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Orthorexic eating behavior[1]

A new type of disordered eating

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Summary

Persistent fixation on healthy nutrition and avoidance of food considered unhealthy in fear of developing an illness is known as "orthorexic eating behavior" and is being recently discussed as a new type of disordered eating. Further characteristics include the presence of overvalued ideas concerning effectiveness and supposed health-promoting effects of foods as well as obsessive and ritualized ways of preparing and consuming foods. The estimated prevalence of orthorexic eating behavior within the German general population amounts to 1–3 %, with predominantly young females affected. New studies indicate that symptoms of orthorexic and anorexic eating behavior tend to overlap, which brings up the question of possibly classifying orthorexia as a subtype of anorexia. Finally, this paper proposes a therapeutic approach combining interventions and methods from classic eating disorder therapy and nutritional counseling as a mean of treating possible consequences of mental or social distress caused by orthorexia.

Keywords: orthorexia, anorexia, eating behavior, healthy eating, compulsivity, nutrition psychology

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Introduction

In 1997, US-American physician Steven BRATMAN created the term „orthorexia nervosa", combining the Greek words *orthós* meaning „proper, correct" and *órexis* signifying „appetite" [1]. Analogous to anorexia nervosa, the newly created term orthorexia nervosa describes the fixation on health-conscious eating behavior. Additional characteristics of orthorexic eating behavior are ongoing mental preoccupation with healthy nutrition, overvalued ideas concerning the effects and potential health-promoting benefits of foods as well as rigid adherence to self-imposed nutrition rules. The desire to be thin and the intentional weight loss are irrelevant according to BRATMAN. In fact, the core symptom of orthorexia is the fear of falling ill due to unhealthy nutrition, and in some cases also the attempt to heal present symptoms with a particularly healthy diet [1].

To evaluate health-promoting benefits of foods, orthorexic individuals implement personal and mainly subjective criteria, that may correspond to the dietary recommendations by the German Nutrition Society [2], but which may also be considered critical from a nutritional or physiological perspective, as for example the macrobiotic diet [3].The individual characteristics of orthorexic eating behavior are versatile and depend on the subjective definition of healthy eating. In some cases, affected individuals focus on avoiding foods considered unhealthy, ranging from the exclusion of singular foods (e. g. certain fruits or vegetables) to the abandonment of whole groups of foods (e. g. all products of animal origin). Furthermore, the complete rejection of food additives (e. g. colorants, preservatives, flavor enhancers) might additionally limit the selection of food. In other cases, affected individuals focus on the specific choice of foods considered healthy or the intake of nutritional supplements.

[1]This article is based on a talk Dr. BARTHELS gave on the 17. Nutrition Conference on "*Wenn die Seele hungert – Essstörungen im Fokus*" invited by the German Nutrition Society, Section Mecklenburg-Vorpommern on 16.10.2014 in Rostock, Germany.

Moreover special emphasis can be placed on the origin of the foods (e. g. organic labels, home grown vegetables), on a special way of food preparation (e. g. mainly raw fruit and vegetables, special cooking utensils) or the combination of foods (e. g. Hay Diet). Main common feature of these different variations is that the subjective definition of healthy nutrition becomes stricter in the course of time, leading to a gradual reduction of the list of „allowed" foods. In extreme manifestations, the diet comprises very few foods, which may increase the risk of insufficient supply with essential nutrients [1]. Other implications of clinical relevance might be potential malnourishment and psychosocial problems (e. g. social isolation or family issues) as well as personal distress.

The heterogeneity of different orthorexic diets and varying risks depending on the subjective definitions of healthy eating, can be comprehended by several case reports retrieved from scientific literature (◆ Overview 1).

Glossary

egodystonic = describes thoughts, impulses or emotions in conflict with personal self-image, which are perceived as not belonging to one's own personality. Egosyntonic describes the opposite tendency, i. e. thoughts and behaviors that are perceived as harmonious with personal self-image [16].

nosology = branch of medicine dealing with the unambiguous and logical classification of diseases.

somatoform disorder = a mental disorder, where affected individuals show several and alternating somatic symptoms (e. g. gastro-intestinal problems) for which no sufficient physical cause can be identified [11].

overvalued idea = dominating belief, in extreme cases hold on to with missionary eagerness against counter-arguments. In contrast to delusion, overvalued ideas are perceived as egosyntonic and affected individuals in general do not show impaired reality testing [17].

