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When “Healthy” Is Taken Too Far: Orthorexia Nervosa—Current State, Controversies and Future Directions

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Valeria Galfano, Elena V. Syurina, Martina Valente,
and Lorenzo M. Donini

The term orthorexia (from the Greek “ortho” meaning “straight or “correct” and “orexi” meaning appetite) was coined by Steven Bratman, in 1997, to describe a pathological obsession with healthful eating. The first article was published in a peer-reviewed journal in 2004. The authors defined orthorexia nervosa (ON) as a “maniacal obsession” in the pursuit of healthy foods [1]. From this moment, many papers, in particular starting from 2011, have been published, and the ON has assumed a scientific dignity [2].

This chapter aims to summarize the current stand of the scientific knowledge about the disorder and highlight several important avenues for further exploration. Thus, the chapter will broadly consist of two sections. In the first one, we present the current scientific knowledge on ON, including its commonly accepted symptoms, risk factors, proposed diagnostic criteria and assessment tools as well as the latest developments in the field of therapeutic approach to ON. The second part of the chapter aims to highlight the latest controversies and on-going discussions in the field of ON research. Among them are aetiological discussion about ON, potential for presentation of ON as a continuum from healthy orthorexia to orthorexia nervosa and the potential role of culture in the behaviours associated with ON. We will then conclude with some suggested new avenues for scientific exploration of ON.

Valeria Galfano and Elena V. Syurina contributed equally to this work.

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14.1 General Characteristics

“Eating disorders are serious and potentially fatal health problems that constitute a considerable burden of mental health problems” [3]. Societal influences and pressures are continuously changing and cause an evolution of eating patterns and behaviours. The remarkable influence of commercial food advertisements in our media today has contributed to the appearance of “orthorexic” subjects who select their foods based solely on whether or not they are considered to be properly healthful foodstuffs [4]. These individuals will obsessively follow strict diets that selectively avoid certain foods and therefore are insufficient and/or unbalanced. Moreover, this behaviour leads to changes in social and personal relationships, social isolation and finally changes in individual’s general psycho-physical condition [5].

Symptoms of ON are related to pathological eating attitude leading to nutritionally unbalanced diet—foods are excluded based on a presumed impurity; these beliefs change from subject to subject and can be extremely variable; therefore, there is no characteristic food pattern of subjects with ON; impairment of physical health due to malnutrition follows the unbalanced diet and obsessive-compulsive symptoms—ritualized preoccupation with buying, preparing and consuming foods; excessive amounts of time are spent reading about, acquiring and/or preparing specific types of foods; guilty feelings and worries after transgressions; intolerance of other’s food beliefs; severe distress or impairment of social or vocational functioning [6]. The perceived quality of food for these individuals becomes therefore more important than personal values, interpersonal relations, career plans and social relationships [7]. While other eating disorders such as “anorexia nervosa (AN)” and “bulimia nervosa (BN)” are obsessions about the quantity of food intake, “orthorexia nervosa” is focused on the quality of food intake. Self-esteem in these subjects is linked to the strong willpower that it is necessary to adhere to extreme food selection: they feel morally superior to those who eat “impure” foods [5].

ON is not currently recognized in the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (DSM-5), but many eating disorder professionals agree on considering it a genuine syndrome in need of more research and awareness [8]. Similarly, in the scientific literature, there is an on-going debate regarding whether or not ON should be classified as being a distinct disorder, as an obsessive-compulsive disorder (OCD), a subtype of an existing eating disorder or a precursor for or a residual of an eating disorder (AN and BN patients may switch from an obsession with the quantity of food to an obsession with its quality, and vice versa) [9, 10]. In fact, a healthy diet may represent a socially acceptable method of weight control for anorexic and bulimic individuals [11].

Studies attempted to explore the relationship between ON and weight loss, in order to distinguish ON from other eating disorders, and therefore gain insights into the classification of ON. Although ON has initially been considered solely driven by

health-related reasons, some studies reported an overlap between the driving forces of ON and those of other eating disorders, suggesting that also ON may be triggered by the desire for weight loss. For example, a study conducted in 2015 reported an association between ON and lower appearance evaluation and body area satisfaction: women suffering from ON were more likely to exercise regularly; perpetuate dieting, eating restraint and weight vigilance; and pay attention to appearance [12]. A 2017 study confirmed that ON is significantly correlated with appearance orientation, overweight preoccupation, self-classified weight and lower body area satisfaction [13]. More recently, a 2019 study confirmed these findings, demonstrating that the main motive for ON would be weight control, concluding that ON may be a maladaptive eating strategy driven by appearance-related reasons [14]. These findings suggest that the boundary between ON and other eating disorders may be blurred.

