ORIGINAL RESEARCH

The Mediating Role of Attitudes Towards Eating in the Relationship Between Compulsive Instagram Use and Orthorexia in Adults

Gonca Ayse Unal [1], Ufuk Kocatepe Avcı [2]

[1]Clinic of Psychiatry, Mersin Sehir Egitim ve Arastirma Hastanesi, Toroslar, Mersin, Turkey; [2]Department of Psychology, Çağ University, Toroslar, Mersin, Turkey

Correspondence: Gonca Ayse Unal, Mersin Sehir Egitim ve Arastirma Hastanesi, Psychiatry Clinic, Korukent District, 96015 Street, Toroslar, Mersin, 33240, Turkey, Tel +90 3243251000, Fax +903242251010/11, Email goncaunal33@gmail.com

Purpose: The purpose of this study is to examine the relationship between compulsive use of social media and orthorexia, with a focus on the mediating role of eating attitudes.

Patients and Methods: The study involved 255 participants between the ages of 18–65 who did not have any psychiatric disorders or developmental disabilities. The participants completed a Sociodemographic Information Form, Orthorexia Nervosa Inventory, Social Media Addiction Scale, and Eating Attitudes Test.

Results: The results showed a positive correlation between orthorexia and all other scales and sub-scales. Multiple regression analyses revealed that eating attitudes were a significant predictor of all sub-dimensions of orthorexia. Additionally, the sub-dimension of Conflict on the Social Media Addiction Scale was found to predict the Impairments sub-dimension of orthorexia. Further analysis using the PROCESS macro showed that compulsive use of social media not only directly predicted orthorexia, but also indirectly through eating attitudes.

Conclusion: These findings emphasize the importance of addressing both compulsive use of social media and eating attitudes when working with individuals who exhibit orthorexic symptoms in clinical settings.

Keywords: eating attitude, Instagram, orthorexia, compulsive use of social media, adult

Introduction

It has been reported that there are over 4.5 billion internet users worldwide, with more than 3.8 billion of them using social media. On average, internet users spend 6.72 hours online each day, which accounts for more than 40% of their waking hours when considering 8 hours of sleep.[1] However, the amount of time spent online varies from country to country. For instance, the average daily internet usage in the Philippines is 585 minutes, while in Japan it is 262 minutes.[1]

Instagram, a social network that has been in use since 2010, is used by approximately 53% of young adults in America who have internet access.[2] Moreover, in the study conducted by Valente et al[3] it was found that the majority of participants (96.2%) used Instagram as their primary social media platform. Another study examining participants' social media preferences also reported Instagram as the most commonly used and received platform for news.[4] The Instagram platform allows users to post photos or videos, add captions and hashtags to identify their content, and tag other users. Users can follow as many accounts as they wish and engage with posts by liking or commenting on them. Additionally, Instagram suggests new accounts for users to follow based on their current interests.[5] Motivations for using Instagram have been identified as surveillance, documentation, and creativity. When it comes to sharing food images on Instagram, these motivations are fulfilled through documenting and showcasing one's own creations, searching for recipes and inspiration, and keeping an eye on what others are eating.[6,7] Due to its visual nature, Instagram may influence users to follow recommendations or imitate the diets of popular Instagram celebrities.[8]

The sharing of content related to health and healthy living is increasing day by day on various social media platforms such as YouTube, Facebook, and Instagram.[9] Research has shown that social media content can potentially influence individuals' food choices.[10] Additionally, searching for information online about healthy lifestyle behaviors has a positive impact on individuals' physical activity and diet.[9] However, while these platforms offer many benefits, they also have significant downsides. There is growing concerns that social media may contribute to the development of eating disorders,[11] and have a negative impact on eating attitudes.[12] An individual's thoughts, feelings, and behaviors related to eating and nutrition are referred to as eating attitude.[13] Eating attitude is influenced by not only biological and physiological factors, but also by psychological and social variables.[14] These factors can lead to excessive preoccupation with one's body and impairments in eating attitudes.[14] The term "impaired eating attitude" is used to describe the progression towards disordered eating behaviors.[15] Eating disorders have both physical and psychological dimensions, characterized by physical symptoms such as weight loss or gain, and psychological symptoms such as distorted body image and low self-esteem.[16] According to the American Psychological Association (APA) in 2013, the diagnostic group for eating disorders is now referred to as "Nutrition and Eating Disorders".[17] The diagnostic criteria for eating disorders include Anorexia Nervosa (AN), Bulimia Nervosa (BN), Binge Eating Disorder (BED), Other Specified Feeding and Eating Disorder (OSFED), Pica, Rumination Disorder, Avoidant/Restrictive Food Intake Disorder (ARFID), Unspecified Feeding or Eating Disorder (UFED), and Other (such as Muscle Dysmorphia and Orthorexia Nervosa (ON).[17]

