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ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS OF THE GAPS IN
CURRENT RESEARCH, EDUCATION, AND DIAGNOSTIC EFFORTS

A THESIS IN
Health and Well-being Management

Presented to the Faculty of the Rochester Institute of Technology in partial fulfillment of the
requirements for the degree

MASTER OF SCIENCE IN HEALTH AND WELL-BEING MANAGEMENT

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ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

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ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS OF THE GAPS IN CURRENT RESEARCH, EDUCATION, AND DIAGNOSTIC EFFORTS

ABSTRACT

Background

Orthorexia nervosa (ON), a term coined in the late 1990s by Steven Bratman, MD, is characterized by an obsessive preoccupation with practicing a “healthy diet”. There is scant reliable literature on the topic and it remains unrecognized as a diagnosis in the *Diagnostic and Statistical Manual for Mental Disorders 5*. Thus, debate surrounding its legitimacy as a diagnosis continues. However, eating disorders (EDs) in the category Other Specified Feeding and Eating Disorder (OSFED), including ON, account for the highest percentage of ED diagnoses in the U.S. Although primary care physicians are often the first to encounter patients suffering from EDs, they receive little training in nutrition. As a result, a significant number of ON cases may go undetected.

Purpose

The goal of this study is to determine the current state of knowledge on ON among health care professionals and gaps in current ON education, research, and diagnostic efforts. The objective is to provide the scientific community with a multidisciplinary summary of gaps in ON literature to facilitate further, translational research into the condition.

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

Methods

A mixed methods study design was used. Professionals working in family medicine, nutrition, and psychology were recruited using purposive and snowball sampling. Data collection occurred in three phases (pre-interview survey, interview, and post-interview debriefing); surveys were administered via Qualtrics and the interview via Zoom. The pre-interview survey included questions about demographic information, eating competence and orthorexic behavior levels. The interview was used to gather knowledge of EDs and ON and personal and professional experiences with EDs and ON. The post-interview debriefing served to determine how the participant's thoughts on the topic changed as a result of participation. Data analysis was conducted using SPSS v27.0 and Dedoose software version 8.3.47.

Results

Seventeen of 22 professionals completed all three phases of the study; 5 working in family medicine/primary care, 10 in nutrition/dietetics, and 2 in psychology. Quantitative analysis showed the sample was eating competent and not orthorexic; orthorexic behavior significantly differed by professional domain ($p = 0.014$). Of professionals in family medicine/primary care who had not heard of ON ($n=4$), 75% had worked with patients that presented with similar behaviors to the condition. Ninety-four percent of professionals felt there were gaps in the way ON is medically/clinically addressed and that awareness of ON in healthcare is important.

Qualitative analysis indicated that professionals in nutrition/dietetics had more intimate experiences working with patients with EDs and more detailed knowledge of ON. Common

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

descriptions of patients with ON included having a general obsession around one's physical health, conducting extensive online research on health and nutrition, and hyper-focusing on the ingredients/additives in food. Perceived gaps in the way ON is medically/clinically addressed included lack of reliable research and diagnostic tools and treatment methods for ON, unawareness of the condition among healthcare professionals, and encouragement of ON related behaviors by providers.

Discussion

Little remains known about ON; although many providers remain ignorant to the condition, it is not uncommon for patients to display ON related behaviors. Future research efforts should be aimed at developing accurate diagnostic tools, testing efficacy of new and existing treatment regimes, and identifying the most efficient and effective method of delivering ON education to medical providers.

CONTENTS

Chapter

1. INTRODUCTION

1.1. Background Information.....	11
1.2. Characterization/Symptomatology.....	12
Orthorexia, Anorexia, Obsessive-Compulsive Disorder, and Autism.....	12
Orthorexia Nervosa and Avoidant/Restrictive Food Intake Disorder.....	14
Orthorexia Nervosa, Body Image, and Exercise.....	14

2. LITERATURE REVIEW

2.1. Risk Factors for Developing Orthorexia Nervosa.....	16
Preexisting Psychopathology.....	16
Demographics.....	16
Body Mass Index and Dieting.....	17
Culture.....	17
Eating Competence.....	18
2.2. Diagnostic Criteria for Orthorexia Nervosa.....	18
2.3. Assessment Tools for Orthorexia Nervosa.....	19
2.4. Prevalence of Orthorexia Nervosa.....	21
2.5. Treatment of Orthorexia Nervosa	22
2.6. Summary of Orthorexia Nervosa Literature.....	23
2.7. Purpose of the Study.....	24

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

3. METHODOLOGY

3.1. Research Design.....	26
3.2. Recruitment.....	26
3.3. Instruments.....	27
Pre-Interview Survey.....	27
Interview Guide.....	28
Post-Interview Debriefing Survey.....	28
3.4. Data Collection	28
3.5. Pilot Study.....	29
3.6. Data Analysis.....	29
Quantitative.....	29
Qualitative.....	30

4. RESULTS

4.1. Demographic Characteristics.....	32
4.2. Eating Competence.....	33
4.3. Orthorexic Behavior.....	33
4.4. Eating Competence and Orthorexic Behavior.....	33
4.5. Professional Experiences with Eating Disorder Diagnoses.....	34
4.6. Professional Experiences with Orthorexia Nervosa.....	36
4.7. Qualitative Analysis of Professional Experiences with Eating Disorders and Orthorexia Nervosa.....	42

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

5. DISCUSSION

5.1. Experience with Eating Disorders and Orthorexia Nervosa.....	50
Experiences Working with Patients with Eating Disorders.....	50
Knowledge of and Experiences with Orthorexia Nervosa.....	51
Preventative/Diagnostic/Treatment Strategies for Addressing Orthorexia Nervosa.....	52
Levels of Eating Competence and Orthorexic Behavior.....	54
5.2. Identified Gaps in the way Orthorexia Nervosa is Medically/Clinically Addressed	
Lack of Awareness of and Education on ON.....	54
Lack of Diagnostic Criteria/Measurement Tools/Treatment Plans for ON.....	55
Finding Appropriate Ways to Provide Nutritional/Health Advice.....	56
5.3. Study Limitations.....	56
5.4. Study Strengths.....	58
5.5. Conclusions.....	59

APPENDICES

Appendix A: Recruitment Emails.....	61
Appendix B: Instruments.....	63
Pre-Interview Survey.....	63
Interview Guide.....	66
Post-Interview Survey.....	67
Appendix C: Dedoose Coding System.....	69

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

REFERENCE LIST..... 73

LIST OF TABLES

1. Mean levels of eating competence and orthorexic behavior by demographic
2. Mean experience level working with patients with eating disorders by professional domain
3. Disorders encountered in practice by professional domain
4. Heard the term “orthorexia nervosa” prior to study participation by professional domain
5. Professional experiences with orthorexia nervosa by professional domain
6. Personal experiences with orthorexia nervosa by professional domain
7. Perceived gaps in the way orthorexia nervosa is medically/clinically addressed
8. Professional experiences with eating disorders by professional domain
9. Description of patients who displayed orthorexic behavior by previous knowledge of orthorexia nervosa (ON)
10. Suggested preventative/diagnostic/treatment strategies for working with patients with orthorexia nervosa by professional domain and previous knowledge of orthorexia nervosa
11. Perceived gaps in the way orthorexia nervosa is medically/clinically addressed by professional domain

CHAPTER ONE

Introduction

1.1 Background Information

The obesity epidemic and the spread of health information through the media has led many individuals to become concerned with maintaining adequate health.¹ However, some become so engrossed in practicing a healthy lifestyle that it becomes worrisome and sometimes pathological. In these cases, individuals become fixated on consuming only foods they deem pure and healthy, often eliminate entire food groups, spend a great deal of time thinking about the planning, preparation, and consumption of food, and avoid social contexts involving food. As a result, they not only eliminate vital nutrients from their diet, but become socially withdrawn and isolated.²⁻³ Over two decades ago Steven Bratman coined the term orthorexia nervosa (ON), a condition he characterizes as a pathological “fixation on righteous eating”.¹ Since then, the characteristics, diagnostic criteria, assessment tools, and treatment options of ON have been studied. However, whether or not ON is a separate clinical entity or a subset of eating disorders like anorexia nervosa (AN) and bulimia nervosa (BN) is still debated.⁴ As a result, the condition remains absent from the *Diagnostic and Statistical Manual of Mental Disorders 5* (DSM-5).

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

1.2 Characterization and Symptomatology

Although orthorexia nervosa (ON) was identified over twenty years ago, no formal definition is available. The term orthorexia nervosa (ON) is derived from Greek terminology; “orthos” means right or correct while “orexia” means hunger.² When Steven Bratman first recognized ON in 1997, he suggested that the condition is characterized by a fixation on the quality of food consumed; individuals with ON often desire to consume only food they feel is pure, healthy, and/or natural. Furthermore, those with ON tend to feel superior to others, judge the eating habits of those around them, and avoid social contexts involving food.⁵ Although individuals with ON may have good intentions and the desire to eat healthy is not unreasonable, the condition becomes pathological when the fixation on healthy eating becomes disruptive in everyday life.² As Bratman notes, “Over time, what they eat, how much, and the consequences of dietary indiscretion come to occupy a greater and greater proportion of the orthorexic’s day.”⁵

Orthorexia, Anorexia, Obsessive-Compulsive Disorder, and Autism

Bratman suggested that the focus on the quality of food in ON makes the condition unique from other eating disorders (EDs) (e.g., anorexia nervosa) that are typically characterized by a focus on the quantity of food consumed.⁵ However, research has suggested that symptoms of ON may overlap with those of other eating and mental health disorders such as anorexia nervosa (AN), obsessive-compulsive disorder (OCD), and autism spectrum disorder (ASD).⁶⁻¹⁰ According to the DSM-5, AN is characterized by restriction of energy intake, an intense fear of gaining weight, and a disturbance in the way an individual feels about their own body weight or shape.¹¹ Obsessive-compulsive disorder is characterized by recurrent and persistent unwanted thoughts or

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

urges with attempts to ignore them and repetitive behaviors the individual feels driven to perform to prevent or reduce anxiety.¹¹ Finally, ASD is characterized by a number of symptoms including persistent deficits in social interaction and restrictive, repetitive patterns of behavior, interests, or activities that cause clinically significant impairment of functioning.¹¹

Some studies have found a positive correlation between ON and ED symptoms.^{6,9-10,12-15} In addition, Koven and Senbonmatsu¹⁶ analyzed the neuropsychological profile of ON in contrast to other eating and psychological disorders, finding that ON symptoms strongly correlated with both AN symptoms (e.g., body dissatisfaction and perfectionism) and OCD symptoms (e.g., checking, neutralizing, and obsessing). A cross-sectional study in 2017 reiterated that ON symptoms were positively correlated with perfectionism, appearance orientation, and overweight preoccupation.¹⁷ Similarly, Brytek-Matera et al.⁶ determined that expression of ED, ON, and OCD symptoms is positively correlated. In addition to OCD, it has been suggested that ON may share common characteristics with ASDs. For example, "the obsession for proper nutrition, ritualized patterns of food preparation and eating, spending time in researching, cataloging and measuring food, planning future meals, and the presence of additional and intrusive food-related thoughts" characteristic of ON has been related to the repetitive behaviors and deficits in social interaction seen in ASDs.¹⁸