Current state of research

Nosology and symptomatology

Orthorexic eating behavior shows several similarities with typical disordered eating behaviors, but other behavioral patterns can also be observed, such as strongly ritualized, almost obsessive eating habits and hypochondriacal fears. In the following text, symptomatical characteristics of orthorexic eating behavior will be analyzed and discussed according to the current state of research.

By coining the term „orthorexia nervosa", BRATMANN already implied a close relation to disordered eating behavior [1]. At first sight, observed orthorexic behavior shows several characteristics that can also be found in anorexia nervosa. In both, a cognitive fixation on nutrition is predominant; foods are not selected in accordance with the subjective feeling of hunger, satiation or individual preferences, but according to a cognitive evaluation regarding their calorie content or their beneficial

OVERVIEW 1: CASE REPORTS OF ORTHORECTIC EATING BEHAVIOR FROM THE LITERATURE

Case report from BRATMAN's alternative medical practice (USA) [1]:

- female patient believing that vitamins and minerals naturally contained in food are not enough to meet daily requirements. Consumption of excessive amounts of dietary supplements according to a schedule and in certain combinations to improve effectivity
- four year old boy nearly dehydrated due to a macrobiotic eating behavior imposed by his parents
- several patients showing highly selective eating behavior as a result of hypochondriacal fears (e. g. fear of cancer)

Case report from Spain [4]:

- 28-year-old severely underweight female patient, eating only seeds in the belief that these were the most natural food group. She declares not intending to lose weight.

Case report from Germany [5]:

- 26-year-old female student, with an eating behavior characterized by selecting and combining healthy foods. Diet based on a rigorous schedule with several interdependent time slots with precisely defined mealtimes and allowed food combinations.

and detrimental effects on health. Evidence can be found in correlations between orthorexic eating behavior and cognitive control [6]. Rigid selection and progressive reduction of allowed foods can be found both in anorexia and orthorexia. Until now, it was assumed that orthorexic eating behavior shows at least one major difference to other eating disorders: The intention to lose weight and intentional weight loss should be absent, also any body image distortion should not be part of the orthorexic syndrome [1,6]. Nonetheless, recent studies came to a different conclusion as correlations between orthorexic eating behavior and drive for thinness, being the cardinal feature of anorexia, could be found [6]. Additionally, individuals with orthorexic eating behavior also show deviations in perceiving and evaluating their body. Recent studies suggest that females with highly orthorexic eating behavior are less satisfied with their body and show less body acceptance compared to females with low orthorexic eating behavior [7]. Accordingly, difficulties in perception and acceptance of one's body also seem to play an important role in orthorexia, which puts even greater emphasis on the close relation between the orthorexic syndrome and symptoms of other eating disorders.

Although evidence for the assumed similarities between orthorexic eating behavior and disordered eating behavior in general could be found, almost no empirical evidence for the assumed connection to obsessive-compulsive disorders exists [8,9]. Only small correlations between orthorexic eating behavior and egodystonic obsessive-compulsive behavior could be found [6], but it still remains plausible that orthorexic eating behavior comprises egosyntonic compulsivity, similar to the compulsivity accompanying anorexic eating behavior. Taking a closer look at orthorexia, fears and thoughts known from hypochondriasis and somatic symptom disorders seem to be part of the syndrome, like for example the fear of falling ill due to an unhealthy diet or the intensive preoccupation with somatic processes [10]. First empirical evidence supporting this assumption can be seen in the correlation found between orthorexic eating behavior and the level of personal distress in the context of somatization [6]. It seems possible that orthorexic eating behavior is used as a coping strategy for hypochondriacal fears or that a health-oriented diet is implemented in an attempt to cure perceived somatic symptoms.

To sum up, it can be stated that according to current knowledge, classifying orthorexic eating behavior as a new type of disordered eating behavior seems most plausible. In contrast to anorexia and bulimia, orthorexia is mainly characterized by the presence of overvalued ideas regarding health-promoting properties of foods, nonetheless there is increasing evidence for overlapping symptoms of anorexic and orthorexic eating behavior. Recent studies suggest that body dissatisfaction and weight control also play an important role in orthorexia. Furthermore, female patients with the diagnosis of anorexia seem to achieve high scores on the Orthorexia scale: 38 % of 24 surveyed female patients exceeded the preliminary cut-off-value for orthorexic eating behavior on the Dusseldorf Orthorexia Scale [6].

Even though there are several aspects indicating the pathology of orthorexic eating behavior, the question of orthorexia meeting the criteria for a mental disorder will be analyzed below.

