

**Association Of Orthorexia Nervosa with Mental Health Disorders: A Review**  
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**Abstract :**

Orthorexia Nervosa: A new disorder with a controversial characterization. Orthorexia Nervosa is a term first raised by Bratman in the late 90s. Orthorexia Nervosa menat an eating disorder in which a person emphasizes too much on their diet which leads to over consciousness about the diet, and the people suffering face consequences in their physiological, social and psychological health. Physiological health is suffered as a person may plan their meal in detail to stay healthy, maintain weight or get an ideal body image but Orthorexic individuals tend to exercise more and eat less which leads to low body weight and several deficiencies. Social health is affected as the individual suffering may avoid eating out as they don't trust the process by which the food is cooked, which leads to much lower social interaction. Orthorexic people also show behavior similar to some of these Mental health disorders like Obsessive Compulsive Disorder. A search was implemented on research platforms like science direct, research gate, elsevisor and google scholar. The Association Orthorexia Nervosa can be seen mostly with Anorexia Nervosa and Obsessive Compulsive Disorder. Orthorexia Nervosa has been stated as the Avoidant/Restrictive Food Intake Disorder.

## Introduction

Orthorexia Nervosa a new term arises in the late 1990s. Bratman explained it as a “psychological” state in which a person’s innocent concern about their diet starts with either keeping away from diseases, or simply maintaining weight or having a healthier lifestyle.(1,2,3) People suffering from Orthorexia show a number of signs in their behavior which can be encapsulated as- (a) too much concern about the food being “healthy’ and of high or acceptable “quality” (b) creating rigid regulations for the diet and showing psychological distress whenever they are trespassed (c) when your diet starts affecting your daily activities and causes disfigurement stating the presence of Orthorexia Nervosa.(4,5,6) Along with these sings other indicators for the presence of Orthorexia Nervosa can be disfigurement in also the physiological and mental health which are: reduction in the weight causing malnourishment, afflictions like sentiments of wrongdoing, remorse & “Anxiety”(7)

People categorize themselves as vegans, frugivores(consume fruits only) or crudivores( consume raw food only) and those individuals avoid eating outside and the cause of which is not being able to trust the process of the cooking of the food.(8) According to the Diagnostic and Statistical Manual Of Mental Health Disorders Orthorexia Nervosa has not been stated as a psychological disorder.(1) Even though it has not yet stated as a psychological “disorder”, it’s categorization is debatable. (4) Lately it has been presented as an “Eating Disorder” which has been obtaining recognition. Researches related to Orthorexia Nervosa are limited which limits the evidence for the proper classification. This limitation expedited the argument for Orthorexia Nervosa if it is a discrete disorder or a constituent of other disorders, concluding “Eating Disorders” & this argument is prolonged by the similarities found between Orthorexia Nervosa and some other eating disorders, specifically “Anorexia Nervosa” and “Bulimia Nervosa”. (9)

Orthorexia Nervosa can be easily distracted from Anorexia Nervosa and Bulimia Nervosa due to the major dissimilarity which is emphasis on the “quality” of food rather than “quantity”.(4) Along with Anorexia Nervosa & Bulimia Nervosa, Orthorexia Nervosa

shows similarities with mental health disorders & symptoms like “Obsessive Compulsive Disorder”, “depression” & “Obsessive Preoccupation”.(4,7,10) It can be stated as Orthorexia Nervosa could be categorized under “Obsessive Compulsive” dimensions of “disorders”.(10) The similarities between Orthorexia Nervosa and Obsessive Compulsive Disorder are the traits which are “perfectionism” and “rigidity” but the dissimilarity is in Obsessive Compulsive Disorder these traits can be related to all over behavior of the person but in Orthorexia Nervosa these traits are only related to the dietary habits.(11) Orthorexia Nervosa has equal similarities with both Obsessive Compulsive Disorder and Anorexia Nervosa which are impulsive thinking, methodical cooking and emphasis on the cleanliness.(10) The orthorexic tendencies of people are based upon the nutritional quality of the food and the purity it provides but not on the “animal welfare, environmental protection or sustainable agriculture.”(12)