However, key differences have been identified between EDs, ON, and OCD. Unlike AN, ON is characterized by focusing on food quality over quantity.⁵ In addition, while those with AN tend to hide their pathological habits, those with ON flaunt them.¹⁶ Likewise, Bratman⁵ suggested that individuals with ON display a sense of righteousness secondary to their eating habits. In addition, although Segura-Garcia et al.⁷ found that ON symptoms are highly prevalent among

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

patients with AN or bulimia nervosa (BN), ON symptoms actually *increased* as eating disorder patients underwent treatment; this indicated that ON may function differently than existing EDs. Furthermore, unlike with AN or BN, some studies have found that individuals with ON tend not to be preoccupied with their appearance, being thin, or losing weight.¹⁹⁻²⁰ Lucka et al.¹⁵ also found no statistically significant difference in OCD symptomatology between individuals displaying ON symptoms and controls. Additionally, those with ON do not display cognitive inflexibility, a common characteristic of both AN and OCD.²¹

Orthorexia Nervosa and Avoidant/Restrictive Food Intake Disorder

Given the differences between ON, AN, BN, and OCD, some researchers have suggested the condition be considered a subtype of avoidant/restrictive food intake disorder (ARFID).²² According to the DSM-5, ARFID is characterized by “an eating or feeding disturbance...as manifested by persistent failure to meet appropriate nutritional and/or energy needs” that is not related to lack of available food, cultural practices, or body dissatisfaction. However, some studies have refuted this. For example, Oberle et al.²³ suggest that ON is separate from ARFID because the latter is typically the result of trying to treat underlying medical issues and not a preoccupation with manifesting health.

Orthorexia Nervosa, Body Image, and Exercise

The relationship between orthorexic behavior, body image, and exercise habits has also been investigated. In 2008, Eriksson et al.²⁴ conducted a cross-sectional study that indicated a positive correlation between ON symptomatology, social physique anxiety, and exercise frequency in women. In addition, men and women who display orthorexic behavior frequently

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

accept and agree with societal body standards.²⁴ Other studies have found that ON symptomatology is positively correlated with exercise addiction, compulsive exercise, psychological and social improvement motivations, social desirability, health avoidance, and health anxiety.^{10,23}

CHAPTER TWO

Literature Review

2.1 Risk Factors for Developing Orthorexia Nervosa

Preexisting Psychopathology

As previously discussed, research has suggested that ON may be related to symptoms that are also associated with existing disorders including AN, OCD, and ASD. Such symptoms include, but are not limited to, perfectionism, body dissatisfaction, obsessing, and ritualized habits.¹⁶⁻¹⁸ However, whether or not these disorders precede or coexist with an ON diagnosis is unclear. A number of possible ON risk factors related to demographic characteristics including gender, age, level and type of education, occupation, and socioeconomic status have been identified.

Demographics

Much of the existing literature on the relationship between ON and various demographic variables including gender, age, education level, and field of work has been contradictory. The majority of studies suggest ON risk and gender are not correlated.^{19,25-30} However, women may be more likely to develop the condition.^{10,14,16,31} For example, Sanlier et al.¹⁴ found women to be nearly 2.5 times more at risk, but others have found greater ON symptomatology in men.^{2,32} Furthermore, although some studies have suggested that the risk of developing ON increases with age and/or education level,^{17,32} others have suggested the opposite.^{2,10,29,34} The risk of developing ON has also been linked to studying in certain fields, including nutrition and the

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

health sciences³⁵⁻³⁶; health professionals including doctors and dietitians have exhibited increased ON symptomatology.^{10,12,37-38} However, Sanlier et al.¹⁴ found no correlation. Increased ON symptomatology has also been found in professional athletes and those in the performing arts; this may be secondary to a desire to improve physique or performance.^{10,12,37-38} In addition, a greater risk of ON development has been linked to higher socioeconomic status, a finding that may be related to increased accessibility to healthy foods.^{28-29,33}

Body Mass Index and Dieting

Risk factors associated with body mass index (BMI) and special diets have also been investigated. Several studies have found that increased symptomatology of ON is positively correlated with BMI in both men and women.^{13,15,32,39} However, Oberle et al.²⁸ found this relationship was only prevalent in men,²⁸ and others have not found any relationship between ON risk and BMI.^{10,29-30} In addition, in review of the literature on the relationship between ON and a vegetarian diet, Brytek et al.⁴⁰ found that orthorexic behaviors were often higher among individuals practicing vegetarianism; this relationship is likely secondary to the removal of large portions of food groups, primarily protein. Increased tendency toward ON has also been associated with practicing a special diet¹⁰ and having been previously diagnosed with an ED.^{10,17}

Culture

Additionally, some studies have suggested that an individual's culture likely influences their opinions and beliefs about food choices, health, and lifestyle and thus may also play a role in their risk of manifesting ON. For example, Italian females with a history of AN displayed significantly higher ON tendencies than Polish females with a history of AN; researchers

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

attributed this finding to possible differing beliefs about food choices, health, and lifestyle between varying cultures.⁸ In addition, Turner et al.²⁹ identified that higher Instagram use was positively correlated with increased ON symptomatology.

Eating Competence

The relationship between eating competence and orthorexic behavior has also been investigated. Rodgers et al.⁴¹ found that orthorexic behaviors were associated with lower levels of eating competence, specifically positive eating attitudes and behaviors among college age students.

2.2 Diagnostic Criteria for Orthorexia Nervosa

Orthorexia nervosa is not recognized as a formal condition by the DSM-5¹¹; thus, formal diagnostic criteria are lacking. Originally, Steven Bratman suggested that the diagnostic criteria for ON include following a self-imposed, rigid dietary regimen in which the nutritional value of the food is more important than enjoying it. In addition, he noted that a person with ON attaches self-esteem to adhering to their diet; they often feel superior to others with differing diets and will experience extreme feelings of guilt for dietary indiscretions.⁵ Other diagnostic criteria noted by Bratman included spending more than three hours per day thinking about, planning, and preparing meals^{5,37}; the focus on diet becomes so extreme that it consumes the individuals' life "at the expense of other personal values, relationships, previously enjoyed activities, and sometimes, ironically, physical health."³⁷

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

Since then, other researchers have sought to refine these criteria as research on the topic has progressed. Donini et al.² suggested that the diagnostic criteria for ON include “health fanatic” eating habits, a personal “value” to produce and conserve specific characteristics of food, and an emotional connection to the desire to consume food.² Furthermore, Dunn & Bratman⁴² suggested that an obsessive focus on healthy eating based on dietary beliefs, exaggerated emotional distress and fear of disease secondary to violation of self-imposed dietary rules, mental preoccupation with food, and an escalation of dietary restrictions over time also be included. An individual with ON must also exhibit significant clinical impairment secondary to malnutrition or intrapersonal or interpersonal distress.⁴²

2.3 Assessment Tools for Orthorexia Nervosa

Originally, Steven Bratman created a ten-item questionnaire called the Bratman Orthorexia Test (BOT).^{5,24} The items on the BOT are dichotomous, consisting of questions with “yes” or “no” answers (e.g., Do you spend more than 3 hours a day thinking about your diet?). An answer of “yes” corresponds to one point, allowing for a score of up to ten points; a score of <5 indicates healthy eating behavior, a score of 5-9 indicates “health fanatic” eating behavior, and a score of 10 indicates orthorexic behavior.²⁴ However, this scale has never been validated and it has been suggested that it fails to differentiate ON criteria from that of other EDs such as AN or BN.²⁴ Furthermore, some research has indicated overlap between BOT scores and that of other validated disordered eating questionnaires. A study by Bundros et al.¹³ found that BOT scores were positively correlated with symptoms of disordered eating as tested with the eating attitudes test (EAT-26), symptoms of body dysmorphia as indicated by the Body Dysmorphic

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

Disorder Questionnaire (BDDQ), and symptoms of OCD as per the Obsessive-Compulsive Inventory-Revised (OCI-R).

In 2005, Donini et al.⁴³ modified the BOT to create a new diagnostic questionnaire for ON, the ORTO-15. The self-administered questionnaire contains 15 multiple choice items that probe for healthy eating behavior in three categories: a cognitive-rational area (e.g., “Are you willing to spend more money to have healthier food?”), a clinical area (e.g., “Does the thought about food worry you for more than three hours a day?”), and an emotional area (e.g., “Do you think that the conviction to eat only healthy food increases self-esteem?”).⁴³⁻⁴⁴ Each item is answered on a Likert scale (always, often, sometimes, never) and answers indicating orthorexic behavior are given a score of “1” while “healthier” answers are given a score of “4”. Each answer score is summed and a total score of <40 is indicative of ON.⁴³

The ORTO-15 originated in Italy but has since been translated for use in a number of other countries including Turkey,⁴⁵ Portugal,⁴⁶ Hungary,⁴⁷ Poland,⁴⁸ Germany,⁴⁹ and Spain.⁴⁴ Although the ORTO-15 has been used in the majority of ON research, as it has been considered the gold-standard of ON assessment,⁴⁴ investigation of the questionnaire’s psychometric properties have revealed poor internal consistency^{25,49-50} and content validity.⁴³ In an effort to improve accuracy, some researchers have suggested a 35-point threshold be used instead of a 40-point threshold to prevent misdiagnosis.^{26,43} Nonetheless, Donini et al.⁴³ have suggested the ORTO-15 fails to identify the obsessive-compulsive behavior, and thus the pathology, of ON.