Such behavioural patterns can lead to a broad range of personal and societal consequences. ON may cause nutritional deficiencies due to avoidance of entire food groups. In particular, these patients may experience medical complications such as osteopenia, anaemia, hyponatremia, metabolic acidosis, pancytopenia, testosterone deficiency and bradycardia [15–17].

Psychologically, individuals with ON may feel frustrated when they disregard their food-related prescriptions, disgusted when food purity is apparently compromised and guilty when they commit food transgressions, worried about imperfection and nonoptimal health [11]. Indeed, dietary violations may cause a desire for self-punishment (e.g. stricter diet) or purification (e.g. cleansing fast) [15].

Finally, orthorexic subjects are frequently socially isolated since they are convinced that their health can be maintained only in isolation avoiding the influence of other people towards whom they often take on feelings of superiority [11].

14.2 Risk Factors and Drivers

There is an on-going investigation regarding the reasons why some individuals develop ON, while others do not. The investigation is focusing on the drivers of the ON behaviour and the predisposing factors that make individuals more susceptible to the development of the pathological behavioural patterns. These broadly can be divided into individual and societal groups.

14.2.1 Individual factors

A recent review of the literature identified risk factors for ON, these being perfectionism; obsessive-compulsive thoughts and behaviours; current or past history of other types of psychopathology, following a vegetarian/vegan diet; engaging in

disordered eating habits; past dieting experience; Instagram use; and having a health-related background/occupation [18]. The same review also showed the lack of evidence that gender and self-esteem can be seen as factors contributing to increase in ON risk. Mixed findings were reported for the following factors: age, SES, BMI, belonging to a health-related field, exercise engagement, vegetarianism/veganism, body dissatisfaction and alcohol, tobacco, and drug use [18].

Findings linking drive for thinness and weight control to ON remain largely unclear. For example, findings assessing the link between body image, body dissatisfaction, BMI and ON are inconsistent; instead, a few studies confirmed a relationship between drive for thinness and thin-ideal internalization and ON [18]. Notably, a 2019 study reported that ON would be driven by weight control purposes, rather than health-related reasons [14].

One of the most researched predisposing factors is perfectionism. Despite it not being unique to ON and being shown to be implicated in the psychopathology of AN and BN, literature suggests it plays an important role in ON. Perfectionism is defined as a personality trait characterized by the search for excessively high standards, expectations of impeccability and disproportionate criticism of self and others. ON individuals are characterized by perfectionism since they aim to eat a “perfect” diet following strict dietary rules [11, 19].

14.2.2 Societal Drivers

Broader sociocultural trends and forces possibly triggering ON are weight bias and obesity stigma, availability of organic/clean food, high income, access to food research/knowledge, positive reinforcement from others, availability of time for food planning/preparation [18] and internalized fear for chronic conditions and non-communicable diseases [20], all of which seem to be highly related to modern Western culture [21]. This possible link between ON and cultural aspects will be discussed in more details in the second part of the chapter.

Body image, depression, social comparison and disordered eating are negatively affected by social media that are increasingly attended by young adults. The relationship between social media use and ON is controversial. Here, the attention was predominantly concentrated in the possible influence of Instagram on the prominence of ON behaviours. On the one hand, increased Instagram use has been associated with increased ON symptomatology [22]; on the other, positive and supportive conversations about ON were identified on Instagram, which suggest Instagram is also used as a platform to enhance recovery and healthier habits [23]. An online survey conducted among social media users ($N = 680$) following health food accounts found that higher Instagram use was associated with a greater tendency towards orthorexia nervosa, with no other social media channel having this effect. These results highlight the implications that social media, and in particular social media “celebrities”, can have on psychological well-being [22].

14.3 Diagnostic Criteria

Although a growing number of articles concerning “orthorexia” have been published, at present, there is no universally shared definition of ON, the diagnostic criteria are under debate, and the psychometric instruments used in the literature revealed some methodological flaws [6].

