

Summary

The Relationship Between Orthorexia Nervosa (ON) and Social Media Use: A Systematic Review

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A physician called Steven Bratman (1997) devised the term Orthorexia Nervosa (ON). The Latin terms “orthos” and “oreksis” were combined to form the term orthorexia. While “orthos” implies “correct, complete, and appropriate,” “oreksis” indicates “hunger and appetite.” As a result, orthorexia is characterized as a desire for nutritious food (Orthos) (Bratman, 2000).

People with orthorexia nervosa place great importance on diet to improve their health and/or to prevent or treat an existing condition (Bratman and Knight, 2000). Food quality and the benefits of a “clean” diet are critical for people with ON (Bóna, Forgács, & Try, 2018). It is suggested that ON develops in two distinct stages. The first stage is characterised by curiosity about food and health, the second by growing obsession with these food. (Douma, Valente, & Syurina, 2021).

Until now, ON has not been classified as a diagnosis in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) (American Psychiatric Association, 2013), despite the fact that a number of diagnostic criteria for ON have been suggested (Cena et al., 2019; Dunn and Bratman, 2013; Moroze, Dunn, Holland, Yager, & Weintraub, 2015; Dunn, Gibbs, Whitney, & Starosta, 2017). While there are some differences between the criteria, generally they mostly focus on obsessive behaviour towards eating food that is considered natural or healthy. However, the suggested criteria also include mental preoccupation/compulsive behaviour related to unhealthy food and experiencing fear and emotional distress about the health effects of these foods. Furthermore, it's stressed that worries about eating healthy must manifest as negative consequences in some manner (e.g., socially, physically, emotionally, or financially)

(Cheshire, Berry, & Fixsen, 2020). On the other hand, ON is classified differently from other eating disorders, while not being recognized in formal diagnostic systems as of yet. In eating disorders like bulimia nervosa and anorexia nervosa, food consumption plays a major role. Conversely, those who suffer from orthorexia ner-

vosa focus more on the naturalness, purity, and substance of their meals. To put it another way, orthorexia nervosa is characterized by an ongoing concern with food quality, whereas anorexia nervosa and bulimia nervosa are primarily concerned with food consumption. However, individuals with these diseases place an extreme amount of emphasis on their eating habits (Donini, Marsili, Graziani, Imbriale, & Cannella, 2005). Additionally, several researchers have pointed out the similarities between ON and obsessive-compulsive disorder. According to Cena et al. (2019), both diseases have characteristics that include perfectionism, obsessive-compulsive behaviors and social isolation.

The question of whether orthorexia nervosa belongs in the category of eating disorders, whether it is a subtype of OCD, or if it should be treated as a distinct disorder is still up for debate (Brytek-Matera, 2012; Dunn & Bratman, 2016). According to some researchers, ON could be a distinct type of eating disorder (Brytek-Matera, 2012). Others have stated that it needs to be investigated individually or as a subclass of obsessive-compulsive disorders (OCD) (Brytek-Matera, 2012; Costa, Hardan-Khalil, & Gibbs 2017; Mathieu, 2005). To put it briefly, diagnostic category of ON will be included in a controversial manner. ON is linked to a number of negative outcomes.

Due to the fact that people with ON frequently abide by strict diets, they may lose weight to the extent of becoming malnourished (Koven & Abry, 2015). The fixation with eating healthily might also have an impact on psychological well-being. According to Brytek-Matera et al. (2015), people with ON think about food more than other people and spend an inordinate amount of time preparing and contemplating their next meal. Obsessive and compulsive eating behaviors linked to ON can have a negative impact on social interactions and increase the risk of interpersonal disputes or social isolation (Dunn, Gibbs, Whitney, & Starosta, 2017; Varga, Dukay-Szabó, Túry, & van Furth Eric, 2013). Furthermore, peop-

le could experience guilt if they don't follow their diet (Bratman, 2017). Consequently, ON has a profound effect on several aspects of a person's life.