The term orthorexia nervosa, first defined by Bratman, is characterized by an unhealthy obsession with consuming only "pure" and "healthy" foods.[18] Although it has been studied without a common definition, in a study conducted in 2022, numerous studies on orthorexia from around the world were reviewed, and an effort was made to establish a common definition and criteria.[19] This disorder is characterized by a strict focus on consuming foods that are free of herbicides, pesticides, or artificial substances,[20,21] and marked by an intense focus on one's eating habits, accompanied by self-imposed, rigid rules that are strictly followed such as spending an excessive amount of time on activities such as planning, acquiring, preparing, and consuming food.[19] While it shares similarities with other eating disorders, the focus in ON is on consuming "pure" foods rather than weight loss. This obsession can lead to excessive mental and behavioral efforts, similar to those seen in obsessive-compulsive disorder, but focused solely on the quality of food consumed.[22,23] People with ON may experience intense guilt when deviating from their strict diets.[24] Research has shown that ON may be influenced by impaired eating attitudes and obsessive-compulsive tendencies.[25] However, ON has not yet been recognized as a separate diagnostic category in the Diagnostic and Statistical Manual of Mental Disorders-5.[17] One possible reason for the development of ON is the constant presence of healthy eating and living content on social media, which can contribute to the development of "healthy life addiction" and obsessive behaviors.[26] Given the possible negative impact of social media on mental health, the influence of Instagram on food sharing and negative social comparisons, and the popularity of healthy diet movements on this platform, there may be a positive relationship between ON and excessive social media use.[27] Furthermore, individuals with ON may restrict their diet to the point of malnutrition and weight loss, similar to those with anorexia nervosa.[23]

Recently, there has been a trend among young adults to rely on social media as a source of information due to its accessibility and appeal.[28] However, this excessive and compulsive use of social media has been identified as a new form of behavioral addiction.[29] Compulsive use of social media is characterized by an uncontrollable urge to engage with it and excessive usage.[30] Previous studies have shown a link between excessive social media use and mental health issues such as depression, anxiety, and low self-esteem.[31–34] One study was found that Instagram had the most impact on symptoms related to orthorexia nervosa (ON).[27] Additionally, spending more time on any social media platform has been linked to higher rates of eating disorder symptoms.[35] However, it is still unclear whether overall social media usage, specific platforms, or specific content viewed are predictors of ON.

Instagram, with its high usage rates, offers more photos than other social media platforms. Moreover, the explore section allows users to easily browse pages that they do not follow. Instagram, in particular, is filled with posts and advertisements promoting healthy nutrition and diets, leading to increased exposure to this type of content. Due to its popularity among the healthy eating community, Instagram is the most thoroughly studied social media platform in ON.[27] Given the potential negative impact of excessive social media use on eating attitudes,[12,36] and the association between Instagram use and orthorexia nervosa symptoms,[27] the main hypothesis of this study is that compulsive use of social

media may contribute to impaired eating attitudes and predict orthorexia nervosa symptoms. Therefore, it is crucial to identify the relationships between compulsive use of social media, orthorexia nervosa, and eating attitudes in individuals in order to develop prevention and assistance programs. The main purpose of this study is to examine the mediating role of eating attitudes in the link between compulsive use of social media and orthorexic symptoms.