Two key features should be present among the diagnostic criteria of ON:

- (a) Obsessive focus on dietary practices believed to promote optimum well-being through healthy eating (with inflexible dietary rules, recurrent and persistent preoccupations related to food, compulsive behaviours)
- (b) Consequent, clinically significant, impairment (e.g. medical or psychological complications, great distress and/or impairment in important areas of functioning) [2]

Specific diagnostic criteria proposed by the authors were used in few studies. Four of them published their proposal, allowing a brief comparison of criteria suggested to diagnose ON [6] (Table 14.1).

Many of the features described above echo symptoms of AN and obsessive-compulsive disorder (OCD), conditions that are themselves highly comorbid and have functionally similar clinical presentations [19].

14.4 Tools for Assessment of ON

The psychometric instruments that have been used in the studies on ON include the Bratman Orthorexia Test (BOT) [15] and the ORTO-15 [24] (that was recently revised and re-validated) [25], but these have revealed some methodological flaws [26, 27].

Additional psychometric tools used are EHQ (Eating Habits Questionnaire) [28], DOS (Dusseldorf Orthorexia Scale) [29], BOS (Barcelona Orthorexia Scale) [30] and TOS (Teruel Orthorexia Scale) [31].

In addition to the lack of a universally shared definition and diagnostic criteria, there are no official tools for evaluating ON tendency. Precisely, seven tools have been constructed, which have been subsequently adapted to other languages: the Orthorexia Self-Test (BOT) [15], the ORTO-15 [1, 24], the Eating Habits Questionnaire (EHQ) [28], the Dusseldorf Orthorexia Scale (DOS) [29], the Barcelona Orthorexia Scale (BOS) [30], the Teruel Orthorexia Scale (TOS) [31] and the Orthorexia Nervosa Inventory (ONI) [32].

The BOT and the ORTO-15 are the first tools constructed to assess ON and the most widely used by scholars. They were translated into different languages; for example, the BOT has been adapted to German [33] and Swedish [34], while the ORTO-15 to Turkish [35, 36], Portuguese [37], Hungarian [38], Polish [39, 40], German [41], English [13, 42], Spanish [43, 44], Arabic [45] and French [46]. Despite their popularity, these tools received criticisms [47, 48].

Table 14.1 Specific diagnostic criteria proposed by the authors

 Setnick (2013)

Criterion A: pathological preoccupation with nutrition and diet far beyond that which is necessary for health, and undue influence of diet on self-evaluation, evidenced by characteristics such as:

1. Phobic avoidance of or response to foods perceived to be unhealthy, such as refusal to be in proximity to such food or experiencing panic while watching others eat the food
2. Severe emotional distress or self-harm after eating a food considered unhealthy
3. Persistent failure to meet appropriate nutritional needs leading to nutritional deficit and/or psychological dependence on individual nutrient supplements in place of food intake due to the belief that synthetic nutrients are superior to those found in food or that food is contaminated (except in cases where food is known to be contaminated)
4. Following a restrictive diet prescribed for a medical condition that the individual does not have or to prevent illness not known to be influenced by diet
5. Insisting on the health benefits of the diet in the face of evidence to the contrary
6. Marked interference with social functioning or activities of daily living, such as isolation when eating, avoidance of social functions where food is served or neglect of work, school or family responsibilities due to food-related activities

Criterion B: not the result of a lack of available food or a culturally sanctioned practice

Criterion C: the individual endorses a drive for health or life extension rather than a drive for thinness

Criterion D: the eating disturbance is not attributable to a medical condition or another mental disorder such as anorexia nervosa, bulimia nervosa or obsessive-compulsive disorder

Moroze et al. (2014)

Criterion A: obsessional preoccupation with eating “healthy foods”, focusing on concerns regarding the quality and composition of meals (two or more of the following):

1. Consuming a nutritionally unbalanced diet due to preoccupying beliefs about food “purity”
2. Preoccupation and worries about eating impure or unhealthy foods and on the impact of food quality and composition on physical and/or emotional health
3. Rigid avoidance of foods believed by the patient to be “unhealthy”, which may include foods containing any fat, preservatives, food additives, animal products or other ingredients considered by the subject to be unhealthy
4. For individuals who are not food professionals, excessive amounts of time (e.g. 3 or more hours per day) spent reading about, acquiring and/or preparing specific types of foods based on their perceived quality and composition
5. Guilty feelings and worries after transgressions in which “unhealthy” or “impure” foods are consumed
6. Intolerance of other’s food beliefs
7. Spending excessive amounts of money relative to one’s income on foods because of their perceived quality and composition