Multiple psychological variables may have a role in the development of ON. Perfectionism, dieting, the drive for thinness, anxiety, fear of losing control, the perception of being vulnerable to illness, and problems with emotion regulation are a few of these (McComb & Mills, 2019; Vuillier, Robertson, & Greville-Harris, 2020). Furthermore, it is emphasized that sociocultural factors like social media and the Internet can play a crucial role in the development of ON (Turner & Lefevre, 2017).

Social media is one of the sources where the emphasis is on nutrition, sport and healthy lifestyles (Turner & Lefevre, 2017). Recently, the emphasis on healthy eating, especially with the aid of social media, and the increase in content produced for this purpose, has been remarkable. Therefore, it is stated that social media may have significant effects on the development of eating disorders. In this context, this study aims to systematically review the studies on the relationship between social media and ON. It is estimated that the use of social media, which is a factor thought to be effective in the development of ON, will help to understand ON and may be a guide in diagnosis and treatment.

Method

This systematic review was conducted according to the PRISMA guidelines (Liberati et al., 2009). Studies were identified by scanning PubMed, Sage Journals, Wiley Online Library and Science Direct databases. Studies were identified using the following keywords: "orthorexia", "orthorexia nervosa", "pathologically healthy eating" and "social media". Quantitative and mixed design studies on the relationship between ON and social media use were included in the review. Theses, reviews, case studies, oral presentations, books and studies conducted with children or adolescent groups were excluded. Studies whose full text could not be accessed were not included in the review. After research and text skimming, studies meeting the inclusion criteria were examined in terms of sample characteristics, study design, orthorexia nervosa measurement tools and study results.

Eleven articles were included in this review. Studies were conducted between 2017 and 2023. Of the included studies, the sample size varied ranging from 96 (Zemlyanskaya et al., 2022) to 4,107 (Tarsitano et al., 2022) participants. Most studies examined both males and females. One study examining only female (Turner & Lefevre, 2017) and one study examining only male (Karniej et al., 2023). Although there are no studies conducted with clinical samples in the reviewed studies, the

sample includes different groups (e.g. gay men, university students, nursing and medical students, health professionals working with eating disorders). Most studies examined links between orthorexia nervosa and social media among young people.

Most studies used cross-sectional study design. Three studies (Valente et al., 2021; Douma et al., 2021; Zemlyanskaya et al., 2022) used a mixed methods design. In one study, exploratory study design (Karniej, et al., 2023) was used.

Results

The main purpose of most studies included in this research is to investigate the relationship between ON and the use social media. The included studies used different tools to assess orthorexia nervosa. These included the ORTO-11 (Hamurcu & Yılmaz, 2023; Asil et al., 2023), ORTO-15 (Yılmazel, 2021; Turner & Lefevre, 2017; Karniej et al., 2020), Italian-Dusseldorf Orthorexia Scale (I-DOS) (Tarsitano et al., 2022), Teruel Orthorexia Scale (TOS) (Awad et al., 2022). Studies have focused on different samples such as gay men, university students, nursing and medical students, health professionals working with eating disorders. The analyzed studies included different social media tools such as Facebook, Instagram, Twitter, LinkedIn, Tik Tok. In one study, an application for finding a partner (Grindr) was also included (Karniej et al., 2023).

The results indicate that social media usage and ON were related. Among social media platforms, Instagram was evaluated as the most effective, most popular and most preferred platform (Tarsitano et al., 2022; Valente et al., 2021; Zemlyanskaya et al., 2022). Studies have shown that especially Instagram usage is associated with ON (Tarsitano et al., 2022; Zemlyanskaya et al., 2022). The image-focused nature of Instagram has been suggested to have an impact on these results (Turner and Lefevre, 2017). Also, it is suggested that Instagram has the potential to both trigger the onset of ON and promote recovery. In other words, it is divulged that Instagram may have a dual effect (Tarsitano et al., 2022). Of the 11 studies examined only one identified a weak association between social media and ON. In this study, twitter usage has a small positive association with orthorexic symptoms (Tarsitano et al., 2022). Studies have also focused on the content of web pages, the purpose and effects of posts. These studies indicate that augmenting social media usage in particular web pages that include diet food, nutrition and health recommendations may increase the tendency towards ON (Asil, Yılmaz, Ayyıldız, & Yalçın, 2023; Scheiber, Diehl, & Karmasin, 2023).

