PERSPECTIVE

Perspective: Classifying Orthorexia Nervosa as a New Mental Illness—Much Discussion, Little Evidence

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ABSTRACT

Significant prevalence rates of pathological healthful eating and its extreme form, orthorexia nervosa (ON), the pathological obsession with healthy eating, have led to increased efforts to understand this phenomenon's clinical relevance. This narrative review qualitatively summarizes existing evidence on the (psycho-)pathology and consequences of ON and offers an interpretation within the frame of existing theories and models of psychiatric disease. Adding to the controversy in the field of ON, this review offers important critiques and identifies gaps in our current understanding of ON as a (distinct) mental illness. *Adv Nutr* 2020;11:784–789.

Keywords: obsessive compulsive disorder, orthorexia nervosa, pathological eating, psychopathology, psychosocial functioning, well-being

Introduction

Ahead even of income and family in the hierarchy of values and across social classes, health is considered the most important area of life (1, 2). Taking care of one's health and the idea of individual responsibility underpin the strategy of empowerment in health promotion. The Health Beliefs Model proposes 6 constructs that predict a person's probability of showing a certain health behavior: risk susceptibility, risk severity (that is, the threats experienced as a result of the disease in question), expectations with regard to preventive behavior (that is, the benefits of action), barriers to action, self-efficacy, and cues to action (3). In women especially, nutrition is considered to be one of the most important behavioral factors influencing health (4, 5). Research shows that a healthy diet is positively linked to higher life expectancy and a lower probability of developing chronic disease (6). Specifically, there is a positive correlation between consuming fruit and vegetables and a lower probability of developing depression or suffering from mental stress (7, 8).

But what happens when healthy eating is put to the extreme? When does a behavior with seemingly positive health effects turn unhealthy and acquire pathological meaning? Could an overly strong fixation on healthy eating be pathologically important? This phenomenon has been termed orthorexia nervosa (ON; Greek ortós = correct, órexis = appetite) to describe a pathological fixation on healthy eating (9). The Orthorexia Nervosa Task Force summarized the following main diagnostic criteria for ON (10): *1*) a pathological preoccupation with healthy eating; *2*) the emotional consequences, such as stress or anxiety, of noncompliance with self-imposed dietary rules; and *3*) psychosocial restrictions in significant areas of life, malnutrition, and weight loss. Various instruments have been proposed for the assessment of ON (11), but none has yet prevailed. Prevalence rates are between 1% and 7% in general-population samples (12–14).

Despite its epidemiological relevance, ON is not included in either the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM) published in May 2013 (15) or in the 11th version of the International Statistical Classification of Diseases and Related Health Problems (ICD) adopted in May 2019 (16). During this time, multiple proposals for criteria considered to diagnose ON have been

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Abbreviations used: DSM, Diagnostic and Statistical Manual of Mental Disorders; ED, eating disorder; ICD, International Statistical Classification of Diseases and Related Health Problems; OCD, obsessive-compulsive disorder; ON, orthorexia nervosa.

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published (17, 18). The Orthorexia Nervosa Task Force summarized these proposals and published the most recent version of criteria in 2018 (see above). With these criteria, debate about the appropriateness of ON as a distinct entity in the ICD or DSM has become possible. This Perspective is intended to contribute to this debate.

However, compiling an up-to-date overview of existing knowledge about ON is difficult. This is due to the use in previous research of nonuniform criteria to diagnose ON, a multitude of diagnostic methods, and instruments revealed to have poor psychometric quality (19). Currently, "diagnosis" of ON relies on data typically collected by questionnaire and individuals' biographic information. While malnutrition and weight loss are among the proposed criteria, physical examination to assess physical impairment is not part of current diagnostic procedures.

In addition, developing a differential diagnosis, in which alternative explanations for nonspecific signs and symptoms are compared and contrasted, has been proposed but is not uniformly, if at all, employed. Differentiating ON from already existing entities is essential for its designation as a "new" mental illness. Furthermore, clinically relevant distress or disability in important areas of life (social, occupational, educational, or others) is considered by all major diagnostic sets, but only a few studies have investigated cognitive, emotional, or behavioral impairments that might be associated with ON.

