Category	Sum	%	Min	Max	MD
Gender					
Male	431	18.7	0	50	1
Female	1876	81.3	0	220	4
In total*	2307	-	-	-	-
Age[#]					
< 18 years	114	4.2	0	25	0
18 - 25 years	426	16.2	0	50	1
25 - 40 years	913	34.7	0	180	2
40 - 60 years	968	36.7	0	300	2
> 60 years	213	8.1	0	70	0
In total*	2634	-	-	-	-
Weight status					
Underweight	364	17.1	0	25	1
Normal weight	1277	60.1	0	250	3
Overweight	484	22.8	0	150	0
In total*	2125	-	-	-	-

The sum column indicates the total number of reported clients for each category (gender, age, weight) across all participants. The columns *MIN* (minimum), *MAX* (maximum) and *MD* (median) represent the minimum, maximum and mean numbers of reported clients per participant. *Total sum scores per category vary due to inconsistent and incomplete indications of the participants. [#]For the age category, estimations of one participant were removed due to its implausible character.

65, 43.3%) and body-oriented psychotherapy ($n = 24$, 16.0%) were mentioned most frequently (multiple selections possible). 14% ($n = 21$) mentioned other methods, e.g. counseling in general (19%, $n = 4$), hypnosis and related methods (19%, $n = 4$) and trauma therapy (9.5%, $n = 2$).

Non-systematic qualitative analysis of the comment field

In eleven comments, the professionals pointed out that they did not believe that orthorexia nervosa was a disorder and that orthorexic eating behavior should not be overrated. In nine comments, the participants emphasized orthorexic eating behavior as a secondary finding, which was rarely the cause of the desire for treatment, but which emerged in the further course of the treatment. In eight comments, the professionals pointed out that orthorexic individuals did not perceive their eating behavior as problematic and sometimes did not want to talk about it or to be treated. In seven comments, the participants explained that according to their observations, orthorexic eating behavior rather resembled an obsessive-

compulsive disorder, which was used to gain or regain a sense of control in the affected individual's life. In five comments, the professionals declared that an overload of information regarding (healthy) eating might trigger orthorexic eating behavior and in four comments each, the participants declared that orthorexic eating behavior emerged from another disorder and that it had detrimental effects on the individual's social life. Finally, there were individual comments on other topics, e.g. that orthorexic individuals needed a holistic treatment or that they needed to be treated by psychotherapists.

DISCUSSION

Regarding the level of awareness, the results revealed that half of the participants were familiar with the terms orthorexia nervosa and orthorexic eating behavior before participating in the study. However, only 30% agreed with the statement that their knowledge regarding orthorexic eating behavior was sufficient. Given the fact that about 70% of the participants had been visited by an individual presumably displaying orthorexic eating behavior, it seems highly important to provide CAM practitioners with

information on orthorexic eating behavior.

Based on their professional experience with clients with orthorexic eating behavior, the majority considered orthorexic eating behavior to be a phenomenon of clinical relevance and about 70% believed that a unique diagnostic category for orthorexia nervosa was needed. These results are in line with a previous study (Barthels et al., 2019) in which nutritionists were surveyed, indicating that despite its unclear definition and diagnostic criteria, professionals, who have already seen patients with orthorexic eating behavior, consider it to be a phenomenon of clinical relevance. This aspect is complemented by the finding that the majority of the participants disagreed to the statements that the pathology of orthorexia nervosa was exaggerated or that orthorexia nervosa was a temporary issue. Furthermore, a high number of unreported cases is assumed. In the scientific community, it is still under debate whether orthorexic eating behavior is a mental disorder or not (Strahler and Stark, 2020). However, taking a closer look at studies investigating orthorexic eating behavior, it must be stated that the majority of these studies did not investigate orthorexic individuals, but merely samples from the general population or subsamples supposed to have an elevated risk for the development of orthorexic eating behavior (Cena et al., 2019). Hence, these studies do not appear to be suitable for drawing broader conclusions on the pathology of orthorexic eating behavior. Summarizing previous studies that surveyed health care professionals on the relevance of orthorexic eating behavior (Vandereycken, 2011; Barthels et al., 2019; Reynolds and McMahon, 2019; Ryman et al., 2019), the overall findings suggest that orthorexic eating behavior is seen as a mental disorder by different groups of professionals. More research with samples consisting of individuals displaying orthorexic eating behavior is needed in order to investigate the question of orthorexia being a disorder or not.

Regarding prevalence, about eight individuals with orthorexic eating behavior were reported on average per professional within the past 12 months prior to the survey. This is comparable to the number of reported orthorexic individuals who consulted dietitians and nutritionists (Barthels et al., 2019). The absolute figures must be interpreted with great caution, as this retrospective report may be subject to several biases (hindsight bias, vague recollection, rough estimations, etc). Taking a look at the reported percentages regarding the sociodemographic characteristics of orthorexic individuals, the results correspond to some extent to the findings reported in other studies. Regarding gender, one review suggests that females seem to be more likely to display orthorexic eating behavior (Strahler, 2019), whereas another review revealed that there might be no difference in the prevalence of orthorexic eating behavior

between females and males (McComb and Mills, 2019). Regarding age, there is evidence that younger people are more likely to be affected and that age has no influence. However, most samples seem to be biased because mainly, samples consisted of young individuals (McComb and Mills, 2019). In the present study, predominantly individuals between 25 and 60 years were reported, which could be a first indication that not only young people can be affected by orthorexia. Regarding weight status, the majority of the studies suggest that there is no relation to orthorexic eating behavior, but there are also studies suggesting that a higher body mass index (BMI) might be a risk factor for ON (McComb and Mills, 2019). In the present study, there were indeed more overweight than underweight orthorexic individuals reported. However, these findings might be influenced by the clientele that typically sees alternative practitioners, who might be older and therefore might tend to have a higher BMI, hence, more studies are needed in order to further investigate age and BMI in the context of orthorexic eating behavior.