### **Association of Orthorexia Nervosa with Eating Disorders**

The Association of Orthorexia Nervosa with Eating Disorders has been stated by several published researches. The study by Caterina Novara states that the symptoms of Orthorexia Nervosa and Eating Disorders authenticates an association between the two. The results were derived by using Eating Habits Questionnaire and its subtests like “Drive for Thinness”, “Bulimia”, “Interoceptive Deficits”, “Perfectionism” “Body Dissatisfaction” & “Asceticism” stating & validating the basic constituents that incorporate both Orthorexia Nervosa and Eating Disorders. These similarities in the constituents show us that Orthorexia Nervosa and Eating Disorders have major similarities in the set of exercise. The major correspondence in these two is the emphasis on intake and “ego-syntonicity” & the major contradiction is contrasting focus on weight management and nutritious diet.(1,13,14,15)

In both Orthorexia Nervosa and Anorexia Nervosa individuals tend to look away from the outcome of their behavior towards their diet.(20) An attitude towards diet which gets this much constrained can give rise to nutritional deficiencies like- osteopenia, anemia,

pancytopenia, hyponatremia etc which is similar in Orthorexia and Anorexia nervosa. The results from another study states the ways in which Orthorexia Nervosa has similar symptoms of Eating Disorders, specifically Anorexia Nervosa which are - (a) not being satisfied with the physique, (b) striving towards getting leaner. Orthorexia Nervosa is also highly related to the existence of Anorexia Nervosa formerly and following discrete dietary patterns and having “low BMI” could be introductory factors for eating problems.(4)

Whereas the association of Orthorexia Nervosa has been stated by a study with the objective to “determine whether eating disorder history predicted greater severity of Orthorexia Nervosa symptomatology. The researchers envisioned that people suffering from Eating Disorders in the past will be getting elevated grades on “Eating Habits Questionnaire”, and also the people who had taken therapy for their Eating Disorders will also be showing elevated grades on the “Eating Habits Questionnaire” which was proved by researchers by using statistical methods. The outcome of this research showed that Orthorexia Nervosa is greatly present in people who received therapy of Anorexia Nervosa or Bulimia Nervosa. This researches outcome helps in the validation of Orthorexia Nervosa for the “diagnosis of Eating Disorders”.(9)

Orthorexic tendencies of patients of Anorexia Nervosa, Bulimia Nervosa, Obesity have also been studied along with the people who were sticking to specific dietary patterns of their own choice and a control group not having any dietary patterns. The outcome of the study showed that the diet section and Eating Disorder patients did reflect more orthorexic behavior than the section of individuals not following any dietary pattern on the Eating Habits Questionnaire. Anorexia Nervosa, Bulimia Nervosa and diet section displayed elevated grades than Obesity and control sections on the Eating Habits Questionnaire. In the “problem” subsection of the Eating Habits Questionnaire Obesity and diet section’s grades were the same and more than that of the control section. The highest grade on this subsection was achieved by the Anorexia Nervosa and Bulimia Nervosa sections. In the “knowledge” subsection of the Eating Habits Questionnaire, the diet group got the highest grade and every other section received similar grades. Also the individuals in the obesity

group were at stake for creating dangerous health problems or were already suffering from them and the worry about these can add to orthorexic tendencies in this group.(16)

People suffering from Anorexia Nervosa usually try not to show their behavior to other people while people suffering from Orthorexia Nervosa purposively flaunt theirs.(12) It has also been stated as the scales for Orthorexia Nervosa- ORTO-15 & ORTO-9 are capable of foretell the existence of Anorexia Nervosa but is not able to differentiate Anorexia Nervosa from Orthorexia Nervosa, while the scale ORTO-9 was more accurate in discovering the presence of the Anorexia Nervosa than ORTO-15. But using both the scales the ability to differentiate Anorexia Nervosa from Orthorexia Nervosa was not much, which stated some hindrance in Orthorexia Nervosa scales, that could also suggest us that Orthorexia Nervosa may be a “sub-type” of Anorexia Nervosa and not an Eating Disorder of its own. Even though “theoretical & behavioral differences” can be seen in between Anorexia Nervosa and Orthorexia Nervosa, the alikeness of the two is may be too much. The ability to identify Anorexia Nervosa but the affliction in distinguishing between the “pathological and non-pathological eating habits” could state that Orthorexia Nervosa may belong to the Eating Disorder range centered in “healthy eating” and Anorexia Nervosa.(10)