Orthorexia as a disorder of clinical relevance?

To date, diagnostic manuals for the classification of mental disorders (DSM-IV, DSM-5, ICD-10) do not include orthorexia as a unique diagnostic category. According to DSM-IV-TR [11], a mental disorder is a clinically significant behavioral or psychological syndrome either leading to personal distress, impairment in at least one area of functioning or important loss of freedom or causing an increased risk for suffering from the aforementioned consequences. To a certain extent, orthorexic individuals described by Bratman and Knight [1] in several case reports fulfill at least one of these criteria, so recognizing orthorexia as a mental disorder seems plausible in some cases. Nonetheless, an important criterion of the DSM-definition of mental disorder seems unfulfilled in nearly every case of orthorexia: personal distress and impairments in everyday life as caused by the fixation on healthy eating are rarely described. On the contrary, Bratman describes strong feelings of superiority and high self-esteem of his clients resulting from keeping their special diet [1].

Recent studies suggest that orthorexia might nonetheless result in personal distress: Correlations between orthorexic eating behavior and reduced personal well-being, lower self-esteem and impaired ability to relax were found [7]. Another study discovered positive correlations between orthorexia and depression [6]. Additionally, individuals with orthorexic eating behavior are at higher risk of malnutrition [4], and children living with orthorexic parents are exposed to several possible dangerous effects [1]. Both findings identify further negative consequences of the fixation on a presumably healthy diet. Similar to anorexia, denial of the disorder is assumed to be another symptom of orthorexia. Possible negative effects of orthorexic eating behavior could not only be ignored by the affected individuals, but rather understood as symptoms of another disorder or disease which must be treated with a presumably even healthier diet.

Even though the current state of research does not allow the final categorization of orthorexic eating behavior as a separate mental disorder, there is increasing evidence for the negative effects of orthorexia, making more research on this subject necessary.

Diagnostics and epidemiology

Since orthorexia is not included in the current classification manuals for mental disorders, there are no generally accepted diagnostic criteria for orthorexic eating behavior available. The orthorexia self-test by Bratman and Knight [1] provides first indications for possible diagnostic criteria. Barthels [6] (◆ Overview 2) and Moroze et al. [12] propose their own recommendations for diagnostic criteria which still need to be examined in a clinical sample of patients with orthorexic eating behavior.

In German-speaking countries, orthorexic eating behavior can be measured with the Dusseldorf Orthorexia Scale (◆ Overview 3), a screening instrument assessing concrete behavioral aspects of orthorexia. 1–3 % of the examined German samples exceeded the preliminary cut-off-score for orthorexic behavior [13] and might be therefore considered as a group with a higher risk of developing disordered eating behavior of clinical relevance.

A closer analysis of this subgroup, consisting mainly of females, reveals that the affected individuals are younger and show a lower body-mass-index (BMI) in comparison to the rest of the sample [6]. Furthermore, they also more often report suffering from somatic (e. g. gastro-intestinal diseases) and mental disorders (e. g. depression, other eating disorders).

Evidence for the clinical relevance of orthorexic eating behavior was provided by the results of a nation-wide survey among 215 professionals working in psychotherapeutic practice throughout Germany [6]. The examined sample consisted of 141 females (66 %) and 69 males (32 %, rest: not specified), of which 60 % worked in a private practice. 23 % worked in clinics and 17 % in outpatient clinics as well as in psychosocial counselling centers specialized in eating disorders and obsessive-compulsive disorders. Only 35 % declared having known the term „orthorexic eating behavior" prior to the participation in the study and 75 % admitted not knowing enough about this topic. Nonetheless, 44 % of the participants reported having encountered patients showing symptoms of orthorexic eating behavior, but only 4 % of them considered orthorexia to be the main symptom. More often, orthorexic eating behavior was observed in combination with typical or atypical eating disorders or with obsessive-compulsive disorders. When it comes to the number of patients with orthorexia, regardless whether orthorexic eating behavior was the main or a minor symptom, one participant of the study treated on average two patients showing orthorexic symptoms within the last 12 months, with 90 % of them being female [6].

Beside the conclusion that orthorexia is at least of minor clinical relevance, the main finding of this study is that psychological professionals do not know enough about orthorexia and that they should be provided with well-founded information about the potential disorder to help improve the health care for individuals affected by orthorexia [6].