Criterion B: the obsessional preoccupation becomes impairing by either of the following:

1. Impairment of physical health due to nutritional imbalances, e.g. developing malnutrition due to unbalanced diet
2. Severe distress or impairment of social, academic or vocational functioning due to obsessional thoughts and behaviours focusing on patient’s beliefs about “healthy” eating

Criterion C: the disturbance is not merely an exacerbation of the symptoms of another disorder, such as obsessive-compulsive disorder, or of schizophrenia or another psychotic disorder

Criterion D: the behaviour is not better accounted for by the exclusive observation of organized orthodox religious food observance or when concerns with specialized food requirements are in relation to professionally diagnosed food allergies or medical conditions requiring a specific diet

Barthels et al. (2015)

Table 14.1 (continued)

 Setnick (2013)

Criterion A: enduring and intensive preoccupation with healthy nutrition, healthy foods and healthy eating

Criterion B: pronounced anxieties for as well as extensive avoidance of foods considered unhealthy according to subjective beliefs

Criterion C

C1. At least two overvalued ideas concerning the effectiveness and potential health benefits of foods and/or

C2. 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

Criterion D

D1: 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

D2. Deficiency syndrome due to disordered eating behaviour. Insight into the illness is not necessary; in some cases, the lack of insight might be an indicator for the severity of the disorder

Criterion 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

Dunn and Bratman (2016)

Criterion A: obsessive focus on “healthy” eating, as defined by a dietary theory or set of beliefs whose specific details may vary; marked by exaggerated emotional distress in relationship to food choices perceived as unhealthy; weight loss may ensue as a result of dietary choices, but this is not the primary goal. As evidenced by the following:

A1. Compulsive behaviour and/or mental preoccupation regarding affirmative and restrictive dietary practices believed by the individual to promote optimum health

A2. Violation of self-imposed dietary rules causing exaggerated fear of disease, sense of personal impurity and/or negative physical sensations, accompanied by anxiety and shame

A3. Dietary restrictions escalate over time, up till removing entire food groups, and involve progressively more frequent and/or severe “cleanses” (partial fasts) regarded as purifying or detoxifying. This escalation commonly leads to weight loss, but the desire to lose weight is absent, hidden or subordinated to ideation about healthy eating

Criterion B: the compulsive behaviour and mental preoccupation become clinically impairing by any of the following:

B1. Malnutrition, severe weight loss or other medical complications from restricted diet

B2. Intrapersonal distress or impairment of social, academic or vocational functioning secondary to beliefs or behaviours about healthy diet

B3. Positive body image, self-worth, identity and/or satisfaction excessively dependent on compliance with self-defined “healthy” eating behaviour

To date, new tools have been proposed, for example, the DOS [29], with its translations into English [49], Chinese [50] and Spanish [51], the newly constructed Orthorexia Nervosa Inventory (ONI) [32] or the ORTO-R [25].

14.5 Prevalence

While attempts to determine the prevalence of ON have been made, the lack of consensus on diagnostic criteria for the condition means there is not yet a reliable estimate available. The prevalence of ON ranges from less than 1 to 88.7%, with studies conducted in different population groups [2]. This range is obviously extremely wide, and no study has yet been conducted which has provided a reliable estimate [3, 35, 52–54]. Partially, this variety is caused by the use of varied assessment tools, which accounts for differences in cut-off scores as some of the instruments are known to be more prone for overestimation of ON behaviour, compared to others (see Sect. 14.4). However, what we also see in the literature is the increasing prominence of highly specific samples used for prevalence estimation. Some studies review the behaviours of general university students, while other studies focus on student in specific departments like nutrition and dietetics or medical students [55–57]. Even when the sample is not limited to university students, often it is fairly specific: for instance, one study focused on gym attendees or yoga practitioners [58, 59]. On the one hand, such sample specification is necessary and often justified by the fact that young adults (i.e. university students) are the group most at risk for development of ON. On the other hand, it also adds to the confusion regarding the actual scale of the issue and conflicting anecdotal evidence about ON. We observe a chicken and egg situation when the lack of official definition leads to confusion about the scale and conflicting evidence about the prevalence leads to discussion about official definitions of ON. Additionally, knowledge on health practitioners' opinions regarding ON is lacking [2, 35, 52–54].

