Kertas Asli/Original Articles

The Correlation Between the Intensity of Instagram Usage and Orthorexia Nervosa in Universitas Gadjah Mada Students

TSANIA FITRI KUMALA*, YAYUK HARTRIYANTI & AVIRIA ERMAMILIA

ABSTRACT

Background: Orthorexia nervosa (ON) is an eating disorder characterized by an obsession with eating healthy foods, which has physical, psychological, and social impacts. The use of social media platform such as Instagram is suspected to be one of the risk factors of ON, as health information on Instagram can reach thousands of people despite the fact that its source is frequently unreliable. Objective: To determine the correlation between the intensity of Instagram usage and ON among Universitas Gadjah Mada (UGM) students, as well as the correlation between confounding variables (gender, monthly income, age, faculty cluster, and nutritional knowledge) and ON. Methods: The research design used is an observational study with cross-sectional design that involved 529 students. Samples were taken by stratified random sampling, and data was collected online. Chi square test with α = 0.05 was used in this study. Results: The results showed that as many as 55% of students were diagnosed with ON and most of the students had moderate intensity of using Instagram. There is a correlation between the intensity of using social media Instagram and ON in UGM students (p value = 0.037<0.05) and there is no correlation of confounding variables (gender, monthly income, age, faculty cluster, and nutritional knowledge) with ON. Conclusion: There is a positive correlation between the intensity of Instagram use and ON in UGM students, and no confounding variables were found in this study. Keywords: Orthorexia Nervosa, Instagram, Social Media, Eating Disorders

ABSTRAK

Latar Belakang: Orthorexia nervosa (ON) ialah gangguan pemakanan yang dicirikan oleh obsesi terhadap pengambilan makanan sihat secara berlebihan dan boleh memberi kesan terhadap fizikal, psikologi dan sosial. Penggunaan Instagram disyaki menjadi salah satu punca seseorang mengalami ON oleh kerana maklumat kesihatan di Instagram boleh mencapai ribuan orang, walaupun sumber maklumat itu tidak sahih. Objektif: Tujuan kajian ini adalah untuk menentukan hubungan antara intensiti penggunaan Instagram dengan ON dalam kalangan pelajar Universiti Gadjah Mada dan menentukan hubungan antara pembolehubah pembauran (jantina, pendapatan bulanan, umur, kluster fakulti dan pengetahuan pemakanan) dengan ON. Kaedah: Reka bentuk kajian yang digunakan ialah reka bentuk kajian pemerhatian dengan pendekatan kajian keratan rentas yang melibatkan 529 orang pelajar. Sampel diambil secara persampelan rawak berstrata, pengumpulan data dilakukan secara atas talian. Ujian yang digunakan dalam kajian ini ialah ujian khi kuasa dua dengan α = 0.05. Keputusan: Keputusan menunjukkan bahawa sebanyak 55% pelajar mengalami ON dan kebanyakan pelajar mempunyai intensiti sederhana menggunakan Instagram. Terdapat hubungan di antara intensiti penggunaan media sosial Instagram dengan ON dalam kalangan pelajar Universiti Gadjah Mada (nilai p = 0.037 < 0.05) dan tidak terdapat hubungan di antara pembolehubah pembauran (jantina, pendapatan bulanan, umur, kluster fakulti dan pengetahuan pemakanan) dengan ON. Kesimpulan: Terdapat hubungan positif antara intensiti penggunaan Instagram dan ON dalam kalangan pelajar Universiti Gadjah Mada dan tiada pembolehubah pembauran (jantina, pendapatan bulanan, umur, kluster fakulti dan pengetahuan pemakanan) ditemui dalam kajian ini.

Kata kunci: Orthorexia Nervosa, Instagram, Media Sosial, Gangguan Makan

INTRODUCTION

Orthorexia Nervosa is an eating disorder characterized by an obsession with consuming excess healthy foods (Brytek-Matera, 2012). Initially, Orthorexia Nervosa started from a desire to improve the quality of health or overcome certain diseases (Healthy Orthorexia) (Bratman & Knight, 2000 in Hayles, et al., 2017). The issue arises, however, when the desire becomes an excessive obsession with healthy food, which can have physical (malnutrition and weight loss), psychological (fatigue and emotional instability), and social (stigma, difficult socialization, and decreased quality of life) consequences (Strahler, et al., 2018).