Material and Methods
Participants
This study was conducted at a training and research hospital between June 2022 and May 2023. The study included hospital staff and patients who visited other polyclinics besides the psychiatry outpatient clinic during the same time period. A total of 300 individuals between the ages of 18 and 65 voluntarily participated in the study. The sample size was planned to be 300 people between the ages of 18–65, regardless of their demographic characteristics. Participants were required to be able to read and write in Turkish and have no developmental disabilities in order to understand and complete the self-report scales. Those with a diagnosed mental illness, developmental disability, inability to speak Turkish, or illiteracy were excluded from the study. Participants with a psychiatric disorder were also excluded as it could potentially affect the results. Additionally, 28 participants who did not use Instagram and 17 who did not complete the questionnaires were excluded, resulting in a final sample size of 255 individuals. It is generally recommended to have at least 15–20 participants for each variable in regression analyses, but this number can be reduced to 10 participants.[37,38] In this study, the sample size appears to be sufficient for regression analyses, but may not be enough for mediation analyses. To address this issue, the researchers utilize the bootstrap method, which is a powerful tool for testing mediation solutions, particularly in small samples.[39,40] One hundred twenty-seven women (49.8%) and 128 men (50.2%) participated in the study. The mean age was 32.41 (SD = 7.101). The average time spent by participants on social media usage was determined to be 9.08 hours (SD = 4.203). The descriptive statistics and results of the participants are given in Table 1.

Measurements
Participants were evaluated using Sociodemographic Information Form, Orthorexia Nervosa Inventory (ONI), Eating Attitudes Test, and Social Media Addiction Scale.

Sociodemographic Information Form
Sociodemographic information such as gender, age, marital status, education level, employment status and items questioning the Instagram usage status take place in this form created by the researchers.

Orthorexia Nervosa Inventory
The scale used in this study was designed as a self-report measure to assess emotions, behaviors, physical, and psychosocial impairments related to excessive focus on healthy eating.[41] It consists of 24 questions and is scored on a four-point Likert-type scale. Participants are asked to indicate the extent to which they agree with each statement, ranging from "not at all true" to "strongly true". The scale showed good fit with a three-factor solution both for maximum likelihood extraction and varimax rotation: Physical and Psychosocial Impairments (10 items, accounting for 44% of the variance), Behaviors and Preoccupation (9 items, accounting for 9% of the variance) and Emotional Distress (5 items,

Table 1 Descriptive Statistics of the Participants

	N	%		N	%
Sex			**Education**		
Female	127	49.8	Primary School	32	12.5
Male	128	50.2	High School	113	44.3
Marital Status			University	110	43.1
Single	133	52.2	**Children**		
Married	122	47.8	No	150	58.8
			Yes	105	41.2

accounting for 5% of the variance). The lowest possible score on the scale is 24, while the highest is 96. Higher scores indicate a greater presence of orthorexic symptoms. The overall scale demonstrated high internal consistency with a Cronbach's alpha value of 0.94, and the subscales showed good reliability with values ranging from 0.88 to 0.90.[41] The original scale and its subscales demonstrated significant positive correlations with the Eating Attitudes Test,[42] depression (measured using the 9 depression-related items from The Patient Health Questionnaire-9),[43] and obsessive-compulsive tendencies (measured using the Yale-Brown Obsessive Compulsive Scale).[44] Individuals diagnosed with anorexia nervosa, bulimia nervosa, binge eating disorder, and avoidant/restrictive food intake disorder reported significantly higher scores on the scale and all of its subscales compared to the control group.[41] A recent Turkish validity and reliability study also reported high internal consistency for the total scale (Cronbach's alpha = 0.91) and the subscales of Physical and Psychosocial Impairments (0.84), Behaviors and Preoccupation (0.82), and Emotional Distress (0.81) and it has been reported that the factor structure fits well with the structure of the original scale (RMSEA =0.08, CFI=0.94, NFI=0.93, SRMR=0.07, IFI=0.94, CMIN/df = 5.65).[45] The total scores of the Turkish version of the scale were found to have a positive correlation with the total scores of the Eating Attitudes Test and body mass index.[45] In the current study, the Cronbach's alpha coefficients for the total scale and subscales were 0.910, 0.831, 0.822, and 0.804, respectively.