Literature shows no clear correlation between ON and age, gender, education and socio-economic level. However, prevalence of ON seems higher among medical doctors, dietitians, Ashtanga yoga practitioners and exercise science students. It seems that more nutrition education may be related to a greater focus on healthy and correct nutrition and a higher trend for ON [35, 53, 60–62]. A high risk of ON emerged in athletes involved in performing arts [63] and fitness activities [34].

14.6 Current Stand on the Therapeutic Approach

The objective of the therapeutic approach is to make more varied the eating pattern, to improve socialization in particular during meals, to diversify leisure activities to include nonfood themes and to avoid or to treat malnutrition.

However, healthcare professionals agree on the necessity to have a multidisciplinary intervention involving physicians, psychotherapists and dieticians [64, 65].

The therapeutic protocol should combine medications (e.g. serotonin reuptake inhibitors and antipsychotics such as olanzapine), cognitive-behavioural therapy (focused on the symptoms that are prominent), relaxation training (to counteract pre- and postprandial anxiety) and psychoeducation (addressed on what patients eat, buy, prepare and feel about the food they consume while counteracting false food beliefs) with close monitoring in outpatient settings [11, 16, 64–68]. An inpatient approach should be proposed in case of significant malnutrition [16].

No studies concerning psychotherapy for ON have been published until now. ON, AN and OCD are highly comorbid conditions and present functionally similar clinical presentations [19]; therefore, prevention of exposure and response therapy (ERP) is probably an appropriate intervention also for the treatment of ON. According to international guidelines, ERP has become the gold standard psychological intervention for OCD in children and adults. To overcome the anxiety associated with obsessive thoughts, the individual’s exposure to stimuli is necessary in the absence of behavioural rituals [69, 70].

ERP also represents a core component of the psychological treatment of AN [71].

Generally, obsessions and compulsions typical of ON, related to healthy eating, can be effectively treated with ERP techniques. Significant family involvement is essential in paediatric and adolescent patients [69]. Parents should have significant control over the domestic food environment and should receive instructions to support the child in following a nutritionally adequate diet. In the early stages of treatment, the patient and therapist work to develop an ERP hierarchy, incorporating exposure scenarios and eliminating compulsions (e.g. search on Google for energy content and nutritional values of food or eating food with unknown ingredients). Patients of all ages, especially those who have eliminated a large number of foods, should create easy/medium/hard food lists and should be encouraged to relatively quickly reintroduce “easy” and then “medium” foods into meals.

A predictable feeding schedule could help reduce pressure on patients by eliminating decision-making about when or if to eat. However, some patients with ON can be overly rigid by joining a structured meal plan. In these cases, deviating from the structure should be treated as an ERP exercise.

A strategy for patients of all ages, especially for paediatric, could be the use of concrete rewards to reinforce participation in ERP.

A key component of treatment is regular weighing, with patients made aware of their weight. To date, there is no evidence in the literature that open weighing has the iatrogenic effect of creating weight concern in patients who deny weight or shape problems [71].

14.7 Controversies and Discussions in the Literature

Despite the fact that ON is receiving an increasing amount of attention in the scientific literature, it continues being in the centre of heated academic debate. In the following section, we would like to highlight a few dimensions of this debate. We will start with the debate about the possible links between ON and other disorders, both eating and non-eating ones. Then we will present the latest argument against the black-and-white definition of the disorder and towards presenting it as a continuum of behaviours. Linked to these two, we will discuss the current stand on the potential role of culture in the development of ON and whether ON can be seen as a separate disorder or more as a cultural manifestation of distress. After a short presentation of the link between ON behaviours and the effects of health systems on these, we will conclude with a small section on our vision on the way forward for ON research.