Studies done on the relationship between “restrained eating, emotional eating & external eating” with the Orthorexia Nervosa stated that all these were segregated. Orthorexia Nervosa and “restrained eating” did show some relationship but did not prove to be corresponding.(17)

### **Association of Orthorexia Nervosa with Obsessive Compulsive Disorder, Depression and Obsessive Thinking**

A number of studies have been done on these stated topics which provided significant results. The Anorexia Nervosa and Bulimia Nervosa groups did show anxiety(44%), depression(53.30%) and Obsessive Compulsive Disorder symptomatology(52.20%), but overall study stated that even if some of the symptoms are same, there is no significant

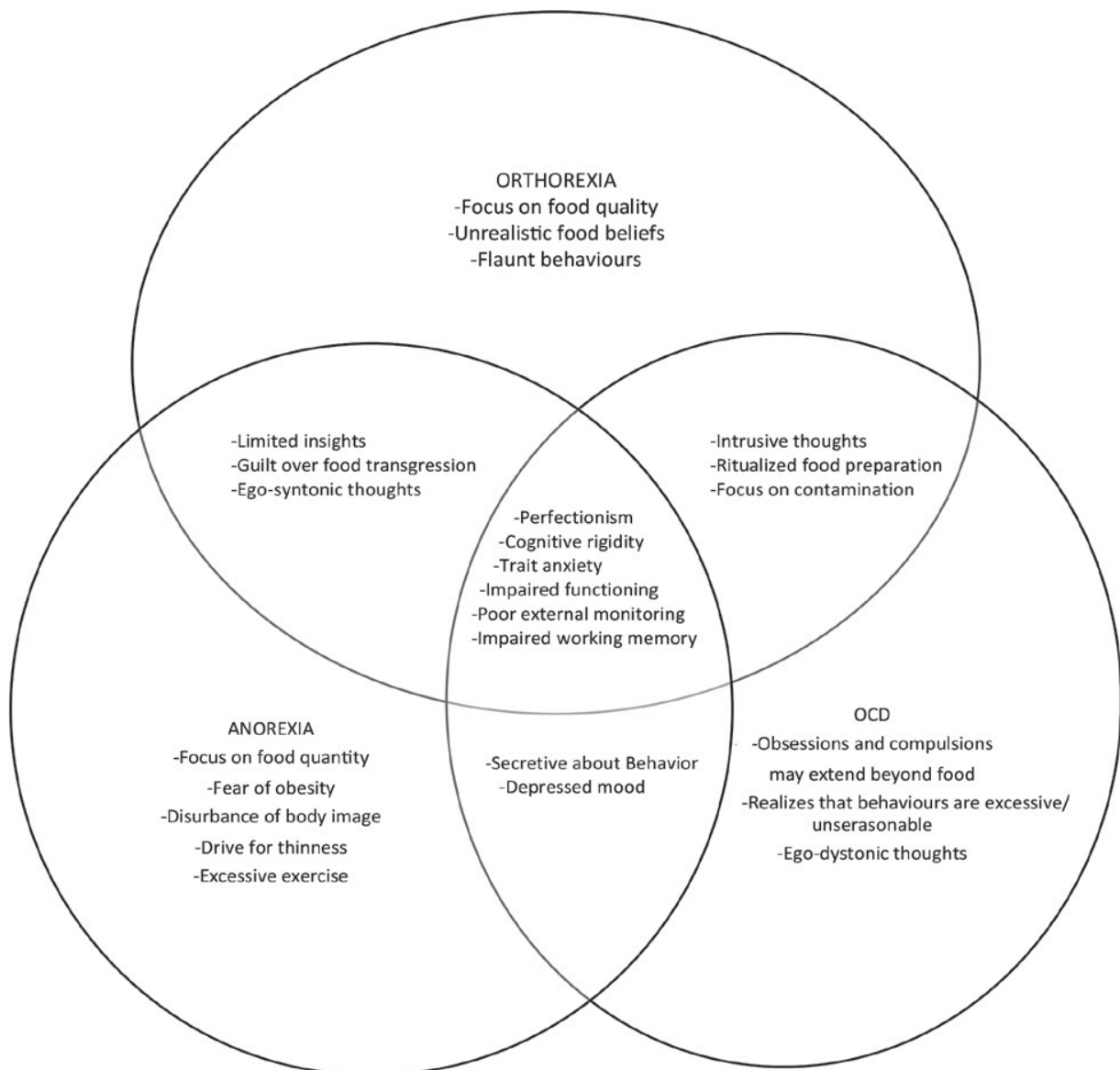
Association of Orthorexia Nervosa with Obsessive Compulsive Disorder along with anxiety and depression(4,10) In the people suffering from Orthorexia Nervosa the scoring of OCI-R is limited which states that both of these are not dependent on each other. (1) Even when the focal of both Orthorexia Nervosa and Obsessive Compulsive Disorder is Obsessional Thinking, It is stated that Orthorexia Nervosa and Obsessive compulsive Disorder are both separate situations and have poor relativity.(8) The Orthorexia Nervosa approach and worry approach are alike but have low significance with Obsessive Compulsive Disorder.(1)