Eating Attitudes Test

The scale developed by Garner and Garfinkel[42] is used a range of attitudes and behaviors related to eating disorders. The Cronbach's alpha value for this scale is 0.79. It has been reported that the original scale discriminates between anorectic and normal groups very well, and that the scale scores indicate emotional problems regardless of weight.[42] It was suggested that the scale had 7 factors,[42] but in a later study, it was reported that the scale was more suitable for the 3-factor structure (diet, bulimia, excessive preoccupation with food) and that the items belonging to these factors explained 40% of the variance.[46] This scale is commonly used to evaluate possible eating disorders in both normal individuals and high-risk populations, particularly for Anorexia Nervosa. It consists of 40 questions and is a 6-point Likert-type self-report scale. For questions 1, 18, 19, 23, 27, and 39, a "sometimes" answer is worth 1 point, a "rarely" answer is worth 2 points, and a "never" answer is worth 3 points. All other answers are evaluated as 0 points. The remaining options on the scale are scored as follows: 3 points for "always", 2 points for "very often", 1 point for "often", and 0 points for all other options. The total score is calculated by summing the scores from each question. A score of 30 or above is considered to be in the risk group for eating disorders, specifically Anorexia Nervosa. In 1989, Savaşır and Erol[47] determined the Turkish validity and reliability of the scale, finding a Cronbach's alpha value of 0.70. The Turkish adaptation study found that the scale demonstrated a 4-factor structure and was able to effectively differentiate between high-risk and normal groups.[47] Additionally, the total scores on the scale showed significant positive correlations with obsessive features.[47] In this study, the Cronbach's alpha was calculated as 0.772 and the scale was included in the analyzes by obtaining a single total score.

Social Media Addiction Scale

The Social Media Addiction Scale, designed by Tutgun-Ünal and Deniz,[48] is used to assess university students' compulsive use of social media. It consists of 41 items and is a 5-point Likert-type scale. Participants are asked to choose one of the following options: "never", "rarely", "sometimes", "often", or "always" to indicate the level at which they experience the described behavior. The validity values for the scale's content, construct, discriminant, and convergent validity demonstrate that it is a reliable measurement tool. The factor structure of the scale consists of four factors with Eigenvalue values of 1.5 and above: Occupation (accounting for 23.50% of the variance), Mood Modification (accounting for 17.08% of the variance), Relapse (accounting for 9.85% of the variance), and Conflict (accounting for 8.89% of the variance). The scores of the scale demonstrated strong positive correlations with the scores of the Facebook Addiction Scale,[49] and the Generalized Problematic Internet Use Scale 2.[50] Cronbach's alpha value for this scale is 0.97. Items 1–12 are related to Occupation, defined as intense thinking about and constant engagement in social media activities (eg 'When I don't check social media for a while, I cannot stop thinking about it'). Items 13–17 are related to Mood Modification, defined as using social media to change one's mood (eg 'When I am feeling down, I turn to social media for comfort'). Items 18–22 are related to Relapse, defined as attempting to decrease social media

use but being unsuccessful (eg 'I try to spend less time on social media, but I always end up using it for longer than I intended'). Items 23–41 are related to Conflict, defined as social media use negatively impacting one's life and relationships (eg 'Using social media causes problems in my life'). The lowest possible score on this scale is 41, and the highest is 205. In this study, the Cronbach's alpha coefficients for the total scale, Occupation, Mood Modification, Relapse, and Conflict were 0.951, 0.913, 0.922, and 0.891, respectively.

Procedure

Before conducting the research, ethical approval was obtained from the Toros University Scientific Research and Publication Ethics Committee on May 27, 2022, with meeting number 5 and decision number 103. The study was conducted in accordance with the Declaration of Helsinki. The authors of the study, a psychiatrist and a clinical psychologist, interviewed the participants face to face. Psychiatric interviews were conducted with all participants according to DSM-5 diagnostic criteria by the authors, and any participants with mental disabilities were excluded.[25] Any parts of the interviews that the participants did not understand were explained by the interviewer. Written informed consent was obtained from all subjects involved in the study. In the consent form, participants were informed that the study would publish articles based on information collected, but with no identifiable information. Data collection took an average of 20 minutes.