Regarding the symptoms, the majority of the participants reported to have observed a strict selection of food according to specific criteria, rigid adherence to self-imposed nutritional rules, a cognitive fixation on healthy eating, the fear of falling ill due to unhealthy eating behavior and the individual's belief of his/her diet being the only right way to eat in their orthorexic clients. The predominance of these reported symptoms suggests that they should be taken into account when it comes to the definition of diagnostic criteria. Other symptoms, although frequently mentioned by Bratman (Bratman and Knight, 2000), such as meal planning a few days ahead of time and the ritualized preparation of meals, were reported by only a quarter of the participants, suggesting that they might not play a major role within the syndrome of orthorexia. While Bratman presented only a few individuals who took dietary supplements (Bratman and Knight, 2000), this aspect seems to be a relevant feature reported by half of the professionals, which should be investigated in future studies.

It is very important to emphasize that only 20% of the participants reported to have seen individuals with orthorexic eating behavior being the main symptom, indicating that in the majority of orthorexic individuals, their eating behavior was not the predominant problem. According to the observations of the participants, orthorexic eating behavior is mainly reported to co-occur with an obsessive-compulsive disorder or with eating disorders not otherwise specified. While some studies confirm a strong connection between orthorexic eating behavior and other eating disorders (Bartel et al., 2020), the current state of research does not in fact suggest a high co-occurrence with obsessive-compulsive behavior (Yakin et al., 2020) nor obsessive-compulsive disorders

(Barthels et al., 2017). More research is needed in order to clarify the nosological classification of orthorexia nervosa and its relation to both eating disorders and obsessive-compulsive disorders. Since also surveyed nutritionists frequently reported obsessive-compulsive behavior as a comorbid disorder in orthorexic individuals (Barthels et al., 2019), this aspect is worth further investigation. Additionally, almost 40% of the participants reported other comorbid disorders, mainly physical diseases, such as digestive problems, chronic diseases and hormonal imbalances. This aspect has not received much scientific attention yet. To our knowledge, there is only one study suggesting that orthorexic individuals experience impaired physical health (Oberle et al., 2019). Since this could be an indication of the pathological potential of orthorexic eating behavior, future studies should address this issue. Furthermore, the co-occurrence with mental disorders, such as illness anxiety, other anxieties, and affective disorders was frequently reported. Since anxiety and depression are common general signs of a mental disorder, this observation might serve as another indicator for the potential harmfulness of orthorexic eating behavior. However, while interpreting these results one should take into account that the majority of the surveyed CAM practitioners did not have any medical training and only a minority was specialized in the field of psychotherapy, possibly impairing the validity of these statements. More research is needed in order to find out which physical or mental disorders are associated with orthorexic eating behavior.

About 50% of the practitioners reported to have treated individuals with orthorexic eating behavior. Mainly, they used homeopathy, naturopathy and microbiological therapy from the CAM spectrum and relaxation techniques, client-centered therapy and body-orientated psychotherapy from the psychotherapeutic spectrum. Currently, there are no recommendations for the treatment of orthorexic eating behavior, hence, it is not possible to comment on the usefulness of the reported methods. Since the results of this study support the hypothesis of orthorexic eating behavior being a mental disorder, more effort should be put into the development and analysis of methods to treat orthorexic eating behavior, in order to give professionals of the health care system guidelines on how to handle orthorexic patients.

Finally, the results of the non-systematic qualitative analysis of the comment field support and extend the findings reported earlier. Some professionals pointed out that they did not believe that orthorexia nervosa was a disorder and that orthorexic eating behavior should not be overrated, suggesting that there are also cases of putative orthorexic eating behavior that do not seem to be pathological. Maybe this indicates the recently described construct of “healthy orthorexia”, which is meant to cover the non-pathological preoccupation with healthy eating

(Barrada and Roncero, 2018). Some comments also included that the orthorexic individuals had no insight into illness, which is an aspect that Bratman (Bratman and Knight, 2000) pointed out several times, but which has not been investigated yet.

Limitations

Representativeness of the sample might not be given since no randomization procedure was used. Hence, self-selection of the participants might have influenced the composition of the sample. Furthermore, retrospective report of the data might have been subject to cognitive biases (e.g. hindsight bias), which might limit the interpretability of the data.

Conclusion

The majority of the surveyed CAM practitioners had been consulted by individuals with orthorexic eating behavior and considered orthorexia to be of clinical relevance. More studies are needed to assess the treatment prevalence of orthorexic eating behavior. All in all, orthorexic eating behavior is a relevant condition in the health care system.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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