Another trait of overlap between Orthorexia Nervosa and Obsessive Compulsive Disorder is that the individuals suffering spend so much time in maintaining their rigid lifestyle that it affects their daily activities.(12)

Orthorexia Nervosa has features similar to one another disorder also which is Obsessive Compulsive Personality Disorder which is a “cluster of personality disorders” of which Orthorexia Nervosa has high moral, too much devotion to diet, rigidity and perfectionist traits. (12)

Limited research has been done on the relationship between self-esteem and Orthorexia Nervosa, the reason behind which is that the research on the disorder is also limited, but both of these can be stated to have a correlation with appearance, weight and body image of the individual.(19,21)

*FIGURE 1. Venn diagram showing the relationships between Anorexia Nervosa, Obsessive-Compulsive Disorder*



*(OCD) and Orthorexia (from Vandereycken, 2011, mod.)(19)*

## **Methodology**

The aim of the secondary data search was to find all literature related to Orthorexia Nervosa and its Association with Mental Disorders. Because we had research experience and knowledge in the field of Orthorexia Nervosa and we reached to the decision to carry out the research by using stated terms. An electronic search was done in PubMed, Google Scholar, ResearchGate, ScienceDirect. For the search of secondary data, these search terms were incorporated—Eating Disorder, Orthorexia Nervosa, Bulimia Nervosa, Mental Health. A manual search among the cited references found additional references from the articles found in the initial search round. Inclusion criteria of the study was the data available on Orthorexia Nervosa showing the relationship of Orthorexia Nervosa with other disorders like Anorexia Nervosa, Bulimia Nervosa, Binge Eating, Obsessive Compulsive Disorder & Obsessive Compulsive Personality Disorder. 125 records were found on the data search through mentioned websites and the duplicates were removed. The secondary data was checked for inclusion criteria and 8 researches and 6 review papers and articles were selected for the study. In addition, in the opening sections, more references were added, including characteristics and cornerstone sources on Orthorexia Nervosa. Because the review is narrative rather than systematic, the references were chosen based on their relevance to the manuscript's topic. Results, of the study which incorporated the original research, meta-analysis, and other review papers, were considered for the study at title, abstract, or by reading the full content of the paper. Studies which met the criteria of being with Association of Orthorexia Nervosa with several eating disorders or behavioral aspects were included.