Statistical Analyses

The collected data was analyzed using the SPSS 21 program. Descriptive statistics were used to examine the percentage distributions of the variables. Pearson correlation and multiple linear regression analyses were used to investigate the relationships between variables. Mediation analysis modeling was done using model 4 of the SPSS Process Macro plugin.[51] The bootstrap method, which involves resampling the data to determine confidence intervals, was utilized in mediation analysis.[52] A result is considered significant if the bias-corrected confidence interval (95%) does not contain zero.[39,53] The bootstrap method is a statistical technique that estimates the accuracy of a sample by creating multiple samples from the original dataset. This allows for the determination of confidence intervals, which indicate the likely range of values for the true population parameter. In this study, the bootstrap method was used to analyze the data and determine the significance of the results. It is known for producing robust results, even with small sample sizes or non-normally distributed variables.[54] For the mediation analysis in this study, 5000 samples were used with the bootstrap method, increasing the accuracy and reliability of the results. The statistical significance level was set at 0.001.

Results
Descriptive Statistics

The data was examined for extreme values; z-scores were calculated to detect univariate outliers, and the Mahalanobis distance was used to detect multivariate outliers. No outliers were found among the participants in the study. To determine whether the variables in the study were normally distributed, skewness and kurtosis values were examined. According to George and Mallery,[55] a variable can be considered normally distributed if its skewness and kurtosis values fall within the range of ± 2. It was observed that the variables in the study were normally distributed. The mean, standard deviation, minimum, maximum, skewness, and kurtosis values of the measurement tools used in the study are presented in Table 2.

Group Differences

Whether all scale and subscale scores used in the study, changed according to sex was examined with Independent Samples *t*-test. There were no significant differences in scores between sexes. The results are shown in Table 3.

Correlation Analyses

The relationship between measurement tools was obtained by Pearson correlation analysis. Total orthorexia scores were positively correlated with eating attitudes (r = 0.432, p < 0.001), total scores of compulsive use of social media (r = 0.302, p < 0.001), occupation subdimension of compulsive use of social media (r = 0.214, p < 0.001), mood modification

Table 2 Descriptive Statistics of the Measurements

	M	SD	Min-Max	PR	Skewness	Kurtosis
Compulsive Use of Social Media	75.482	31.840	41–181	41–205	1.160	0.751
Occupation	26.834	11.371	12–60	12–60	0.711	−0.251
Mood Modification	10.571	5.221	5–25	5–25	0.812	−0.182
Relapse	8.270	4.432	5–23	5–25	1.382	0.943
Conflict	29.812	14.834	9–34	19–95	1.643	1.353
Eating Attitude	16.823	10.023	2–50	0–120	1.172	1.024
Orthorexia	39.822	11.983	24–80	24–96	0.533	−0.182
Behaviours	16.731	5.452	9–36	9–36	0.411	−0.144
Impairments	14.592	5.240	9–34	10–36	1.164	0.753
Emotions	8.493	3.021	5–17	5–20	0.652	−0.294

Abbreviations: M, mean; SD, standard deviation; Min, minimum; Max, maximum; PR, potential range.

Table 3 Independent Samples T-Tests for Gender

	Female (N = 127) M±SD	Male (N = 128) (M±SD)	t	df	p
Compulsive Use of Social Media	74.791±30.302	76.162±33.403	−0.343	253	0.732
Occupation	27.384±11.292	26.302±11.471	0.758	253	0.449
Mood Modification	10.614±5.083	10.521±5.370	0.139	253	0.890
Relapse	8.444±4.580	8.093±4.280	0.625	253	0.532
Conflict	28.362±13.541	31.251±15.941	−1.559	253	0.120
Eating Attitude	17.574±9.991	16.084±10.043	1.181	253	0.239
Orthorexia	39.552±11.253	40.082±12.714	−0.356	253	0.722
Behaviours	16.972±5.212	16.503±5.693	0.685	253	0.494
Impairments	14.384±4.970	14.804±5.513	−0.649	253	0.517
Emotions	8.202±2.711	8.781±3.290	−1.526	253	0.128

subdimension of compulsive use of social media ($r = 0.243$, $p < 0.001$), relapse subdimension of compulsive use of social media ($r = 0.244$, $p < 0.001$) and conflict subdimension of compulsive use of social media ($r = 0.332$, $p < 0.001$). The results are shown in Table 4.