In 2013, Gleaves et al.⁵¹ developed the Eating Habits Questionnaire (EHQ) in the United States, a 21-item self-report inventory that was designed to detect pathological ON behavior. The EHQ probes for information related to the knowledge of healthy eating, problems associated

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

with healthy eating, and feelings about healthy eating. Psychometric analysis of the questionnaire revealed good internal consistency, test retest, and construct reliability in a sample of college students.⁵¹ In addition, the Dusseldorf Orthorexia Scale (DOS) was constructed in 2015, a 10-item questionnaire based on Bratman's original diagnostic criteria that employs a 4-point Likert scale to assess for orthorexic behavior; a higher score corresponds to ON, with a threshold of 30 points.⁵²⁻⁵³ Although this assessment tool has been utilized in a number of German studies, some studies have suggested the questionnaire fails to accurately distinguish between ON and AN.⁵³ Other questionnaires have been developed, including the Barcelona Orthorexia Scale (BOS) and the Teruel Orthorexia Scale (TOS), however no studies have been published displaying the application of these scales to ON research.⁵³

2.4 Prevalence of Orthorexia Nervosa

The prevalence of ON among general populations has varied greatly across studies. The prevalence of ON was identified as 6.9% in a sample of Italians (n = 404) in 2004 based on the presence of exaggerated healthy eating habits and obsessive-phobic personality traits.² However, an Italian study in 2011 (n = 177) found a prevalence rate of 57.6% when using the ORTO-15 with a 40-point threshold and of 21% when using a 35-point threshold.²⁶ Furthermore, in Poland Hyrnik et al.³⁹ (n = 1899) found a prevalence of 61.3% using the ORTO-15 with a 40-point threshold and of 13.7% using a 35-point threshold. In addition, Plichta et al.⁵⁴ (n = 1120) identified a prevalence of 75% using the ORTO-15 with a 40-point threshold and of 28.3% using a 35-point threshold in a sample of Polish university students. In a sample of Americans, Dunn et al.⁵⁵ (n = 275) identified a prevalence of 71.2% when using the ORTO-15 with a 40-point

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

threshold and 22.1% when using a 35-point threshold. However, only 1% of the sample was determined to have symptoms that actually *impaired* daily functioning, reflecting that the ORTO-15 may fail to identify pathology.⁵⁵ Additionally, a study from 2018 (n = 454) found a prevalence of 17% in a sample of Spanish university students when using the ORTO-11.³¹

Furthermore, some studies sought to identify the prevalence of ON in specific high risk populations including athletes, nutrition and exercise science students, dieticians, and social media users. In 2012, 28% of a sample of Italian athletes (n = 577) displayed ON when assessed with the ORTO-15.¹² Similarly, in 2014 25% of Italian nutrition and exercise science students (n = 440) scored in the orthorexic range on the ORTO-15.³⁵ In addition, in 2017 the prevalence of ON in a sample of United States dieticians (n = 636) was 49.5% when using the ORTO-15.⁵⁶ Turner et al.²⁹ identified an ON prevalence of 90.6% among a sample of female Instagram users (n = 680) when using the ORTO-15 with a 40-point threshold; this percentage dropped to 49% with a 35-point threshold.

2.5 Treatment of Orthorexia Nervosa

Although there has been no research on treatment for ON to date, some case studies have provided insight into possible treatment options. In 2015, a 28-year-old man was suffering from a multitude of conditions secondary to ON including severe weight loss, bradycardia, malnutrition, and testosterone deficiency.²² In addition to nutritional support, the patient was treated with olanzapine, a medication that had previously been successful at inducing weight gain in AN patients and relieving obsessing symptoms.²² Moreover, cognitive behavioral therapy (CBT)

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

and/or selective serotonin reuptake inhibitors (SSRIs) may also be useful given their success in treating OCD symptoms.¹

2.6 Summary of Orthorexia Nervosa Literature

Although ON was identified over twenty years ago, there is still no formal definition, distinct diagnostic criteria, validated assessment tool, or verified treatment options for the condition. The limited research on ON contrasts with the extensive research on eating disorders such as AN and BN; a search for AN in PubMed yields nearly 17,000 results, while ON yields less than 200. Furthermore, the research that *has* been conducted on ON has done little to advance understanding of the topic, as studies have yielded conflicting results.

In 2005, Donini et al.⁴³ composed a diagnostic questionnaire for ON based on Bratman's description of orthorexic tendencies. However, the questionnaire was in need of further investigation and validation. Over the following fifteen years, many studies reiterated the need for a more accurate diagnostic tool, however one has yet to be created.⁴ In addition, the majority of studies that have assessed the prevalence and clinical basis of ON have used inconsistent assessment tools and unrepresentative samples, yielding ungeneralizable data. As a result, there is debate surrounding whether or not ON is a unique disorder separate from other formally recognized EDs; should it be classified as an eating disorder? A behavioral disorder? The creation of the DSM-5 aimed to reduce the number of diagnoses that fall under the Other Specified Feeding and Eating Disorder (OSFED) category, which accounted for the highest percentage of ED diagnoses between 2018-2019.⁵⁷ Although the DSM-5 now recognizes ARFID,

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

rumination disorder, and pica, the lack of reliable research and data on ON prevented its inclusion.¹⁸

Individuals are exposed to an abundance of health and nutritional information that has the potential to trigger disordered eating patterns.³⁸ The research on ON shows that potential high-risk groups include athletes, physicians, students in health sciences, and individuals working in the performing arts.^{4,12,35,38} In addition, health professionals receive limited training in nutrition and thus EDs.⁵⁸ As a result, high risk patients may be left suffering from pathological eating habits that go undetected. Missbach et al.⁵⁹ reiterate that the focus of ON research needs to shift away from discussing clinical characteristics and prevalence with unfit tools and more towards assessing the clinical significance of ON; “We argue that translating and adapting already existing measures are not contributing to our knowledge of ON producing yet additional findings that are of mediocre quality.”^{59, p. 523} Furthermore, health professionals including physicians and registered dietitians have emphasized the importance of investigating the proper ways to prevent and treat ON.¹ As such, further, progressive investigation must be done on the features and diagnostic boundaries of ON to better understand, prevent, diagnose, and treat those suffering and to determine what health professionals are most suited for the job.

2.7 Purpose of the Study

This study will explore the current state of ON knowledge among healthcare professionals in multiple professional domains and to improve the research, education, and diagnosis of ON in the clinical setting. The objectives of the study are to (1) determine the gaps in current ON research, education, and diagnostic efforts based on literature and professional

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

opinion and (2) provide the scientific community with a multidisciplinary summary of ON based on literature and professional opinion to enhance the translation of ON research into the clinical setting and facilitate further, translational research on ON.

CHAPTER THREE

Methodology

3.1 Research Design

A mixed methods study design was used; both quantitative and qualitative methods were included. The study consisted of three phases (1) pre-interview, (2) interview, and (3) post-interview. The pre-interview phase consisted of initial subject recruitment and completion of a pre-interview survey using the Qualtrics platform. The interview phase consisted of a virtual interview, approximately 20-30 minutes long, administered and recorded via Zoom. Finally, the post-interview phase involved the completion of a final Qualtrics debriefing survey.

3.2 Recruitment

Purposive sampling was used to locate participants practicing in family medicine, nutrition/dietetics, and/or psychology, with the goal of gathering a minimum of ten professionals in each category. The head(s) of communication in organizations including the New York Academy of Medicine, the New York State Academy of Nutrition and Dietetics, the New York State Psychological Association, and the Ellyn Satter Institute were contacted via email to identify potential subjects or recruitment venues. Information regarding the scope of the study was provided in this email (see appendix A); organization heads were encouraged to share study information with members via email and Facebook groups with a direct link to begin study participation. Inclusion criteria were that the subject must be currently practicing in one or more of the aforementioned categories, have access to the internet, and speak English.

3.3 Instruments

Pre-Interview Survey

A pre-interview survey (see Appendix B) was administered via the Qualtrics platform, nine pages in length, and used to obtain participant information including demographics, eating competence, and orthorexic behavior. The ecSatter Inventory 2.0TM was included in the pre-interview survey to assess participant eating competence, or the ability to be positive, comfortable, and flexible with eating while simultaneously having structured meal times and satisfying hunger cues.⁶⁰ Eating competence is an important aspect of maintaining positive bio-psychosocial outcomes including experiencing “fewer cognitive behaviors associated with disordered eating.”⁶¹ This validated questionnaire includes 16 multiple choice items related to eating habits, attitudes, and behaviors and is scored on a Likert scale (3 = always, 2 = often, 1 = sometimes, 0 = rarely, 0 = never). Total scores are determined for each subsection and the overall test. A cutoff score of 32 and above indicates eating competence.⁶⁰ Additionally, the ORTO-15 questionnaire was included in the pre-interview survey to assess for orthorexic behavior. This questionnaire includes 15 multiple choice items related to the emotional, cognitive, and behavioral aspects of nutrition and eating. Answers indicating orthorexic behavior are given a score of “1” while answers considered healthy are given a score of “4”, all of which are summed to determine overall risk of orthorexia. A cutoff score of less than or equal to 40 on the total questionnaire indicates a risk of orthorexia.⁴³ The ecSatter Inventory 2.0TM and ORTO-15 were used to determine whether a participant’s eating competence or orthorexic behavior level influenced their responses to open ended questions.^{43,60}

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

Interview Guide

An interview guide was created (see Appendix B) that includes a series of open-ended questions regarding the participant's knowledge of and professional and personal experiences with persons with EDs and/or ON.

Post-Interview Debriefing Survey

A post-interview survey (see Appendix B) was administered via the Qualtrics platform, 3 pages long, and included a series of multiple choice questions to serve as a debriefing and gather information regarding how the participant's thoughts and feelings on ON changed after the completion of the virtual interview.

3.4 Data Collection

The pre-interview survey was administered using the Qualtrics platform. Responses were self-report. The survey consisted of 1) an informed consent; 2) a series of free response and multiple choice questions including demographic items (e.g., name, contact information, and professional background/credentials); 3) the ecSatter Inventory 2.0^{TM60}; and 4) the ORTO-15.⁴³ Responses from the pre-interview survey identified participant availability for the virtual interview.

Interviews were conducted with the use of an interview guide, which was developed as a Qualtrics survey completed by the interviewer during the Zoom interview. The guide consisted of a variety of closed and open-ended questions to gather information about the participant's professional and personal experiences working with persons with EDs and/or ON. Additionally, the interview guide included questions addressing gaps the participant perceives in the way ON

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

is medically/clinically addressed. Following the virtual interview, participants received an email with a link to a Qualtrics survey that served as a post-interview debriefing request. The post-interview debriefing included closed and open-ended questions and was designed to solicit information about change in thoughts/opinions on ON as a result of the virtual interview.

3.5 Pilot Study

A pilot study was conducted to test recruitment strategy, Qualtrics survey administration, interviewing capabilities, and data analysis processes. Subjects (n = 3) were recruited via email from professional contacts provided by RIT faculty (see Appendix A). Two physicians and one registered dietitian responded to the emailed invitations. Each subject completed the pre-interview survey, virtual interview, and post-interview debriefing survey. Both surveys were administered via Qualtrics and the virtual interview via Zoom.

As a result of the pilot study, the aforementioned methodological processes were found to be adequate for use in official data collection. Therefore, the pilot study sample was included in the final data analysis. The results of the pilot study will be presented in Chapter 4, Results.