The general definition of a mental disorder in the DSM distinguishes between socially deviant behavior, or conflicts between the individual and society, and mental disorders [15, p. 20]. A similar debate has arisen around the classification of ON. While some experts propose ON as a new mental illness (20, 21), others consider this behavior a lifestyle phenomenon (22) or a behavioral trait (23). Sociocultural factors influence nutritional habits and food selection, as they determine current social norms and lifestyles (24). Initial studies have indicated that sociocultural context may shape interest in healthy eating (25) and thus possibly also the risk of developing ON.

Typically, a behavior's pathology is evaluated according to its comprehensibility (the behavior is comprehensible given the sociocultural context), whether it is adaptive or nonadaptive, and whether or not it causes distress or disability (26). To draw a distinction between pathological, deviant, and normal behavior, especially health-conscious behavior, might be challenging. In terms of ON or healthy eating, norms and categorization currently rely on arbitrary cutoff points across the spectrum of orthorexic eating. Hence, the most appropriate criteria for categorizing ON as a mental illness would be the proposed distress, disability, and dysfunction criterion [27, p. 421].

Therefore, the aim of the following narrative review was to summarize the published evidence on the (psycho-) pathology of orthorexic eating. It was also this article's intention to provide readers with up-to-date knowledge on the current debate on ON as a (distinct) mental illness and discuss existing research from a theoretical and contextual point of view.

Current Status of Knowledge

The (psycho-)pathology of ON

There is already some evidence that orthorexic dietary behaviors may influence quality of life, mental well-being, and health and lead to impairments in various areas of life. Primary studies have examined various constructs and employed a multitude of measures to assess health and well-being. The following section summarizes this knowledge. While we do not claim completeness, we were very thorough in our literature research and synthesized studies published up to November 2019.

Mental health.

In the last decade, knowledge about the correlation between orthorexic eating and mental well-being and health has accumulated. Worth noting is the fact that this knowledge stems mainly from a few case reports and cross-sectional studies in nonclinical settings, making generalization and causal inference impossible. Mental health outcomes examined so far have included self-perceived well-being, chronic stress, negative and positive affect, depressive and anxious symptoms (including hypochondriacal fears), somatization, and obsessive-compulsive symptoms.

Studies conducted on the general population or on student samples have confirmed lower well-being and positive affect in individuals with higher orthorexic eating (28–30). Conversely, negative affect and depressive symptoms have been found to be positively correlated with orthorexic eating behaviors in studies conducted in both clinical (31, 32) and nonclinical (13, 28, 30) settings. Other studies, all conducted using student samples and all employing instruments that have been criticized for their poor psychometric properties, have failed to support this link (33–35). ON's association with stress has been examined by only a few general-population studies, with higher chronic stress (28) and an impaired ability to relax (29) reported in those with higher orthorexic eating. Furthermore, data from student samples show a significant positive relation between orthorexic dietary behavior and anxiety in some cases (28, 34, 36), but not in another (33). More specifically, appearance anxiety, fear of negative evaluation, and satisfaction with individual body regions have been found to be related to the strong interest in healthy eating (33, 37–41). Contrary to expectations, hypochondriacal fears were not particularly pronounced in eating disorder (ED) patients who also showed ON symptomatology compared with ED patients without comorbid ON (42). Likewise, the assumed correlation between interest in food and nutrition and health concerns could not be confirmed in a student sample (43). Elsewhere, psychological distress from depression, anxiety, and somatization symptoms appeared higher in patients who, in addition to their mental disorder, also show orthorexic eating behaviors (31, 32). And finally,

in a student sample somatic anxiety (physical complaints relating to anxiety) correlated with interest in healthy eating while mental anxiety (mental agitation and psychological distress) did not (44).

Functional impairment has rarely been examined, and those studies that have examined it, all conducted in a non-clinical setting, showed only small effects of orthorexic eating on, for example, physical role functioning or interference from disordered eating (33, 34, 45).

Several studies have investigated patient samples to examine current and past suffering from other mental illness as a risk factor of ON. These studies showed particularly high levels of both orthorexic eating and interest in healthy eating in ED patients (31, 32, 42, 46–50), while rates among patients with obsessive-compulsive disorder (OCD), panic disorder, and generalized anxiety disorder (32, 51) were comparable with those in general-population samples. Past suffering from an ED has also been related to higher self-reported orthorexic dietary behaviors (49, 50). It should be noted that all but one of these studies were cross-sectional. The one exception, which compared ED patients before and 3 y after treatment (48), showed an increase in patients' interest in healthy eating while ED symptoms decreased.