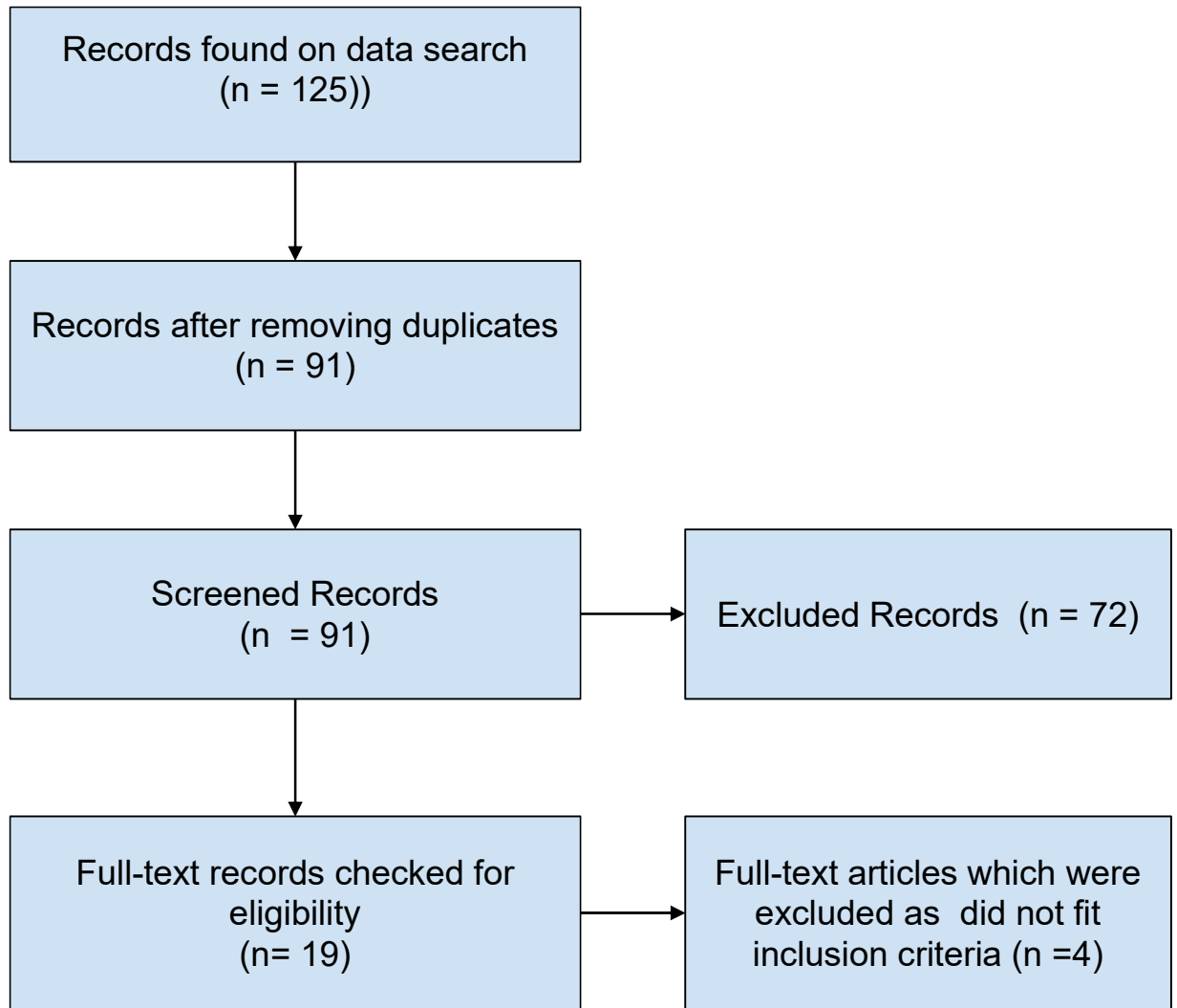


Fig. 2 Process of selection criteria of the records included in this paper

**Discussion**

The rise in Eating disorders can be displayed by the rise in the occurrence of the disorders which led to higher acknowledgement by healthcare professionals and increased consciousness of people suffering by the means of social media.(20) Orthorexia Nervosa and Anorexia Nervosa can be associated with each other as they both reveal similar behavior of “perfectionism, high trait anxiety and higher need to exert control” along with the need to lose weight(12) and worry about the food being contaminated which can be seen in Obsessive Compulsive Disorder.(20) As a study shows higher correlation between Obsessive Compulsive Disorder and Orthorexia Nervosa symptomatology and Orthorexia Nervosa can be understood greater if both the traits of Anorexia Nervosa and Obsessive Compulsive Disorder are evaluated together.(20)