3.6 Data Analysis

Quantitative

Demographic information (e.g., gender, professional domain, state of licensure/certification, professional credentials, and length of career) were summarized using measures of central tendency to determine the characteristics of the sample. ecSatter Inventory 2.0™ items were summed and organized into subscales and eating competence categories as directed,⁶⁰ then summarized with descriptive statistics. Similarly, items from the ORTO-15 were

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

summed and summarized with descriptive statistics.⁴³ ecSI.20™ and ORTO-15 scores were correlated using Spearman rho. The association of being eating competent with an orthorexia category was analyzed using a Chi-square test. Groups were compared using Mann-Whitney U and Kruskal-Wallis tests. Other variables including amount of experience working with patients with EDs, professional and personal experiences and exposure to ON, knowledge of ON, and opinions on ON were considered in comparison to the aforementioned demographic variables using mean comparisons and cross tabulation. Data were analyzed with SPSS v27.0.⁶²

Qualitative

Zoom interview transcripts were downloaded from the Zoom platform. Each transcript was read through, compared with the recorded interview audio, and reviewed/revised for accuracy. Reviewed transcripts were imported into Dedoose software version 8.3.47.⁶³ Inductive coding was used to conduct thematic analysis of the data.⁶⁴⁻⁶⁵ A coding scheme was developed based on answers to interview questions (e.g, professional experiences working with patients with eating disorders and/or ON, perceived gaps in the way ON is medically/clinically addressed). Parent codes were created based on overarching themes (e.g., the subject has encountered patients with ON in their professional practice) and child codes were created based on subthemes (e.g., the specifics of the subject's encounters with patients with ON). The coding system can be viewed in Appendix C. Responses to each interview question were coded based on the identified themes and analyzed to identify patterns. Common trends in interview question responses were reported in the results.

CHAPTER FOUR

Results

4.1 Demographic Characteristics

Of the 22 professionals recruited, 17 completed the three phases of the study (pre-interview survey, virtual interview, and post-interview debriefing survey). The remaining 5 professionals completed the pre-interview survey but did not continue to schedule a virtual interview; 3 worked in nutrition/dietetics and 2 in family medicine/primary care.

The majority of participants who completed all three phases of the study were actively engaged; Zoom interviews averaged 17.6 minutes in length. The sample consisted primarily of females (n = 12) working in the field of nutrition and/or dietetics (n = 10). Six professionals worked in family medicine and/or primary care and 2 in the field of psychology. Over half (n = 11) were licensed or certified to practice in New York State and the remaining practiced in other states including Georgia, Ohio, Rhode Island, and Texas. In addition, a variety of professional credentials were held including registered dietitian, licensed master social worker, medical doctor, physician's assistant, master of public health, advanced practice psychiatric mental health nurse practitioner, and certified diabetes care and education specialist. Over half had careers spanning either 0-5 years (n = 5) or 20+ years (n = 5). Three subjects had careers spanning 6-10 years; 4 had careers spanning 16-20 years.

4.2 Eating Competence

On average, the sample was eating competent (39.2 ± 7.6). Eating competence did not significantly differ based on gender ($p = 0.624$) or professional domain ($p = 0.084$). Professionals with varying career durations did not significantly differ in eating competence ($p = 0.561$).

4.3 Orthorexic Behavior

On average, the sample was not orthorexic (40.9 ± 4.1). Orthorexic behavior did not significantly differ based on gender ($p = 0.103$), but did significantly differ based on professional domain ($p = 0.014$); professionals working in nutrition/dietetics were less orthorexic than those working in family medicine/primary care and psychology. Professionals with varying career durations did not significantly differ in orthorexic behavior ($p = 0.820$).

4.4 Eating Competence and Orthorexic Behavior

Being eating competent (i.e., having an ecSI2.0™ score ≥ 32) tended to be associated ($p = 0.08$) with not being orthorexic (i.e., ORTO-15 score > 40). Mean levels of eating competence and orthorexic behavior based on demographic variables are included in Table 1.

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

Table 1: Mean levels of eating competence and orthorexic behavior by demographic

	ecSI2.0 TM score (SD)*	ORTO-15 score (SD)**
Gender		
Male (n = 4)	36.3 (8.6)	37.8 (4.3)
Female (n = 13)	40.1 (7.4)	41.9 (3.7)
p-value	0.624	0.103
Professional Domain		
Family Medicine/ Primary Care (n = 5)	35.2 (7.8)	37.2 (3.0)
Nutrition/Dietetics (n = 10)	42.9 (5.4)	43.2 (3.5)
Psychology (n = 2)	30.5 (7.8)	39.5 (0.7)
p-value	0.084	0.014
Length of Career (years)		
0-5 (n = 5)	42.4 (7.0)	42.0 (2.6)
6-10 (n = 3)	35.0 (8.5)	40.3 (4.5)
11-15 (n = 0)		
16-20 (n = 4)	38.8 (10.2)	40.5 (1.0)
20+ (n = 5)	38.8 (7.6)	40.6 (6.8)
p-value	0.561	0.820

*Cutoff score of 32 and above indicates eating competence

**n=16; cutoff score of less than or equal to 40 indicates risk of orthorexia nervosa

4.5 Professional Experiences with Eating Disorder Diagnoses

The amount of experience working with patients with eating disorders ranged from 1 (none at all) to 5 (a great deal), with an average of 3.2 ± 1.3 years. Experience working with patients with eating disorders by professional domain is displayed in Table 2 and Figure 1; 3

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

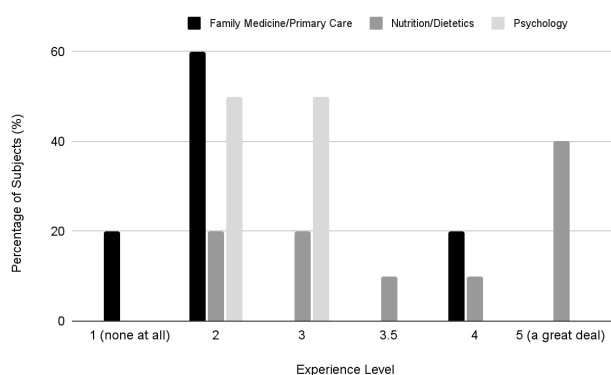
professionals reported encountering patients with ON prior to being asked. Experience level working with patients with EDs did not significantly differ based on professional domain ($p = 0.63$). The types of EDs encountered in practice by professional domain are displayed in Table 3. A narrative summary of the experiences working with patients with EDs is displayed in Section 4.7.

Table 2: Mean experience level working with patients with eating disorders by professional domain

Professional Domain	Mean*	SD	Range (min/max)
Family medicine/Primary Care (n = 5)	2.2	1.1	1 - 4
Nutrition/Dietetics (n = 10)	3.8	1.2	2 - 5
Psychology (n = 2)	2.5	0.7	2 - 3

*Experience level measured on a scale of 1 (none at all) to 5 (a great deal)

Figure 1: Experience* working with patients with eating disorders by professional domain



*Experience level measured on a scale of 1 (none at all) to 5 (a great deal)

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

Table 3: Disorders encountered in practice by professional domain

Disorder	n (%)	Family Medicine/Primary Care (n =5)	Nutrition/ Dietetics (n =10)	Psychology (n = 2)
Anorexia Nervosa	8 (47)	2 (40.0)	6 (60.0)	0 (0.0)
Bulimia Nervosa	6 (35)	0 (0.0)	6 (60.0)	0 (0.0)
Binge Eating Disorder	8 (47)	1 (20.0)	6 (60.0)	1 (50.0)
Pica	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Rumination	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Avoidant/Restrictive Food Intake Disorder (ARFID)	7 (41)	0 (0.0)	7 (70.0)	0 (0.0)
Orthorexia Nervosa	3 (18)	1 (20.0)	2 (20.0)	0 (0.0)
Other*	10 (59)	2 (40.0)	8 (80.0)	1 (50.0)

*Table entries are frequencies (%)

*other eating disorders encountered included other specified feeding and eating disorder, general disordered eating, muscle dysmorphia, and purging..

4.6 Professional Experiences with Orthorexia Nervosa

Twelve professionals had heard of the term “orthorexia nervosa” (ON) prior to participation in the study, 10 of which worked in nutrition/dietetics (see Table 4). The self-reported level of confidence in knowledge of orthorexia nervosa among those who had previously heard of ON (1 = very unconfident, 7 = very confident) ranged from 3-7 with an average of 5.2 ± 1.3 ; levels of confidence did not significantly differ based on professional domain ($p = 0.08$). Figure 2 displays the level of confidence in knowledge of ON by professional domain.

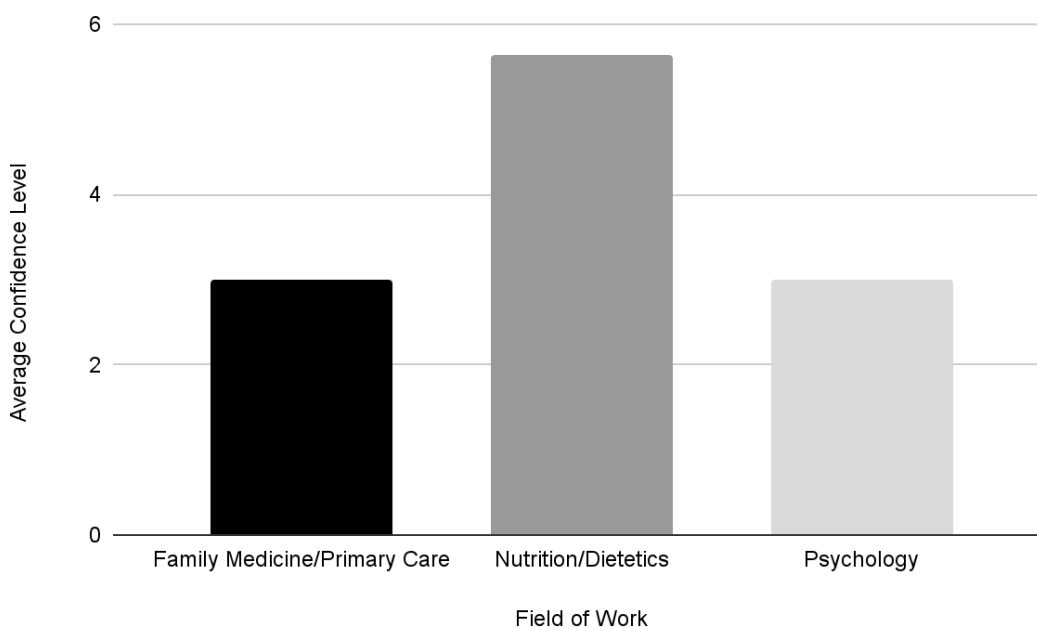
ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

Table 4: Heard the term “orthorexia nervosa” (ON) prior to study participation by professional domain (n = 17)

Heard term “ON” prior to participation	Family Medicine/Primary Care (n = 5)	Nutrition/Dietetics (n = 10)	Psychology (n = 2)	Total
Yes	1 (20)	10 (100)	1 (50)	12
No	4 (80)	0 (0)	1 (50)	5

*Table entries are frequencies (%)

Figure 2: Average confidence of orthorexia nervosa (ON) knowledge by professional domain*