In addition, there is initial evidence of chronic physical disease being a risk factor for strong, possibly obsessive interest in healthy eating [breast cancer (52)]. By contrast, interest levels in diabetic patients were found not to be particularly pronounced (53). Of note, while comorbid orthorexic eating is not often seen in OCD patients, obsessive-compulsive symptoms have repeatedly been linked to this eating behavior in the general population (28, 33, 34, 41, 45, 48, 54–57). However, the research is far from consistent (31, 58–60) and there is evidence that this association vanishes when disordered eating is controlled for (45).

Comparatively little attention has been paid to quality of life and life satisfaction. There is initial evidence that people with orthorexic tendencies experience lower life satisfaction (28) and quality of life (61), but the effects were either small or could not be found (33, 62).

Physical health status.

According to previous assumptions (9), orthorexic eating develops from a desire to improve one's health and recover from chronic illness. Scientific evidence of the physical consequences of ON is almost exclusively limited to case reports. The exceptions are a few studies that have examined self-reported physical health and medical problems in relation to orthorexic eating. One such study showed poorer physical health in individuals with higher orthorexic eating (63), while the others could find no association with interest in healthy eating (14, 31, 64). The case reports, by contrast, described quite extreme forms of malnourishment, being underweight, and consequences related to orthorexic eating: for instance, a 30-y-old man presenting with hyponatremia and metabolic acidosis who severely restricted his food intake to treat his tic disorder (65) and a 28-y-old man who restricted his food intake to avoid constipation, who was severely underweight [BMI (kg/m^2): 12.3] and had metabolic alkalosis (positive base excess in blood), testosterone deficiency, a slower heartbeat, and decreased bone density (66). There is also case-based evidence of extreme restrictions on permitted food resulting in malnutrition (67). Another report described the case of an 18-y-old woman who restricted her diet, tightly counting calories and eating only self-made meals, suffering from social isolation and comorbid depression, and reportedly dismissing other people's opinions on diet (68). Two further cases provide evidence for the hypothesis that children living with orthorexic parents are exposed to several possible dangerous effects (9). In the first case, a 6-mo-old boy who was fed coconut water, hemp seed, sea moss, and small amounts of vegetables and fruits only suffered from severe hypocalcemia and hyperphosphatasia, stridor, and seizures. The second case was a 3-y-old girl whose diet was composed of plant-based, unsalted, and unseasoned foods only; she had never eaten any animal-based product, and she was reported to have developed a goiter (69).

Social and cognitive impairments.

Besides the physical consequences, an obsession with healthy eating has also been related to self-reported impairment in the areas of work/school, family, and social life in students (33). In particular, conflicts with friends and family (14), restrictions on eating outside the home and with others (49), and lower satisfaction with relationships (70) were reported in those with stronger interest in healthy eating and orthorexic eating. Personality traits such as perfectionism and narcissism have been discussed as possible moderators of this association (31, 37, 70). Studies using case vignettes also suggest that subjects with ON are at heightened risk of being stigmatized (71) and being regarded as lacking empathy (72). In terms of neuropsychological correlates of ON and orthorexic eating, the research is in its infancy. Studies experimentally investigating cognitive flexibility (Wisconsin Card Sorting Test) have found weaknesses in emotional control, self-monitoring, and working memory in students with stronger interest in healthy eating (41). This could not be confirmed in a more recent study (73) or when comparing self-reported cognitive flexibility, meta-cognitive beliefs, and emotion dysregulation (F Marchiol, C Cavallero, B Penolazzi, unpublished results, 2019). Finally, 1 study examining attentional bias towards healthy food (compared with unhealthy foods) found higher bias scores in students with stronger interest in healthy eating (74).

Overall, there is increasing evidence of strain and suffering due to an obsessive focus on healthy eating and ON. In this context of individual suffering, it is also important to consider the assumption that the orthorexic individual experiences his/her eating habits as being in harmony or consistent with his/her ideal self-image (75). Such an egosyntonic behavior is not perceived as problematic or pathological from the individual's own perspective and does not necessarily lead to a considerable amount of suffering.