Title	Author Name	Journal	Methodology	Conclusion
Orthorexia Nervosa: overconcern or obsession about healthy food	Novara C, Pardini S, Maggio E, Mattioli S, Plasentin S	Eating and Weight Disorders	302 people were selected for the study and were divided into two groups high EHQ and Low EHQ bases on their scores on Eating Habits Questionnaire	ON and ED show similar traits but ON may have different objectives than other disorders.
Orthorexia Nervosa and dieting in a non-clinical sample: a prospective study	Novara C, Pardini S, Visioli F, Meda N	Eating and Weight Disorders	1075 people participated in the study and completed the set of given questionnaires	ON was found more in individuals with history of eating disorders and people following specific diets
Orthorexia Nervosa and its association with obsessive-compulsive disorder symptoms: initial cross-cultural comparison between Polish and Italian university students	Brytek-Matera A, Pardini S, Modrzejewska J, Modrzejewska A, Szymanska P, Czepczor-Bernat K, Novara C	Eating and Weight Disorders	666 students of Italian and Polish universities participated.	The Italian students had lower BMi than Polish students and Polish students with high score Orthorexic scales showed higher OCD traits

Orthorexia Nervosa: differences between clinical and non-clinical samples	Novara C, Maggio E, Piasentin S, Pardini S, Mattioli S	BMC Psychiatry	392 people were divided into four groups Anorexia/Bulimia, Obesity/Binge Eating, diet group and control group.	Orthorexic traits were much more in Anorexia/Bulimia, Obesity/Binge Eating and Diet than in the control group.
Orthorexia Nervosa and healthy orthorexia as new eating styles	Barthels F, Barrada J, Roncero M	PLoS ONE	Two groups of participants were selected(Group 1= 460 and Group 2 = 509). All the participants were University Students	More tendencies of “Emotional and Restrained Eating “were seen in female Participants.
Prevalence and Relationship of Orthorexia Nervosa with Self Esteem and in Indian Married Women	Jain A, Sharma U	International Journal of Indian Psychology	128 females of India took part in this study all of which were married and had the average age of 30-40 years.	The Relationship of Self Esteem and Orthorexia Nervosa among Indian women was non-existent.
A neuropsychological evaluation of orthorexia nervosa	Koven N, Senbonmatsu R	Open Journal of Psychiatry	100 participants were selected on the criteria of being right handed	Similarities were found in between the symptoms of Orthorexia Nervosa, Obsessive Compulsive Disorder and Anorexia Nervosa

## Conclusions

The conclusion here is that the association of Orthorexia Nervosa with Eating Disorders and the Association of Orthorexia Nervosa with OCD, Obsessive Thinking & Depression is significant. Also the individuals previously suffering or overcoming Anorexia Nervosa and Bulimia Nervosa show higher Orthorexic tendencies than the control group. Orthorexia Nervosa shows higher traits of Anorexic and Obsessive Compulsive Behavior and may be highly associated with Anorexia Nervosa and Obsessive Compulsive Disorder than other disorders. Further research is needed on this topic to put light on the characterization of Orthorexia Nervosa as a lifestyle syndrome, Specific Eating Disorder or an element of an existing Eating Disorder & Mental Disorder. While Orthorexia Nervosa has slightly higher ability to diagnose Anorexia Nervosa than Obsessive Compulsive Disorder and Obsessional Thinking which states that Orthorexia Nervosa has more similarities with Anorexia Nervosa.(10) Even after being said as “a disease disguised as a virtue” Orthorexia Nervosa is not said to be a Mental Disorder but Diagnostic Statistical Manual-5 states orthorexia Nervosa to be an Avoidant/Restrictive Food Intake Disorder.(18) Researcher found out that the people suffering became isolated and often suffered with deficiencies and low BMI, along with excessive exercising which is also a trait of Orthorexia Nervosa which may feel lethargic for most of the time because their mind is always occupied by obsessional thinking about food, time is occupied by exhausting food preparation and body is occupied by excessive exercising. So, Orthorexia Nervosa affects the social, Psychological and physiological health of the suffering individual.

**Author contributions**

Stuti Sharma(MSc Nutrition and Dietetics) designed the review and developed the search strategy and Prof. (Dr.) Pratibha Singh supervised the procedure. Prof. (Dr.) Pratibha Singh guided in search, exclusion, and argument extraction processes. Stuti Sharma wrote and edited the final article, which was reviewed and approved by Prof. (Dr.) Pratibha Singh. Prof. (Dr.) Kommi Kalpana along with Muskaan Jain(MSc Nutrition and Dietetics) and Muskan Garg(MSc Nutrition and Dietetics) helped in editing and data collection.

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