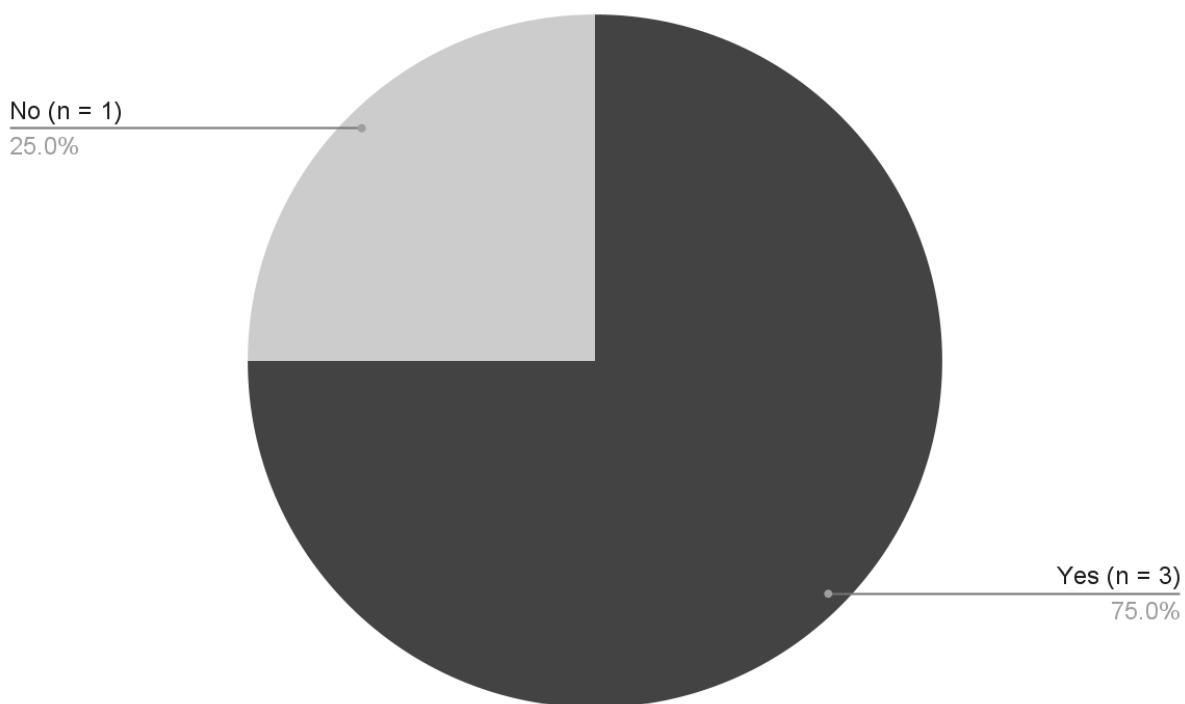
*Confidence level measured on a scale of 1 (very unconfident) to 7 (very confident)

Of the 4 professionals in family medicine/primary care who had not heard of ON prior to participation in the study, 3 had patients who exhibited similar behaviors to ON (see Figure 3).

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

Over half (n = 9) of professionals in all domains knew about and had professional experiences with ON (see Table 5). A narrative summary of professional experiences with ON are displayed in Section 4.7.

Figure 3: Professionals in family medicine/primary care who did not know about orthorexia nervosa (ON) (n = 4) but had patients who presented with similar behaviors



*Yes: Had patients presenting with behaviors similar to ON; No: did not have patients presenting with behaviors similar to ON

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

Table 5: Professional experiences with orthorexia nervosa (ON) by professional domain (n = 17)

Knowledge/Experience with ON*	n (%)	Family Medicine/Primary Care (n = 5)	Nutrition/Dietetics (n = 10)	Psychology (n = 2)
Did not know about ON and had no professional experiences with ON	2 (12)	1 (20)	0 (0)	1 (50)
Did not know about ON but had patients with similar presentations	3 (18)	3 (60)	0 (0)	0
Knew about ON but had no professional experiences with ON	3 (18)	0	2 (20)	1 (50)
Knew about ON and had professional experiences with ON	9 (53)	1 (20)	8 (80)	0

*Table entries are frequencies (%)

Of those with personal experiences with ON, 4 also had professional experiences with ON, while 2 were unsure. A narrative summary of the subjects' personal experiences with ON is displayed in Section 4.7.

Table 6: Personal experiences with orthorexia nervosa (ON) by professional domain (n = 16)

	Family Medicine/Primary Care (n = 4)	Nutrition/Dietetics (n = 10)	Psychology (n = 2)	Total (%)
Yes	2 (50)	5 (50)	2 (100)	9 (56)
No	2 (50)	3 (30)	0 (0)	5 (31)
Unsure	0 (0)	2 (20)	0 (0)	2 (13)

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

*Table entries are frequencies (%)

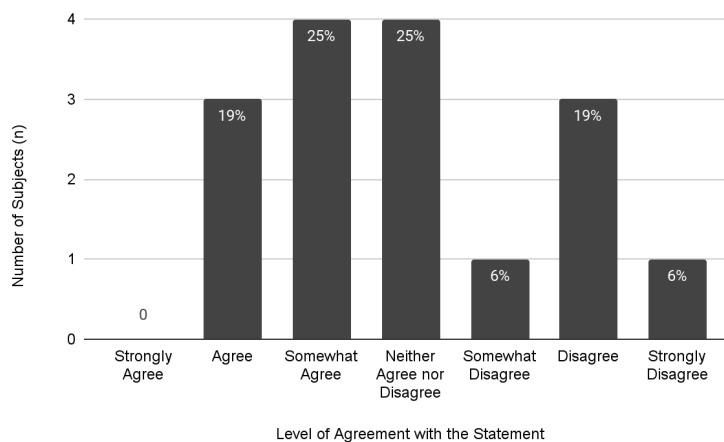
Table 7: Perceived gaps in the way orthorexia nervosa is medically/clinically addressed (n = 16)

Perceived gaps in the way ON is medically/clinically addressed	Family Medicine/Primary Care (n = 4)	Nutrition/Dietetics (n = 10)	Psychology (n = 2)	Total
Yes	3 (75)	10 (100)	2 (100)	15 (94)

*Table entries are frequencies (%)

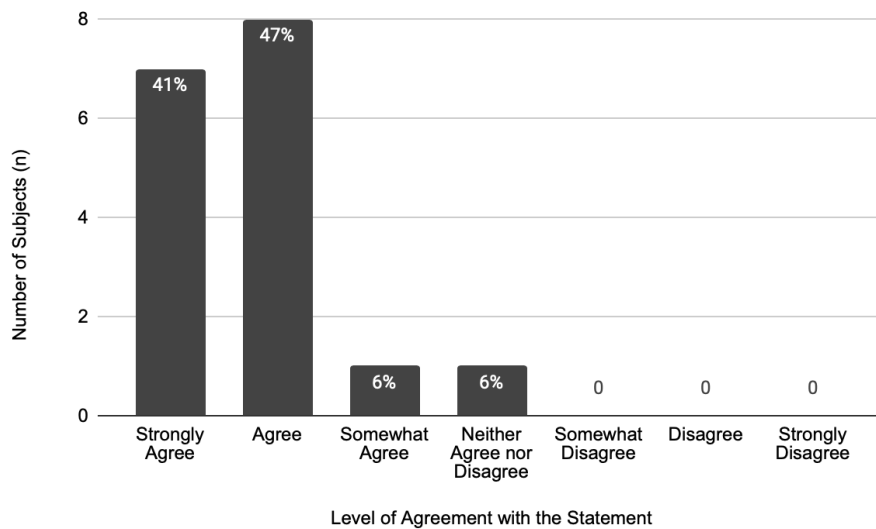
Figure 4 displays how the subjects' concept of ON may or may not have changed as a result of participation in the study. Four subjects somewhat agreed that their concept of ON did change as a result of participation in the study; 3 agreed (n = 16; see Figure 4). Additionally, 94% of subjects somewhat agreed that awareness of ON in healthcare is important upon completion of study participation (n = 17; see Figure 5).

Figure 4: Level of agreement with the statement that “My concept of orthorexia nervosa (ON) has changed as a result of the Zoom interview discussion” (n = 16)



ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

Figure 5: Level of agreement with the statement that “Awareness of orthorexia nervosa (ON) in healthcare is important” (n = 17)



ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

4.7 Qualitative Analysis of Professional Experiences with Eating Disorders and Orthorexia

Nervosa Diagnoses

A narrative summary of the experiences and roles professionals in family medicine/primary care, nutrition/dietetics, and psychology have had working with patients with eating disorders is displayed in Table 8.

Table 8: Professional experiences with eating disorders (EDs) by professional domain

Professional Domain	Experiences working with patients with EDs
Family Medicine/ Primary Care	<ul style="list-style-type: none"> - Conducting follow up appointments with patients previously hospitalized with ED diagnoses - Referral of patients presenting with ED symptomatology to mental health services - Seeing patients in the outpatient setting with ED diagnoses including AN, BED, and restrictive eating
Nutrition/ Dietetics	<ul style="list-style-type: none"> - Advocating for the patient's healthcare needs - Assessing a patient's eating history and developing meal plans - Assisting patients with eating a wide variety of foods - Building rapport with patients - Providing patients with nutritional counseling - Seeing patients in the outpatient and inpatient settings with ED diagnoses including AN, BN, BED, ARFID, OSFED, ON - Seeing patients in the outpatient setting struggling with BMI increases/weight management issues - Working in conjunction with mental health counselors and medical providers; addressing patient referrals from other professionals
Psychology	<ul style="list-style-type: none"> - Conducting research on the relationships between culture, nutrition, and mental health - Seeing patients with EDs at outpatient mental health clinics and referring them to professionals in nutrition/dietetics

*Anorexia nervosa (AN), bulimia nervosa (BN), binge eating disorder (BED), avoidant/restrictive food intake disorder (ARFID), other specified feeding and eating disorder (OSFED), orthorexia nervosa (ON), body mass index (BMI)

Several individuals recruited from the Ellyn Satter Institute working in nutrition/dietetics reported attending a continuing education presentation by Jessica Setnick, a Certified Eating Disorder Dietitian, on the topic. Other sources of information included the Ellyn Satter "Treating the Diet Casualty VISION Workshop", other continuing education workshops and/or

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

conferences, peer reviewed online journal articles, magazine and online articles, eating disorder listservs, undergraduate and/or graduate classes, dietetic internships, colleagues, and patient experiences. A narrative summary of experiences working with patients displaying orthorexic behavior is displayed in Table 9.