Table 4 Relationships Between Variables

	2	3	4	5	6	7	8	9	10	11
1. Age	−0.030	−0.014	−0.053	−0.033	0.024	−0.122	−0.191	−0.110	−0.030	−0.071
2. Orthorexia		0.891*	0.861*	0.870*	0.432*	0.302*	0.214*	0.243*	0.244*	0.332*
3. Behaviours			0.572*	0.723*	0.384*	0.111	0.070	0.104	0.054	0.132
4. Impairments				0.661*	0.342*	0.420*	0.291*	0.304*	0.364*	0.473*
5. Emotions					0.441*	0.294*	0.224*	0.233*	0.242*	0.292*
6. Eating Attitude						0.210*	0.202*	0.171	0.191	0.190
7. Compulsive Use of Social Media							0.894*	0.844*	0.853*	0.912*
8. Occupation								0.802*	0.704*	0.654*
9. Mood Modification									0.663*	0.652*
10. Relapse										0.751*
11. Conflict										

Note: *p≤0.001.

Regression Analyses

The predictive power of the subscales of Social Media Addiction Scala (Occupation, Mood Modification, Relapse, Conflict) and Eating Attitudes Test on the subscales of orthorexia (Behaviors, Impairments, Emotions) were examined by multiple regression analyses. The results are given in Table 5. The results showed that only the eating attitude significantly predicted the behaviors subfactor of orthorexia (B = 0.201, p ≤ 0.001), and all variables explained 16% of the dependent variable. Conflict (B = 0.162, p ≤ 0.001) and eating attitude (B = 0.141, p ≤ 0.001) predicted the impairments subfactor of orthorexia; all variables together explain 29% of the dependent variable. Finally, eating attitude (B = 0.124, p ≤ 0.001) predicted the emotions subfactor of orthorexia, and all independent variables in the model explain 24% of the dependent variable.

Mediation Analysis

Based on the results of the mediation analysis, it was found that there is a significant and positive relationship between compulsive use of social media and orthorexia. Specifically, the study found that compulsive use of social media significantly predicts orthorexia ($F (1, 253) = 25.933$, $p < 0.001$) and has a positive effect (B = 0.115, $t(253) = 5.093$, $p < 0.001$, 95% CI [0.070, 0.159]), explaining 9% of the variance (path c). Additionally, the study found a positive and significant relationship between compulsive use of social media and eating attitude (B = 0.067, $t (253) = 3.482$, $p < 0.001$, 95% CI [0.029, 0.105]) (path a). Eating attitude, which was included as a mediator variable, was also found to have a significant and positive relationship with orthorexia ($F (2, 252) = 38.590$, $p < 0.001$; B = 0.463, $t (252) = 6.821$, $p < 0.001$, 95% CI [0.328, 0.593]) (path b). This suggests that eating attitude plays a mediating role in the relationship between compulsive use of social media and orthorexia. The indirect effect of compulsive use of social media on orthorexia was found to be significant ($\beta = 0.031$, 95% CI [0.015, 0.051]) (path c'). Overall, the model explained approximately 23% of the variance (Figure 1).