In the studies the relationship between demographic

variables and ON was examined. It has been determined that participants with ON tendency or participants who post about ON on Instagram are mostly female participants. Most of the studies also evaluated age and body mass index. In some studies, it was found that both the average age and body mass index of those with ON tendency were significantly higher than those without ON tendency (Asil, Yılmaz, Ayyıldız, & Yalçın, 2023; Karniej et al., 2023). However, some studies have found that body mass index and age are not associated with ON symptoms (Turner & Lefevre, 2017; Yılmazel, 2021).

Studies have been conducted in different countries such as Italy, Canada, USA, Russia and also with different groups such as medical and nursing students and gay men. Even though there are studies conducted in different countries and different samples, the results revealed that social media was associated with ON. In conclusion, the results of this review reveal that there is a strong relationship between social media and orthorexia nervosa. Therefore, it can be said that social media is a socio-cultural factor that may increase one's tendency towards having orthorexia nervosa. In addition, the findings of the analysed studies are summarised in Table 2.

Discussion

In this study the relationship between orthorexia nervosa and social media usage was investigated. The studies included in this systematic review indicate that social media usage is associated with ON. Factors such as widespread use of social media, easy access to information, and unrealistic advice from social media celebrities are associated with an increase in tendency towards ON (Hamurcu, 2023). However, there are also studies that state that the use of social media can help in coping with ON (Valente, Renckens, Bunders-Aelen, & Syurina, 2021; Zemlyanskaya, Valente, & Syurina, 2022). Therefore, considering the results of the studies included in the current review, it can be said that social media usage has a dual influence on ON.

The strengths of this study include the use of the PRISMA protocol. A contribution of the current review is its investigation of the relationship between orthorexia nervosa and social media in multiple populations. This review contributes to the literature on ON and its causes and in addition may be a guide for diagnosis and treatment.

One limitation is that the included studies were mostly cross-sectional study design, therefore longitudinal studies need to be conducted in future studies. The fact that gender is not equally represented in the analysed studies and the use of self-report instruments is also a limitation. Another limitation is that the included studies

are all from Western nations. In other words, the English and Turkish language barrier set by the authors are also an important limitation of this study. Therefore, the relationships between orthorexia nervosa and social media may not be generalizable to non-Western cultures. In light of these limitations, we suggest that further research to be conducted on non-Western countries to get more generalizable and credible results.