Table 9: Description of patients who displayed orthorexic behavior by previous knowledge of orthorexia nervosa (ON)

Professional Domain	Description of Patients	
	Previously heard the term “ON”	Had not previously heard the term “ON”*
Family Medicine/ Primary Care	<ul style="list-style-type: none"> - Had a general obsession around their physical health - Had pre-existing medical conditions (i.e., a medical history of a heart attack, diabetes mellitus) that pushed them towards orthorexic tendencies in an attempt to improve their condition 	<ul style="list-style-type: none"> - Expressed extreme anxiety over the chemicals that may be present in foods - Had diabetes mellitus and began only eating chicken and broth to lower their A1C levels - Patient’s parent brought online literature to an appointment expressing concern over the nutritional content of food
Nutrition/ Dietetics	<ul style="list-style-type: none"> - A runner, achievement oriented, and used diet culture words of “good foods” and “bad foods”, looked for non-GMO and non-processed products, worried about chemicals on foods, and had anxiety and tension surrounding eating with family members and friends - Conducted their own online research on nutrition and deemed dairy to be bad - Doubted a lot of information coming from their health care providers/professionals - Eliminated entire food groups after conducting internet searches about nutrition - Felt guilty for any eating transgressions - Hyper focused on food being organic/the ingredients in foods/the way food is prepared - Over-exercised and/or exercised through injuries and avoided rest days - Used a calorie counting app - Was concerned about the number of people who touched their food before them - Was so concerned with what foods they ate that they asked for written permission from the provider to eat certain foods 	N/A
Psychology	N/A	<ul style="list-style-type: none"> - Would collect online articles about nutrition and ask them to be read and reviewed for advice - Would consistently want to do cleanses

*Professionals who had not previously heard of orthorexia nervosa were provided a description of the condition

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

In some instances, professionals reported that patients with ON expressed concerns regarding their own behaviors. For example, one participant reported it was common for patients with orthorexic behavior to be confused and concerned about how to move forward from their current dietary practices. Others described patients expressing concern once their behaviors began affecting their physical health (i.e., extreme weight loss) or social life. However, other professionals reported that their patients with ON did not typically express concern regarding their dietary patterns. Experiences included having a patient whose behavior was constantly reinforced by improvement in their biometric laboratory results, a patient whose family seemed to encourage and reinforce their behaviors, and another who felt superior to others secondary to their eating habits. A narrative summary of suggested preventative, diagnostic, and treatment strategies for working with patients with ON is displayed in Table 10.

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

Table 10: Suggested preventative/diagnostic/treatment strategies for working with patients with orthorexia nervosa (ON) by professional domain and previous knowledge of orthorexia nervosa (ON)

Professional Domain	Preventative/Diagnostic/Treatment Strategies	
	Previously heard the term “ON”	Had not previously heard the term “ON”*
Family Medicine/ Primary Care	<ul style="list-style-type: none"> - Discuss the six pillars of health and encourage balance among all aspects of health and well-being - Refer the patient to mental health services 	<ul style="list-style-type: none"> - Conduct biomarker testing to determine the impact of the patient’s behavior on electrolytes, bone metabolism, etc. - Referral to mental health services/ cognitive behavioral therapy - Similar treatment to that of anxiety/anxiety medications - Take time to screen for abnormal dietary behaviors and/or discuss nutrition and diet with the patient
Nutrition/ Dietetics	<ul style="list-style-type: none"> - Avoid over-researching nutritional related articles - Avoid recommending the limitation of foods/food groups and focus more on what can be added in and/or replaced - Challenging patients to define and explore what “health” means to them to encourage overall health and well-being - Exposure to foods and/or ingredients that the patient fears to increase their flexibility with foods - Encourage parents to monitor and discuss the information their child encounters on the internet - Find scientific data that contradicts/refutes the patient’s beliefs surrounding food and nutrition - Group therapy sessions with other patients exhibiting similar behaviors - Utilization of the Family Feeding Dynamics and Ellyn Satter Inventory to assess eating competence and work towards a more relaxed, comfortable relationship with food - Work with a full team to address the patient’s behavior 	N/A
Psychology	N/A	N/A

*Professionals who had not previously heard of orthorexia nervosa were provided a description of the condition

Professionals working in nutrition/dietetics often emphasized the harm that can come from providers recommending the limitation of certain foods and food groups without being aware of the patient’s disordered eating history. A professional in nutrition/dietetics reflected on

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

the experience of a patient they had who was having gastrointestinal symptoms, reporting “I have a client with an extensive eating disorder history from the age of nine, and then in her [gastrointestinal] office, her doctor said ‘oh, try a gluten free, lactose free diet,’ and that was not okay...that happens all the time.” They went on to explain that this particular patient’s symptoms did not require such drastic dietary changes, but that similar advice is often given to GI patients when there appears to be “no other options.” Another registered dietitian notes that it may be beneficial to suggest alternatives to certain foods rather than complete elimination of entire food groups, unless absolutely necessary.

A professional in family medicine/primary care noted attempting to balance nutritional advice by putting the importance of it into perspective, suggesting that care can be put into making nutritional decisions without encouraging obsessive behaviors; “I don’t want to make people go so crazy about their foods, but there are some things I do tend to warn people about...you don’t have to have everything be organic, but there are a couple of things where it matters.”

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

Table 11: Perceived gaps in the way orthorexia nervosa (ON) is medically/clinically addressed by professional domain

Professional Domain	Perceived Gaps	
	Previously heard the term “ON”	Had not previously heard the term “ON”
Family Medicine/ Primary Care	<ul style="list-style-type: none"> - The literature on the topic is “flimsy” and often does not appear in peer reviewed journals/articles - The majority of people and clinicians likely have no idea what orthorexia nervosa is 	<ul style="list-style-type: none"> - A lot of medical professionals are unaware of the condition - It is difficult to get information on the topic and to know how to address it - It can be hard to encourage patients to stop orthorexic behaviors when their laboratory work shows improvements - There is currently no way to measure it - There is a lack of appropriate therapy for mental health diagnoses/lack of referrals out to mental health services
Nutrition/ Dietetics	<ul style="list-style-type: none"> - If someone appears to be a healthy weight, it may be easy to assume they are not struggling with an eating disorder - Lack of awareness about the condition among primary care providers - Lack of education available on the topic - Lack of research conducted on the topic and on eating disorders in general - Medical providers may be unknowingly encouraging related behaviors (i.e., applauding weight loss, “healthy” eating...etc.) - Medical providers may not typically raise concern about a patient being overly focused on eating healthy foods - Patients being told to eliminate certain food groups as a treatment may be motivating orthorexic behaviors - Providers may perceive the behaviors as a healthy lifestyle when it is actually unhealthy - Some dietitians may exhibit similar behaviors to orthorexia nervosa and blindly promote similar attitudes to patients - Some may be skeptical of the condition as a diagnosis - There is no true diagnostic criteria, making it difficult to identify - There is no model for dietitians to follow regarding assessment and treatment of the condition - The topic may be ignored or downplayed 	N/A
Psychology		<ul style="list-style-type: none"> - The condition is not well recognized - Difficult to determine if the behavior is impeding on your daily life

*Professionals who had not previously heard of orthorexia nervosa were provided a description of the condition

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

Lack of awareness and education on the topic of ON among healthcare professionals was a common gap reported by participants in all fields of work. A professional in family medicine/primary care who had previously heard of ON noted, “I have found very little on it in the literature,” while another stated, “There’s almost no nutrition education in medicine. Almost none.” Given this, many professionals in nutrition/dietetics emphasized the importance of providers referring patients with disordered eating behaviors and/or nutritional concerns to other professionals more qualified to address such concerns.

Several professionals in nutrition/dietetics reported that behaviors characteristic of ON may be celebrated by healthcare providers, including weight loss and a focus on healthy eating, encouraging patients with ON to continue their obsessive habits. However, some professionals in family medicine/primary care discussed the difficulty that comes with encouraging patients to stop behaviors that may be improving other aspects of their physical health, such as lowering glycated hemoglobin (A1c) levels in diabetic patients. A physician’s assistant noted, “I think as providers we are so used to people eating so poorly and not doing anything healthy that we may grab onto those [perceived healthy habits] and don’t want to discourage someone from doing something that improves their numbers... It is very hard to see the A1c levels go down and then try to tell them it’s bad.”

Some professionals in family medicine/primary care noted the difficulty of identifying disordered eating behaviors secondary to the limited time they are allotted to spend with each patient. A professional with a history working in primary care noted the benefit of having longer patient encounters practicing in lifestyle medicine, often over thirty minutes, giving the provider time to both build rapport and discuss more deeply rooted concerns than they otherwise would

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

have. Other professionals in family medicine/primary care reported the limited availability of professionals in nutrition/dietetics to refer out to, adding to their difficulty addressing the patient's concerns.

CHAPTER FIVE

Discussion

5.1 Experience with Eating Disorders and Orthorexia Nervosa

Experience Working with Patients with Eating Disorders

Prior research notes that primary care providers are most likely to be the first professionals to be exposed to and identify patients exhibiting disordered eating.⁶⁷ In contrast, findings indicated that experience level working with patients with EDs did not significantly differ based on professional domain. However, although primary care providers are more likely to encounter patients with EDs, many feel ill-prepared to treat them.⁶⁸ Therefore, it is possible that the limited experience working with ED patients that was reported by professionals in family medicine/primary care is secondary to lack of knowledge of EDs, awareness of EDs, or not screening for disordered eating behaviors.

In addition, several professionals working in nutrition/dietetics were recruited from the Ellyn Satter Institute, an organization that focuses heavily on eating competence and disordered eating⁶⁶; this may have contributed to the higher average experience level working with patients with eating disorders reported by those in nutrition/dietetics. Experts have previously agreed that dietitians should be the first line of defense in treating patients suffering from EDs, as they are more well-equipped to diagnose and treat them.¹ This aligns with the qualitative finding that professionals working in nutrition/dietetics had more frequent and intimate experiences working with patients with EDs, both in the inpatient and outpatient settings.

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

Knowledge of and Experiences with Orthorexia Nervosa

Brief, intensive education sessions can greatly increase professionals' knowledge on EDs, making them more likely to practice screening and prevention measures with patients and thus increase ED detection in the primary care setting.⁶⁹⁻⁷⁰ Several professionals in nutrition/dietetics reported attending a continuing medical education (CME) seminar or presentation on the topic that contributed to their current knowledge of ON. In contrast to previous research, statistical analysis revealed that the difference in confidence level of ON knowledge was not statistically significant between the three fields of work. However, qualitative analysis indicated that professionals working in nutrition/dietetics who attended a CME related to ON had more robust knowledge of the topic and more experiences working with patients with ON.