OVERVIEW 2: **PRELIMINARY DIAGNOSTIC CRITERIA FOR ORTHOREXIA ACCORDING TO Barthels [6]**

	Criteria
A	Enduring and intensive preoccupation with healthy nutrition, healthy foods and healthy eating
B	Pronounced anxieties for as well as extensive avoidance of foods considered unhealthy according to subjective beliefs
C(1)	At least two overvalued ideas concerning the effectiveness and potential health benefits of foods AND/OR
C(2)	Ritualized preoccupation with buying, preparing and consuming foods, which is not due to culinary reasons but stems from overvalued ideas. Deviation or impossibility to adhere to nutrition rules causes intensive fears, which can be avoided by a rigid adherence to the rules.
D(1)	The fixation on healthy eating causes suffering or impairments of clinical relevance in social, occupational or other important areas of life and/or negatively affects children (e. g. feeding children in an age-inappropriate way) AND/OR
D(2)	Deficiency syndrome due to disordered eating behavior. Insight into the illness is not necessary, in some cases the lack of insight might be an indicator for the severity of the disorder.
E	Intended weight loss and underweight may be present, but worries about weight and shape should not dominate the syndrome.

For diagnosing orthorexia, criteria A, B, C and E must be clearly fulfilled. Criterion D should be fulfilled at least partially. If criterion E is not clearly fulfilled, diagnosing atypical anorexia nervosa is recommended.

OVERVIEW 3: **DUSSELDORF ORTHOREXIA SCALE** [13]

1. When it comes to nutrition, health is more important to me than indulgence.
2. I have established certain nutrition rules.
3. I can only enjoy eating foods considered healthy.
4. I try to avoid getting invited over to friends for dinner if I know they pay no attention to healthy nutrition.
5. I perceive it as positive to pay more attention to nutrition than other people.
6. I am filled with remorse after eating foods I consider unhealthy.
7. I have the feeling of being excluded by my friends and colleagues due to my strict nutrition rules.
8. My thoughts permanently revolve around healthy nutrition, which determines my daily routines.
9. I find it difficult to offend against my own nutrition rules.
10. I feel upset after eating unhealthy foods.

Therapeutic approaches

Considering the fact that individuals with orthorexic eating behavior actually seek help in psychotherapeutic practices emphasizes the relevance of developing suitable treatments. Due to a lack of studies assessing possible treatments for orthorexic eating behavior, therapeutic approaches presented in the following will be based on theoretical considerations.

The basis for further treatment could be established by extensive psychoeducation and nutrition counseling, helping orthorexic individuals develop a more realistic view on the significance and mutual relation of nutrition and health. Creating a „blacklist", containing foods considered „forbidden/unhealthy" by the patient, as well as a list of „allowed/healthy" foods (see [14]), provides an overview of the current food restrictions. In addition to that, a list containing nutrition rules should be established to assess other implemented restrictions, e. g. ritualized ways to prepare food. A confrontation with „forbidden foods" could help treat phobias concerning specific foods. Working with hypochondriacal fears should be addressed as another aspect of the therapy, especially if they seem to dominate the syndrome to the extent of completing the full clinical picture of hypochondriasis. Creating a realistic health concept [15] seems indicated for orthorexic individuals who have too rigid ideas regarding not only „healthy eating" but also the image of a „healthy body".

Additional techniques including elements of cognitive behavioral therapy could also be implemented, e. g. cognitive restructuring and countering probability estimations („How likely is falling ill from a single unhealthy meal?") as well as identifying dysfunctional, food-related beliefs and developing alternative thoughts.

In-patient treatment should be considered when the affected individual is at risk of developing severe underweight or already suffering from it, especially when the list of „allowed foods" contains only very few foods and/or a severe undersupply with essential nutrients already exists. Involving family members and relatives is indicated when children are being harmed due to the orthorexic eating behavior of their parents.

Conclusion

Research on orthorexia is still in its early stages, so it is not yet possible to answer every question concerning the potential disorder. While it is quite obvious that orthorexic eating behavior belongs to the group of eating disorders, its independency as a mental disorder of clinical relevance and its differentiation from anorexia nervosa are not yet clear. Furthermore, more research is needed to analyze the relevance of hypochondriacal fears and somatic disorders within the orthorexic eating behavior and to assess possible therapeutic interventions.

In general, it can be concluded that orthorexic eating behavior is a new type of an eating disorder, characterized by consuming solely foods considered healthy according to highly subjective criteria.

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Conflict of Interest
The authors declare no conflict of interest according to the guidelines of the International Committee of Medical Journal Editors.

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