14.7.1 Aetiological Discussion (ON and Other Disorders)

ON is commonly described in the literature as a new eating disorder or disordered eating pattern due to the fact that the symptoms of the phenomenon are focused on food intake. Individuals with ON behaviours develop obsession with the perceived quality and “healthiness” of the food they consume. Thus, a lot of debate surrounding the prospective introduction of ON as a separate diagnostic entity surrounds the distinctiveness of ON from other eating disorders: AN, BN and AFRID. This is further supported by the studies that have identified that having a history of eating disorders increases the risk of ON behaviour [13, 41, 54]. A recent study used a sample of adults self-reporting symptoms of varied eating disorders to further investigate the differences between ON and other eating disorders. Their findings suggest that ON symptoms were more strongly related to AN than to ARFID while also being a separate distinct entity [72].

However, the debate about the distinctiveness of ON stretches further than just comparing ON to AN, BN and AFRID. ON seems to be associated with BN [2, 60], while different authors found an association with different eating behaviours (restricting attitude [62], dieting [53] vegan and vegetarian diet) [53, 62, 73].

A variety of authors suggest a significant overlap between ON symptoms and obsessive-compulsive disorder (OCD) and obsessive-compulsive personality disorder (OCPD) [74]. This is especially linked to the high prevalence of obsessive thoughts and pre-occupation with certain patterns of food consumption [75]. Currently, there is no evidence definitively either proving or disproving the distinctiveness of ON from OCD and OCPD.

Another prominent disorder that is investigated regarding its possible common underlying aetiology is autism spectrum disorder (ASD). This has been suggested in a study about historical positioning of AN, ON and ASD due to the overlap between behaviours typical of AN and ASD, i.e. rigid attitudes and behaviours [76]. This was further supported, among others, by a study on opinions of the Dutch health professionals regarding the possible classification of ON [3] and the review of the psycho-social risk factors of ON [18]. It is however important to note that the relationship between ON and ASD symptoms is a complicated one as a recent study investigating the link between ON and cognitive inflexibility concluded that despite inflexible thoughts and behaviours specific for healthy eating, the condition does not seem to be associated with inflexibility as an executive function deficit [77].

Despite these discussions, studies that investigated the opinions of the health professionals and people who self-identify with having ON, as well as case studies, report ON being a distinct entity in need for official recognition: i.e. diagnostic criteria [3, 16, 78].

14.7.1.1 Can ON Be Seen as a Continuum?

Part of the diagnostic conversation about ON is linked to the application of the assessment tools, specifically the cut-off point that separates the “normal” from “disordered”. It was previously identified that some instruments have a higher

sensitivity and thus classify the behaviours more easily as ON compared to others [79, 80]. This was one of the reasons several researchers recently considered the fact the orthorexia may not be a single pathological construct, but rather have two aspects: orthorexia nervosa (linked to disordered behaviours and cognitions) and healthy orthorexia (having a natural interest in food quality and eating healthy). Such division was first introduced by Barrada and Rancero during their research on the development of one of the newer instruments to measure orthorexic tendencies [81]. They discovered that while items geared towards orthorexia nervosa were positively correlated to such phenomena as distress, restrained eating, OCD symptoms and low physical self-esteem, the items designed to measure healthy orthorexia were either unrelated or even negatively correlated to various psychopathological items [81]. The authors concluded that people who score high on the healthy orthorexia scale are in general interested in healthy diets without signs of psychopathology and they link their interest to their “lifestyle” and often are ready to spend considerable resources (time and money) to identify and utilize health alternatives for their meals. In this population, there is no indication of obsessive thoughts or pathological pre-occupations that are observed in the groups scoring high on orthorexia nervosa scales.

Similar findings were found in a recent paper which attempted to disentangle if the two proposed dimensions of orthorexia can be considered new eating styles or basically equivalent to restrained eating behaviour [73]. Following their analysis, they conclude that one should carefully distinguish between orthorexia nervosa and healthy orthorexia. While orthorexia nervosa is related to psychological distress, healthy orthorexia shows a different pattern and is related to well-being and may even serve as protective factor against psychological distress. Their analysis also, among others, showed that orthorexia could be distinguished from restrained eating, emotional eating and external eating. And one of the suggested conclusions was that orthorexia nervosa is offering a new dimension to restrictive eating pattern, which in turn feeds into the discussion about aetiology of orthorexia (see above). Moreover, it was noted that orthorexia nervosa and healthy orthorexia may also have different motivations. In the case of orthorexia nervosa, the main motive noted by the study was weight control, with sensorial appeal and affect regulation also showing significant associations. However, for healthy orthorexia, the main motive was health content, with sensorial appeal and price also showing significant associations [14]. In the recent paper, we reviewed the factors contributing to making choices about healthy eating and reviewed if some of those can potentially be seen as leading to development of orthorexic tendencies. Among the factors contributing to desire to eat healthy were the desire to take care of the body, the desire to have a fit body, the preference for the taste of healthy food, concerns about future chronic conditions and the desire to have a good appearance in adulthood [20]. However, only concerns about future chronic conditions were positively correlated with orthorexia nervosa tendencies. This further underlines the importance of more in-depth investigation about orthorexic behaviour. One solution would be to regard it as a continuum with healthy orthorexia on the one end of the spectrum and orthorexia nervosa on the other end. As with the majority of mental health disorders in general and eating