Furthermore, once given a description of ON, 75% of professionals in family medicine/primary care who had *not* heard of the condition prior to participation in the study (n = 4) confirmed they *had* seen patients who exhibited similar symptoms to ON. This aligns with the findings of a 2011 study that reported that although 10% of a sample of 111 psychologists, physicians, and other health care professionals did not know about ON, 66.7% had seen patients exhibiting similar symptoms in their practice.⁷¹

Findings indicated that professionals working in family medicine/primary care and nutrition/dietetics had patients and/or parents who expressed extreme anxiety and obsessions over perfecting their dietary regime and maintaining optimal physical health (e.g., severely limiting food intake to improve biometric laboratory results, hyperfocusing on the ingredients in

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

and/or the way food is prepared). Similarly, Moroze et al.²² suggested ON diagnostic criteria include the following:

- Obsessional preoccupation with eating “healthy foods”, focusing on concerns regarding the quality and composition of meals
- The obsessional preoccupation becomes impairing by either impairment of physical health owing to nutritional imbalances or severe distress or impairment of social, academic, or vocational functioning owing to obsessional thoughts and behaviors focusing on patient’s beliefs about “healthy” eating.²²

As a result of such behaviors, professionals reported identifying clinical signs including extreme weight loss, bradycardia, and tachypnea. In some instances, patients displaying orthorexic behaviors required hospitalization. Such signs are similar to that reported in a case study of a 28-year-old man with orthorexic tendencies that required inpatient treatment, who exhibited extreme weight loss and bradycardia in addition to malnutrition, testosterone deficiency, and disorganized and tangential thought processes.²²

Preventative/Diagnostic/Treatment Strategies for Addressing Orthorexia Nervosa

Professionals working in all fields of interest suggested that excessively researching diet and nutritional advice can exacerbate orthorexic tendencies. Social media platforms and influencers discussing topics including healthy living, body image, and fitness have previously been associated with inducing an obsession with healthy eating, particularly in individuals with a pre-existing susceptibility to disordered eating.⁷¹⁻⁷⁴ As a result, recommendations include patients and/or parents monitoring internet usage, providing more professional, nutrition education, and an industry-wide shift in the way health related messages are broadcast to vulnerable groups.¹⁴

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

In addition, professionals in nutrition/dietetics often suggested that providers take care to avoid recommending the limitation of certain foods and/or food groups and to be conscious of having conversations with patients that may be promoting orthorexic behaviors. Such ideas align with prior research that has suggested providers may have their own dietary practices and/or sentiments about food and nutrition that impact their ability to prevent, recognize, and treat patients suffering from EDs and in some instances may encourage disordered eating behaviors.^{5,22,75}

Common ON diagnostic strategies suggested by those in family medicine/primary care included referral to mental health services and conducting more routine screenings for abnormal dietary behavior. Other experts in nutrition/dietetics have made similar suggestions, emphasizing the usefulness of working with an interdisciplinary team, “whether that is a referral to a mental health professional, primary care physician, or a combination of such referrals.”¹

Literature on treatment strategies for ON is limited. However, Olanzapine, a medication traditionally used to encourage AN weight gain and lessen symptoms of anxiety and obsessive compulsive disorder, has been used successfully to treat ON.²² Using a combination of cognitive behavioral therapy and selective serotonin reuptake inhibitors has also been suggested.¹

Professionals in family medicine/primary care and nutrition/dietetics suggested some similar ON treatment strategies, including medications used for treating anxiety and group therapy and/or counseling sessions. In some cases, patients exhibiting orthorexic behaviors have experienced an increase in symptoms while undergoing treatment for EDs including AN and BN.⁷ This may be secondary to the notion that although some symptoms of ON overlap with that of other EDs,

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

there are distinct differences that make ON an individual condition requiring independent preventative, diagnostic, and treatment strategies.^{5,7,16,19}

The efficacy of the aforementioned treatments were not discussed or analyzed; they are merely suggestions made by professionals based on the characteristics of ON. Lack of ON treatment options and efficacy of current recommendations have been documented previously.⁷⁶ This highlights the lack of literature on the topic and emphasizes the importance of additional research being carried out on the topic.

Levels of Eating Competence and Orthorexic Behavior

On average, this sample of professionals were eating competent and not orthorexic. This finding may contradict other studies that have indicated health professionals are likely to display orthorexic behaviors.^{10,12,37-38} Furthermore, eating competence was associated with lower levels of ON (higher ORTO-15 scores) in this sample. Similarly, Rodgers et al.⁴¹ found that ON and eating competence were inversely related. However, that sample was college students and not experienced professionals.

5.2 Identified Gaps in the way Orthorexia Nervosa is Medically/Clinically Addressed

Lack of Awareness of and Education on ON

Lack of awareness and education on the topic of ON were commonly reported as gaps in the way ON is medically/clinically addressed by professionals in all fields of interest. Previous research has reported on the limited nutritional education in medical school curriculum; 71% of medical schools fail to meet the minimum 25 hours of nutrition education.⁵⁸ In addition, only 14% of 114 physicians surveyed in a 2015 study felt adequately trained to provide nutritional

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

counseling.⁶⁸ Scant reliable research exists on the topic of ON; this lack of available information on the topic, combined with a lack of general nutritional instruction in medical education, likely closely relates to the lack of knowledge and confidence that professionals in family medicine/primary care have on the topic.

In addition to lack of ON knowledge by professionals, the general public is unaware of the condition and that extensive online, social media research on the topic of food and nutrition may contribute to the manifestation of orthorexic tendencies.^{14,71-74,77} A professional in nutrition/dietetics stated, “[Orthorexia nervosa] is so woven into diet culture that people think we are supposed to be agitated and anxious about food.” Therefore, future research may be aimed at identifying the most appropriate ways to deliver nutritional education to patients, taking into consideration the influence that environment, including social media, may have on one’s health and well-being, and how to discern fact from opinion.

Lack of Diagnostic Criteria/Measurement Tools/Treatment Plans for ON

Historically, professionals and researchers have emphasized that the literature on ON remains scant and ungeneralizable,^{18,33,38,43,55,59,76-79} leaving healthcare providers with no reliable prevention, diagnostic, or treatment guidance for the condition. This study supports these findings; professionals in family medicine/primary care and nutrition/dietetics highlighted the lack of existing diagnostic criteria, measurement tools, and treatment options for ON. Several professionals suggested that there is likely a spectrum to ON, as is seen with other eating and psychological disorders; some patients may be exhibiting some minor orthorexic tendencies that do not impede on their everyday life enough to be considered pathological, while others may be so severely orthorexic that they experience extreme physical and psychological distress.

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

However, without any formal diagnostic criteria or measurement tools, it is impossible to know how to identify, diagnose, or treat such patients.

Finding Appropriate ways to Provide Nutritional/Health Advice

Simpson and Mazzeo⁷⁷ discuss that “Media messages and health professionals alike promote that an inability to follow a diet is indicative of a character defect...Thus, ON-related symptoms might be seen as admirable and indicative of considerable self-control.”^{77, p. 782}

Similarly, several professionals in nutrition/dietetics highlighted the harm that can result from providers suggesting the elimination of certain foods or food groups without consideration of the effect such advice may have on disordered eating. Healthcare professionals may have their own internal biases that influence their response to patients struggling with eating disorders, including ON. Therefore, it may be necessary for healthcare providers to determine how they can provide health advice and assist patients with improving their biomarkers while simultaneously being mindful of not encouraging disordered eating behaviors. This is closely related to the idea of maintaining a state of overall well-being, balancing both physical and psychological health.

5.3 Study Limitations

The generalizability of the results are impacted by factors including the sampling methodology, size and homogeneity of the study sample, and use of self-reported measures. A combination of purposive and snowball sampling techniques were used to gather study participants. Given both time constraints and difficulty obtaining responses to outreach efforts, this method led to the generation of a relatively small sample; this may be related to the lack of

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

statistical significance seen between professional domains in the level of experiences working with patients with eating disorders and confidence of ON knowledge. Additionally, professionals who had not previously heard of ON were not prompted to report level of confidence on the topic, likely impacting the results.

The sample consisted of American professionals who were primarily female and working in nutrition/dietetics. Many professionals in nutrition/dietetics were recruited from the Ellyn Satter Institute, an organization that places emphasis on eating disorders.⁶⁶ As a result, mean eating competence scores among professionals in nutrition/dietetics were higher than previously reported. In addition, only two psychologists were recruited, both of which did not specialize in EDs, and some of the professionals in family medicine/primary care were retired, likely influencing their knowledge and opinions on the topic. Limitations in sample size and breadth impact the external validity of these findings and application of the results to other healthcare professionals in these same three disciplines. Furthermore, the distribution of participants among the three fields of work was uneven, making it difficult to compare and generalize the information to other professionals in those respective fields.

Self-report questionnaires and Zoom interviews were used to determine level of eating competence and orthorexic behavior, level of experience working with patients with EDs, level of confidence in ON knowledge, and types of experiences working with patients with EDs and ON. As a result, responses may have been subject to self-report bias, impacting the results. Furthermore, data analysis revealed gaps in the information gathered. For example, professionals were not asked about the efficacy of the ON preventative, diagnostic, and treatment suggestions

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

reported. Additionally, the ORTO-15,⁴³ used to test for ON behavior, has not previously been tested for construct validity or test-retest reliability.

5.4 Study Strengths

This study had several strengths. Healthcare professional knowledge of ON was obtained from three specific disciplines– family medicine/primary care, nutrition/dietetics, and psychology. This makes the data more generalizable and representative of the complexity of patient care. Findings were interpreted using both qualitative and quantitative data analytical methods. By using a combination of self-report surveys and interviewing, contradictions between quantitative and qualitative data can be more easily identified. For example, the difference in level of experience working with patients with EDs and confidence in ON knowledge was not significantly different based on professional domain in the quantitative analysis. However, qualitative data from open-ended interview questions indicated a clear difference in the level of knowledge various professionals had of ON across the three fields of interest; professionals working in nutrition/dietetics showed a more clear and thorough understanding of the condition. Also, instruments to collect quantitative data (e.g., ecSI 2.0TM and ORTO-15) were either validated⁶⁰ or previously tested.⁴³

Finally, the study benefited from the overall approach of being an exploratory study without bias or intent to test an expected outcome or hypothesis. Findings from this exploration facilitate hypothesis testing in future research about professional education of ON.

5.5 Conclusions

Despite being identified over two decades ago, little is known about orthorexia nervosa. Debate continues surrounding if ON should be considered a disorder separate from existing eating and psychological disorders and whether the condition should be included as a diagnosis in the future editions of the *Diagnostic and Statistical Manual of Mental Disorders*. Findings confirmed that although many professionals in family medicine/primary care may be ignorant to ON as a condition, it is not uncommon for them to see patients displaying orthorexic behaviors. This highlights the concern that patients suffering from ON may be frequently going untreated.

Professionals who had previously heard of and worked with patients with ON unanimously agree that having diagnostic criteria and treatment regimens available for the condition is essential to provide their patients with the treatment and resources they need. Existing ON diagnostic and measurement tools lack both internal and external validity, and much research on the topic has been aimed at modifying existing, inaccurate tools. Therefore, it may be beneficial for future research efforts to prioritize generating *new* measures to diagnose the condition based on past literature *and* stakeholder opinions to speed translation into the clinical setting. This includes both professionals who have worked directly with the condition and patients who have experienced it. In addition, the efficacy of ON treatment methods must be studied in samples with diverse demographic backgrounds.

Furthermore, 100% of those who had little knowledge of ON prior to participation in the study agreed that the Zoom interview was enough to change their concept of ON. This finding, along with other research that has recognized the benefits of brief continuing medical education

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

on EDs, may suggest that future efforts also be aimed at identifying the most efficient and effective methods of delivering ON education to clinicians.