Whether ON should be considered to be egosyntonic has yet to be comprehensively explored.

ON as a distinct mental illness

For a mental illness category to achieve diagnostic validity, the seminal paper by Robins and Guze (76) proposed several steps. Since their paper, increasing attempts have been made to develop sets of criteria for psychiatric diagnoses that have guided the revisions of the DSM since its third iteration (77). While the classification of mental disorders has been repeatedly revised and adapted, the National Institute of Mental Health's Research Domain Criteria project being the most recent initiative, Robins and Guze's steps can be used to validate definitions of a mental disorder to some degree.

Their first step is that of clinical description, which has already been carried out for ON. The second step is laboratory studies, including the development of assessment tools. In terms of ON, there is no such generally accepted tool, and further development is necessary to overcome the flaws of current instruments (19). In addition, no study has yet investigated the neurobiological and neurophysiological underpinnings of orthorexic eating, nor, as is true of most mental disorders, is there any discrete laboratory test for ON. Third, differential diagnoses and the exclusion of other disorders are needed to proof the distinctiveness of a newly proposed illness category. Previous studies have shown a clear overlap between ON and ED, anxiety, and OCD pathologies [see above and other reviews, e.g. (78)]. However, mental disorders often co-occur (79). Therefore, the simultaneous occurrence of 2 disorders does not negate their distinctiveness. Hence, it could further be argued that excluding other disorders involves showing that the distress experienced by the person is due to orthorexic behaviors and not some other mental disorder. Such an approach has been adopted by 2 studies. Both showed that, when controlling for other ED symptoms, overall ON symptomatology was no longer related to clinical impairment (interference from disordered eating) (45), well-being, life satisfaction, or chronic stress (28). To date, there has been no validation that ON as a subgroup of a disease would signify a clinically relevant variation. Research associated with step 3 thus hardly confirms ON to be a distinct mental illness. Steps 4 and 5 include follow-up studies and family studies, respectively, neither of which have been pursued in terms of ON. In sum, from the current evidence it seems advisable to be cautious when extending the label of illness to the phenomenon of ON.

Conclusions and Perspective

This review aimed to give an overview of current scientific evidence on the clinical consequences of pathological healthy eating and ON. In doing so, it has also contributed to the current debate concerning ON as a (distinct) mental illness. While considerable numbers of health professionals agree that ON is of clinical relevance and fits the Eating and Feeding Disorder category of the DSM-5 (80), the scientific evidence only partially supports this view. Certainly, increasingly more studies are investigating the (psycho-)pathology of orthorexic eating and providing initial evidence of emotional, cognitive, and behavioral changes as well as social and functional impairments relating to such behaviors. These findings must, however, be seen in the light of several limitations. Research on ON has often been conducted on either convenience samples or high-risk samples containing hardly any individuals with the extreme form of ON and whose results therefore cannot be generalized. Moreover, many of these studies used criticized diagnostic tools, while in terms of design few have gone beyond cross-sectional, single-time-point measurements using correlational analyses.

In summary, great caution should be exercised in extending the label of illness to the phenomenon of ON. More studies are needed to investigate the sole contribution of ON to pathology before we can reach a conclusion about its significance as a distinct illness. In addition, researchers and clinicians must be wary of being ethnocentric. Cross-cultural studies and the development of culturally sensitive diagnostic procedures are highly warranted, given the general assumption of the considerable influence of Western culture by many health professionals (81) and some evidence from scientific reports (82–84).

Overall, this review does not imply that extremely healthy or orthorexic eating cannot have debilitating consequences for the individual. Furthermore, the discussion about ON as a distinct mental illness also reflects the current debate on employing categorical as opposed to noncategorical classification schemes in psychiatry (85, 86). In terms of ON, setting a single cutoff point to separate the ill from the healthy is disputable. To distinguish normal from pathological behavior is particularly challenging when it comes to conscious dieting. While dimensional classification or the clustering of more homogenous subgroups from clinical groups could be a solution—where each individual receives a profile of scores across different dimensions (87, 88)—the need for treatment is often a yes/no question in clinical practice. The decision about treatment, even in mild cases, is a question both of the individual's suffering and of preventing future serious cases. In terms of ON, the latter could be the development of anorexia nervosa with severe medical complications (42, 46, 48).

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