Table 2: Findings

Study	Sample Size	Gender	Aim	Design	Social Media Tool(s)	Outcome measure(s)	Findings/Results
Awad et al. (2022)	368	224 females 139 male	To examine the relationship between Social Media Use Disorder (SMUD) and ON and to evaluate the indirect effect of loneliness on this relationship.	Cross-sectional	Instagram, Facebook, Twitter etc.	Teruel Orthorexia Scale (TOS) de Jong Gierveld Loneliness Scale Social Media Disorder Scale (SMD)	It was found that social media use disorder was associated with ON and that this relationship was mediated by loneliness. Spending more time on social media was associated with ON.
Scheiber et al. (2023)	647	353 females 290 male 4 others	Testing the model created for the effect of social media on body image problems and orthorexic eating tendencies.	Cross-sectional	-	Eating Disorder Inventory (EDI-2) Dusseldorf Orthorexia Scale (DOS) SATAQ 4R (sociocultural attitudes towards appearance questionnaire)	Individuals who showed more interest in health and fitness topics on social media showed higher ON tendencies compared to those who showed less interest in such content. Individuals who participated more in health and fitness accounts on social media also idealized more thinness and internalized being muscular, which contributed to their higher tendency to ON.
Hamurcu and Yilmaz (2023)	339	286 females 53 male	Examining the relationship between ON and social media use in nursing students.	Cross-sectional and descriptive	Twitter, Facebook, Pinterest, Snapchat, Instagram, Youtube etc.	Social Media Use Integration Scale (SMUIS) ORTO-11	It has been found that the ON tendency increases as the duration of social media usage increases. There was no difference in ON tendency depending on the type of social media tool used.
Yilmazel (2021)	969	619 females 350 male	To determine the relationship between ON tendency and social media addiction.	Cross-sectional	-	ORTO-15 Sosyal Medya Bağımlılığı Ölçeği	It has been found that as the level of social media addiction increases, the ON tendency increases.
Valente et al. (2021)	In the survey part: 185 participants Interview part: 9 participants	Survey part: 177 females 8 male Interview part: 9 females	To learn about the development of ON, risk factors, symptoms and recovery, and to compare people with and without self-diagnosis of ON.	Sequential explanatory mixed methods	Instagram	Semi-structured interview and survey study	It has been found that social media has two different effects on ON: positive and negative. Accordingly, social media has been found effective in the development and maintenance of ON, and it has been stated that social media helps individuals become aware of their problems and helps them cope with ON.

Douma et al. (2021)	In the survey section: 101 participants Interview part: 10 participants	Survey part: 97 females 4 male Interview part: 8 females 2 male	Learning about the etiology of ON	Exploratory mixed methods	-	Semi- structured interview and online survey study	Social media use has been found to be a risk factor for ON.
Asil ve et al. (2023)	2.526	1830 females 696 male	To evaluate the ON tendencies of social media users and the factors affecting these tendencies.	Cross-sectional	Instagram, Facebook, WhatsApp, Twitter	ORTO-11 Sosyal Medya ve Yeme Davranış Ölçeği (SMEB) Ulusal Araştırma Fiziksel Aktivite Anketi Kısa Formu (IPAQ)	It has been found that social media use, especially including web pages related to health and nutrition advice, can increase the ON tendency. Tendency towards ON has been found to be associated with increasing body mass index, age and being female
Turner and Lefevre (2017)	680	680 females	To investigate links between social media use and ON symptoms.	Cross-sectional	Instagram, Facebook, Twitter, Pinterest, Google+, Tumblr ve LinkedIn	ORTO-15	Results show that the healthy eating community on Instagram has a high prevalence of ON symptoms and that higher Instagram use is linked to increased symptoms. Instagram and Twitter were slightly associated with ON, other social media tools were not associated with ON.
Tarsitano et al. (2022)	4.107	3.916 females 154 male 37 others	To investigate the relationship between social media use and ON risk.	Cross-sectional	Instagram Tik Tok Facebook Twitter LinkedIn Snapchat	Italian Dusseldorf orthorexia scale (I-DOS)	Participants who used social media more were found to have a higher prevalence of ON than those who used less. The prevalence of ON among participants who reported using social media for more than 60 minutes per day was found to be higher than those who used social media for less than 15 minutes per day.
Karniej, et. al.(2023)	394	394 male	To determine the relationship between gay men's social media use, dating app use and other variables with ON.	Exploratory	Instagram	ORTO-15	The most important predictors of ON in gay men were found to be low body mass index and Grindr (partner finding application) use. It was found that the use of Instagram reduces the risk of ON by 52.1% and the use of the Grindr application increases this risk more than 5 times.
Zemlyanskaya et.al. (2022)	Survey part: 96 participants Interview part: 5 participants	Survey part: 89 females 7 male Interview part: 5 females	Explaining who shared ON-related posts, why, and its impact.	Mixed	Instagram	EAT-26 (Eating Attitudes Test) Survey and interview	Instagram has been found to have a dual effect. It has the potential to both increase the onset of ON and direct it to recovery.