Although research done on ON thus far has done little to advance understanding of the condition, the majority of professionals in all fields of interest agreed that awareness of the condition in healthcare is important. A professional in nutrition/dietetics stated, “I believe for a long time binge eating disorder wasn’t even a diagnosis, so it’s possible that that can change as well for orthorexia.”

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

Appendix A: Recruitment Emails

Email to Organization Heads/Subjects

Hello!

My name is Olivia Garror and I am completing a masters thesis about how health care professionals respond to a specific eating behavior. This study consists of two short surveys and an interview using Zoom. I am hoping you can share this email with healthcare professionals in your organization or network. If you want more information, feel free to contact me before sharing this email with others. My contact information is: phone ***-***-**** and email is *****@rit.edu.

Persons interested in learning more can use this link to read the consent form and complete the first survey.

I appreciate your time in helping with this project that will ultimately help healthcare related to eating behavior.

Warm regards,

Olivia Garror

Study Advertisement for Facebook

How do healthcare professionals respond to eating behaviors of patients? We all know this is a complex topic. As a result, it is an area of research for the purpose of informing professional practice guidelines. We want your voice in this discussion. You can do so by being in a study that includes completing 2 really short surveys and participating in a zoom discussion with the researcher who is at the Rochester Institute of Technology in Rochester, NY. If interested, you can [use this link](#) to contribute to the discussion. To get more information to decide about your participation, please contact Olivia at ***-***-**** or email *****@g.rit.edu. Your time and expertise are very much appreciated and will ultimately inform healthcare practices related to eating behavior.

Email to Subjects (Doodle Poll)

Hello [enter name],

Thank you for your interest in this study and for completing the pre-interview survey. Below is a link to a doodle poll. Please select the date and time that is most convenient for completing the virtual interview.

Warm regards,

Olivia Garror

Email to Subjects (Post Interview)

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

[Enter participant name here],

Thank you for participating in the interview portion of this research study. I enjoyed our conversation and appreciate the time you took to be involved.

Below you will find a link to the final survey which is very short with only three questions. The questions relate to your thoughts and feelings about the interview topics.

Again, thank you for your time!

Olivia Garror

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

Appendix B: Instruments**Pre-Interview Survey**

<p>1. Does your professional activity involve one or more of the following?</p> <p><i>If the subject answers “none of the above”, they will be prompted with the following statement:</i></p> <p><i>We are sorry, but based on your selected practice area we regret that you are not eligible for this study. However, thank you for your interest!</i></p>	Family medicine/primary care
	Nutrition/dietetics
	Psychology
	None of the above
Informed Consent Form Presented Here	
2. First name	
3. Last name	
4. What are the best ways to contact you? Enter all that apply.	Phone _____
	Email _____
5. Below are statements about your eating. Think about each one, then choose the best response for you. (ecI2.0™)	
	Always Often Sometimes Rarely Never
I am relaxed about eating.	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
I am comfortable about eating enough.	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
I have regular meals.	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
I feel it is okay to eat food that I like.	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
I experiment with new food and learn to like it.	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
If the situation demands, I can “make do” by eating food I don't much care for.	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
I eat a wide variety of foods.	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
I am comfortable with my enjoyment of food and eating.	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

	Always	Often	Sometimes	Rarely	Never
I trust myself to eat enough for me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I eat as much as I am hungry for.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tune in to food and pay attention to eating.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I make time to eat.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I eat until I feel satisfied.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I enjoy food and eating.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider what is good for me when I eat.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I plan for feeding myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. Review the statements and choose the best response for you. (ORTO-15)

	Always	Often	Sometimes	Never
When eating, do you pay attention to the calories of the food?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When you go in a food shop do you feel confused?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
In the last 3 months, did the thought of food worry you?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are your eating choices conditioned by your worry about your health status?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Is the taste of food more important than the quality when you evaluate food?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Are you willing to spend more money to have healthier food?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Does the thought about food worry you for more than three hours a day?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you allow yourself any eating transgressions?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

	Always	Often	Sometimes	Never
Do you think your mood affects your eating behavior?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you think that the conviction to eat only healthy food increases self-esteem?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you think that eating healthy food changes your life-style (frequency of eating out, friends, ...)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you think that consuming healthy food may improve your appearance?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you feel guilty when transgressing?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you think that on the market there is also unhealthy food?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
At present, are you alone when having meals?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. What are your professional credentials?				
8. Where do you currently work? Consider your employer <i>and</i> employment setting.				
9. In which state(s) do you currently practice?				
10. How long have you been practicing in your current line of work?				
11. How long have you been practicing in your current line of work?	0-5 years			
	6-10 years			
	11-15 years			
	16-20 years			
	20+ years			
12. What is the gender with which you identify?	Male			
	Female			
	Non-binary/third gender			
	Prefer not to say			
13. What days are best for contacting you?				

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

Interview Guide

1. First name	
2. Last name	
3. Email address	
<p>4. On a scale of 1-5, how much experience do you have working with people with eating disorders?</p> <p><i>If the subject's choice is less than or equal to 2, skip to question 5.</i></p> <p><i>If the subject's choice is greater than 2, skip to question 6.</i></p>	1 - None at all
	2 - A little
	3 - A moderate amount
	4 - A lot
	5 - A great deal
<p>5. You indicated that you have limited/no experience with people with eating disorders; I am interested in the experience that you do have and/or what you do know about eating disorders.</p> <p><i>Skip to question 8.</i></p>	
6. What disorders have you/do you encounter in practice?	
7. You indicated you have experiences working with people with eating disorders. Please describe these experiences.	
<p>8. Have you heard of the term "orthorexia nervosa"?</p> <p><i>If the subject says "no", skip to question 9.</i></p> <p><i>If the subject says "yes", skip to question</i></p>	
<p>9. You indicated that you have not heard of orthorexia nervosa. That is not unusual. Orthorexia nervosa is a novel eating disorder that is characterized by an obsessive, preoccupation with practicing a specific diet that the individual deems "healthy" or "pure".</p> <p>Have you ever had a patient with a similar clinical presentation?</p> <p><i>If the subject says "yes", skip to question 13.</i></p> <p><i>If the subject says "no" or "not sure", skip to question 20.</i></p>	
10. On a scale of 1-7 (1 = very unconfident, 7 = very confident), how confident are you of your knowledge on orthorexia nervosa?	
11. You indicated having some knowledge of orthorexia nervosa; please describe what you know about the disorder.	
12. Have you had any professional experiences with orthorexia nervosa?	

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

<p><i>If the subject says “yes”, skip to question 13.</i></p> <p><i>If the subject says “no” or “not sure”, skip to question 18.</i></p>
13. What types of experiences were they and how did you handle them?
14. What signs/symptoms did you notice?
15. Did the patient express concerns regarding their behavior? Please explain.
16. What preventative, diagnostic, and treatment strategies do you suggest using for persons with orthorexia nervosa?
17. Where did you learn about orthorexia nervosa?
18. I previously asked you if you had professional experience with orthorexia nervosa; now I am interested in learning if you have had any personal experiences with orthorexia nervosa?
19. In your opinion, are there any gaps in the way that orthorexia nervosa is medically/clinically addressed? Please describe.
20. Are there any other comments about this topic that you want to make before we end the interview?

Post-Interview Survey

1. First name	
2. Last name	
3. Email address	
4. How much do you agree with the following statement? My concept of orthorexia nervosa has changed as a result of the zoom interview discussion with Olivia Garror.	Strongly agree
	Agree
	Somewhat agree
	Neither agree nor disagree
	Somewhat disagree
	Disagree
	Strongly disagree
5. How much do you agree with the following statement? Awareness of orthorexia nervosa in health care is important.	Strongly agree
	Agree
	Somewhat agree

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

	Neither agree nor disagree
	Somewhat disagree
	Disagree
	Strongly disagree
6. Please provide any additional comments, questions, or ideas about orthorexia nervosa and/or the interview experience in the space below.	
7. Are you okay with being contacted if we have questions or need clarification on any interview responses?	
8. Would you like your email to be entered in the drawing for a \$75.00 gift card?	Yes
	No

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

Appendix C: Dedoose Coding System

Theme	Parent Code	Child Codes
Demographic information	Professional Domain	Family Medicine/Primary Care
		Nutrition/Dietetics
		Psychology
	Duration of career	0-5 years
		6-10 years
		11-15 years
		16-20 years
		20+ years
	Gender	Male
		Female
Non-binary/third gender		
Experiences working with patients with eating disorders	Professional experience working with patients with eating disorders	None at all (1)
		A little (2)
		A moderate amount (3)
		A lot (4)
		A great deal (5)
	Limited experiences working with patients with eating disorders	
	Disorders encountered in practice	Anorexia nervosa
Bulimia nervosa		

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

		Binge eating disorder	
		Pica	
		Rumination	
		Avoidant/restrictive food intake disorder	
		Orthorexia nervosa	
		Other	
	Description of professional experiences working with patients with eating disorders	Had patients with eating disorders and treated them directly	
		Referred patients out to other professionals	Therapist/Psychologist
			Nutritionist/Dietitian
			Other
		Inpatient	
		Outpatient	
		Other	
Experiences with Orthorexia Nervosa	Heard term "orthorexia nervosa"	Yes	
		No	
	Have not heard of orthorexia nervosa	Had patients with similar clinical presentation	
		Did not have patients with similar clinical presentation	
		Unsure if had patients with similar clinical presentation	
	Confidence in orthorexia nervosa knowledge	Very unconfident (1)	
		2	
		3	
		4	

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

		5	
		6	
		Very confident (7)	
	Had knowledge of orthorexia nervosa	Description of orthorexia nervosa knowledge	
	Professional experiences with orthorexia nervosa	Yes	Inpatient
			Outpatient
			Directly treated
			Referred out
			Sign/symptoms noticed
		No	
		Unsure	
	Patient with orthorexia nervosa expressed concerns regarding their behavior	Yes	
		No	
	Preventative/Diagnostic/Treatment Strategies for orthorexia nervosa	More education for professionals	
		Similar treatment to other eating disorders	
		Referral to other professionals	
		Inpatient	
		Outpatient	
		Counseling	
		Other	
	Source of orthorexia nervosa knowledge	Undergraduate education	
		Graduate education	

ORTHOREXIA NERVOSA: A MULTIDISCIPLINARY ANALYSIS

		Professional continuing education	
		Peer reviewed research	
		Online articles	
		Social media	
		Other	
	Personal experiences with orthorexia nervosa	Yes	Themselves
			Friend/loved one
			Coworker/colleague
			Other
		No	
		Unsure	
	Gaps in the way orthorexia nervosa is medically/clinically addressed	Yes	Lack of education
			Lack of awareness
			Not in DSM-V/no criteria
			Encouragement of related behaviors
Other			
No			
Unsure			
Miscellaneous	Other comments		
	Direct Quotations		

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