Table 5 Regression Analyses

|	F	t	df	B	R^2	p
ORTHOREXIA	17.42		5, 249		0.26	≤.001
Occupation		−0.981	249	−0.102		0.330
Mood Modification		0.802	249	0.173		0.426
Relapse		−0.522	249	−0.134		0.604
Conflict		3.553	249	0.254		≤.001
Eating Attitude		6.974	249	0.462		≤.001
BEHAVIOURS	9.34		5, 249		0.16	≤.001
Occupation		−0.922	249	−0.052		0.360
Mood Modification		1.021	249	0.113		0.309
Relapse		−1.351	249	−0.160		0.179
Conflict		1.622	249	0.062		0.106
Eating Attitude		6.293	249	0.200		≤.001
IMPAIRMENTS	20.50		5, 249		0.29	≤.001
Occupation		−1.001	249	−0.044		0.316
Mood Modification		0.261	249	0.022		0.794
Relapse		0.282	249	0.032		0.778
Conflict		5.213	249	0.163		≤.001
Eating Attitude		4.954	249	0.141		≤.001
EMOTIONS	15.53		5, 249		0.24	≤.001
Occupation		−0.401	249	−0.010		0.691
Mood Modification		0.751	249	0.042		0.453
Relapse		0.052	249	0.003		0.959
Conflict		0.193	249	0.042		0.036
Eating Attitude		0.402	249	0.120		≤.001
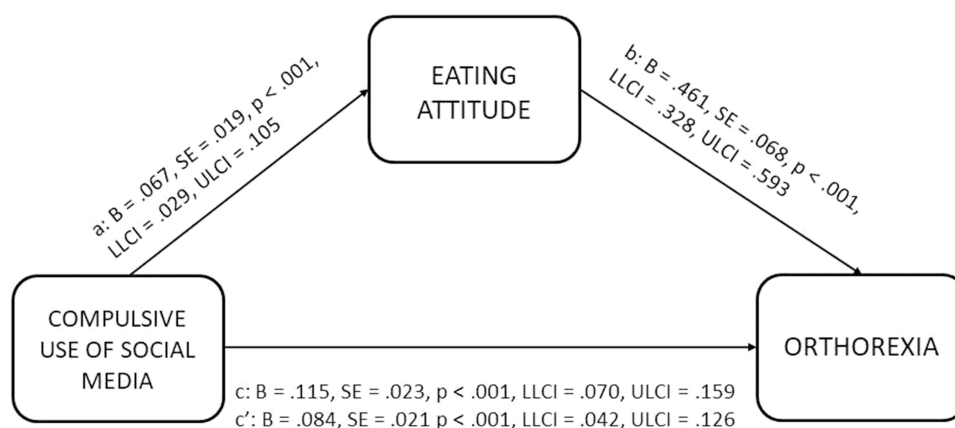
Figure 1 The Mediator Role of Eating Attitude on the Relationship between Compulsive Use of Social Media and Orthorexia.
Note: B, unstandardized coefficient.
Abbreviations: SE, standard error; LLCI, the lower limit confidence interval; ULCI, the upper limit confidence interval.

Discussion

The main objective of this study was to investigate the relationship between compulsive use of social media and orthorexia, with a focus on the mediating role of eating attitude. Additionally, the study aimed to identify potential correlates of orthorexia.

The relationship between ON and age has been a topic of debate. While Arusoğlu et al[25] found no association between age and orthorexic tendencies in the Turkish society, Łucka et al[56] also did not find any correlation between orthorexic symptoms and sociodemographic data such as gender, age, education level, and place of residence. Based on these findings, it is not surprising that our study did not find any significant differences in orthorexic symptoms based on age and gender. Previous research has shown conflicting results, with some studies reporting higher orthorexic tendencies in men,[22,24] and others reporting higher tendencies in women.[57] In our study, there was no significant difference in ON scores based on gender. These discrepancies may be attributed to differences in the measurement scale used or cultural variations in the development of orthorexic tendencies.[58,59]

The correlation analyses indicate a positive relationship between all scales and subscales of the study and ON. The results of the regression analyses revealed that only eating attitude significantly predicted scores on all subscales of ONI. These findings support previous studies that have shown a link between orthorexic symptoms and an impairments in eating attitudes.[60–64] Additionally, the Conflict subfactor of the Social Media Addiction Scale was found to predict the Impairments subfactor of ONI. The fourth dimension of the Social Media Addiction Scale, "Conflict", refers to the negative impact of social media on an individual's life, particularly in their relationships. Statements such as 'I use social media more even though it negatively affects my work/studies', 'Using social media causes problems in my life' and "The more responsibilities I have, the more I feel the need to use social media" all reflect the way in which social media can create conflicts in a person's life. One of the defining characteristics of addiction or compulsive behavior is the inability to control the behavior. This may explain why individuals continue to use social media despite its negative impact on their lives. The content encountered on social media can also influence behaviors related to body image and eating patterns, potentially leading to a person's inability to actively use social support systems and to organize their spare time in a healthy and beneficial way. According to Gobin et al[65] the focus on Instagram content can create pressure to conform to beauty standards and may contribute to the development of orthorexia. Additionally, individuals with high ON symptoms often have a low perception of social support.[66] Therefore activating social support systems and increasing leisure activities may help improve ON symptoms.