disorders in particular, the transition from behaviours considered normal to those on the pathology spectrum is complex in nature and can take a long time. Thus, we believe it is crucial to further investigate the so-called tipping point: when does a positive intention of being healthy turn to the darker side of obsessive thoughts and behaviours that are harming the everyday life of the individuals?

14.7.2 Cultural Discussion

Another on-going discussion about ON is whether it can be seen as a separate, distinct condition or a more culture-bound disorder or even culturally defined manifestation of distress.

ON has been reported to disproportionately affect “Western” countries and to be directly linked to “Western culture” [19, 82, 83]. “Western culture” refers broadly to values like individualism, capitalism and materialism and is linked to industries like the food and diet industries, as well as the transferring of values and messages through mass media [84, 85]. Currently, it is unclear if ON is a culture-bound disorder and how and whether it should be classified.

Despite the fact that studies about ON have been conducted in many different countries, we can observe a certain trend as a vast majority of the studies have been conducted in the West European countries (i.e. Italy, Germany, Spain, Portugal, the Netherlands and the UK) or North America [86]. Notable exceptions to this rule were studies from Turkey and a small selection of Eastern European countries (i.e. Poland, Hungary) [38, 59, 87] and some studies from non-European countries, i.e. Lebanon [57]. Moreover, some comparative studies have reported significant differences in the prevalence and symptomology of ON between Western and Eastern European countries. For instance, a study comparing Italian, Spanish and Polish samples found difference in prevalence per country with ON behaviours seeming to be more prevalent in Poland [55]. Another interesting study compared the prevalence and symptomology between German and Lebanese samples [88]. This study concludes that culture is playing an important role in the development of eating pathologies and ON in particular. They also identified that prevalence of ON was higher in Lebanese sample, while some distinct patterns of beliefs were linked to higher risk of ON behaviours.

It is however important to note that current cross-cultural studies are commonly using the same measurement instruments that are often only linguistically validated, with no cultural adaptation.

14.8 Directions for Further Investigation: Use of Transdisciplinary Approach

There is a general agreement that more research and more in-depth investigations regarding the phenomenon of ON are needed. Among the areas that get continuous attention are risk factors leading to orthorexic behaviours, strive for a unified definition and diagnostic criteria, validation of the diagnostic instruments and looking into the pathways to help the individuals suffering from ON.

One of the directions we would like to highlight is the possibility of implementation of a new approach to investigation into ON. The fact that there are many sets of diagnostic criteria, none of which has received official recognition as a “golden standard”, shed light on an underlying fragmentation of research about ON. The lack of official diagnostic criteria is particularly relevant in that it tells us that an official, shared conceptualization and understanding of ON may be missing. There seems to be a clear need for the scientific community to jointly define what are diagnostic attributes of ON. However, scientists cannot do it alone. The fact of ON being a complex phenomenon, because it is driven by broader societal forces and because it lies at the intersections between health and illness, makes impellent a transdisciplinary approach.

A transdisciplinary approach to research implies the elimination of the distinction between knowledge development and problem resolution. Knowledge co-production from scientific and societal actors is central: different perspectives come together in a learning process, which is required to solve complex issues. Within this approach, participatory techniques are needed to involve not only multiple disciplines but also multiple non-academic stakeholders in the research process [89, 90]. Research on ON may therefore benefit from a transdisciplinary approach, since different academic disciplines (psychology, nutrition, sociology, anthropology, etc.) and different societal actors (patients, food industry, health professionals, etc.) may be involved in understanding ON.

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