One of the key findings of this study, which also is the response to the main research question, is that compulsive use of social media is a predictor of orthorexia scores, both directly and through its impact on eating attitudes. Previous research has also shown a link between compulsive use of social media, particularly Instagram, and ON.[27,67,68] Excessive use of Instagram has been linked to increased symptoms of ON, as individuals may feel pressured to conform to societal

standards of thinness, leading to restrictive eating habits.[65] This is further supported by the prevalence of diet and healthy nutrition content on Instagram, which is easily and frequently encountered by users. As individuals spend more time on Instagram and are exposed to this type of content, their orthorexic symptoms may worsen. Additionally, prolonged exposure to this content may also lead to changes in eating attitudes, further contributing to the development of orthorexia. Other studies have also found that social media use can negatively impact perceptions of beauty and eating attitudes.[69] When individuals are influenced by societal beauty standards promoted on social media, they may strive to achieve these standards through restrictive eating and dieting.[70] It is possible that orthorexia is utilized as a means to conform to societal beauty standards. In light of these discoveries, it is not surprising that one's eating habits play a mediating role in the relationship between excessive social media use and orthorexic symptoms, as demonstrated in this study.

Limitations

This study cannot be generalized to clinical samples due to its focus on a normal population. Also, the inclusion of hospital staff among the participants represents a significant limitation of the study. The medical knowledge of these individuals may introduce bias, as it could place them at risk for orthorexic tendencies. Focusing solely on Instagram usage in the study can also be considered a limitation. Including other social media platforms could have enhanced the generalizability of the findings. Future studies should take these issues into consideration. Additionally, the study did not thoroughly measure the specific content that Instagram users were exposed to. To improve the understanding of this relationship, future studies could increase the sample size, narrow the age range of participants, and control for the frequency of exposure to different types of content. It is important to note that this research is cross-sectional, meaning that it only captures a single moment in time. Therefore, the findings should not be interpreted as causal relationships. To gain a better understanding of the potential impact of social media on eating behaviors, future studies could use longitudinal designs. Future research could expand our understanding of these behaviors by comparing the effects of different social media platforms. Future research could also enhance our understanding of the connections among those variables by incorporating the variables of the participants' physical activity levels and body image into this model.

Practical Implications

The findings of this study carry important practical implications for both mental health professionals and individuals seeking to address disordered eating behaviors, particularly in the context of social media use. First, the direct and mediated effects of Instagram use on orthorexic symptoms suggest that mental health professionals should consider the impact of social media engagement when assessing and treating individuals with disordered eating behaviors. Incorporating discussions about social media habits and eating attitudes into therapy sessions could help identify underlying factors contributing to unhealthy eating patterns and facilitate more comprehensive treatment approaches. Additionally, the mediating role of eating attitudes highlights the importance of promoting healthier, more flexible approaches to food and body image, especially among social media users. Public health campaigns or digital literacy programs aimed at increasing awareness about the potential risks of social media exposure, including the development of orthorexic tendencies, could play a critical role in prevention. These interventions could emphasize the importance of critical thinking when engaging with online content, particularly regarding body ideals and health-related messaging. For individuals, the results underline the importance of self-reflection on social media consumption and its potential influence on eating behaviors. Encouraging mindful and intentional use of social media, alongside fostering a positive and balanced relationship with food, could help reduce the risk of developing disordered eating behaviors like orthorexia.

Conclusions

This study examined the relationship between compulsive Instagram use and orthorexic symptoms, as well as the mediating role of eating attitudes in this relationship. The results showed that compulsive Instagram use predicted orthorexic symptoms both directly and through eating attitudes. These findings highlight the potential of social media use, particularly on platforms like Instagram, to encourage unhealthy eating behaviors, with eating attitudes playing a significant mediating role in this interaction. The frequent sharing of content related to ideal body image and healthy

lifestyles on such visually-oriented platforms may contribute to the development of orthorexia-like symptoms. This study emphasizes the need for intervention and prevention strategies targeting eating disorders such as orthorexia to consider the influence of social media interactions and eating attitudes.

Use of Artificial Intelligence

No artificial intelligence or assisted technologies were used in the production of the work (including figures).

Data Sharing Statement

The authors are not willing to share their data, analytics methods, and study materials with other researchers. The material will be available upon request.

Ethical Standards

The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008.

Informed Consent

All subjects provided written informed consent for inclusion before they participated in the study.

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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