Social media usage is related to the incidence of Orthorexia Nervosa, especially on social media sites like Instagram (Turner & Lefevre, 2017) . Health information on Instagram can reach and influence thousands and even millions of people, despite the fact that the source of this information is frequently misleading. Users would rather listen to dietary advice from "influencers" who do not necessarily have health or nutrition knowledge than health professionals' advice. Misleading information from influencers can potentially lead to an unbalanced diet and encourage a person to have eating disorders such as Orthorexia Nervosa.

Instagram is one of the most popular social media for young people, with the 18-24 years age range dominating the number of users (Annur & Bayu, 2021), within 18-24 years is the age range of college students in Indonesia. Instagram users among college students are predicted to increase from year to year due to the policy of the Indonesian government during the Covid-19 pandemic, as the result of online activities including lesson periods from home. As a result, students will have more time to search for information or communicate with others on social media, which is consistent with Budury et al.'s (2020) finding that during the COVID-19 pandemic, as many as 87.3% of college students spent time in social media.

In addition to social media and age, there are other factors that can influence a person to suffer from Orthorexia Nervosa, such as gender, income, and health knowledge (Sarah & Millis, 2019). The prevalence of Orthorexia Nervosa in different countries has been studied with various data, this is due to many factors, such as culture, sample population and sociodemographic factors. In the student sample population, it was found that at least 3.3% of nutrition and sports students in Germany experienced Orthorexia Nervosa (Depa, 2017). In opposite of that, prevalence of Orthorexia Nervosa among students were as follows; Turkey 70.6%, Poland 65.13%, America 35.4%-71.2%, and students of nutrition, sports, and biology in Italy have a prevalence of 25.9%-34.9% (Agopyan, et al., 2018, Bo, et al., 2014, Dell'Osso et al., 2017, Brytek-Matera, et al., 2015, Hayles, et al., Dunn et al, 2017). Globally, the exact prevalence of Orthorexia Nervosa in the student population has not been found, and until now, there has been no research in Indonesia demonstrating the prevalence of orthorexia nervosa in students or in general. This research aims to determine the correlation between the intensity of Instagram usage and Orthorexia Nervosa among Universitas Gadjah Mada (UGM) students, this research helps determine the first step for early detection and minimization of risk factors for eating disorder Orthorexia Nervosa.

MATERIALS AND METHODS

STUDY DESIGN AND PARTICIPANT

The method of this research was non-experimental quantitative with a cross sectional study approach. This research was conducted at Universitas Gadjah Mada Yogyakarta and data collection using an online questionnaire. The data was collected between November and December of 2021. The population in this study consisted of a minimum of 380 undergraduate students from Universitas Gadjah Mada who were active users of Instagram, were not currently on a diet program, and did not have eating disorders.

ONLINE QUESTIONNAIRE

Informed consent was obtained from all individual participants included in the study answer the online questionnaire. This research has passed ethical cleareance with number KE/FK/1147/EC/2021

SOCIAL MEDIA USAGE

Participants were asked seven statements on a four-point Likert scale about their psychological feelings about Instagram. Next, participants were asked about the amount of time spent on Instagram they use: (1) "How many hours a day do you spend using Instagram?" with multiple choice answers of " more than 3 hours 39 minutes", " 2 hours 26 minutes – 3 hours 38 minutes", " 1 hours 35 minutes – 2 hours 36 minutes", " 34 minutes – less than 1 hour 35 minutes" and " less than 34 minutes". (2) "How often do you access Instagram in a day?" with multiple-choice answers of "more than 20 times", " 14-20 times", "8- less than 14 times", " 3- less than 8 times" and "less than 3 times", (3) What content do you often see on Instagram?".

ORTHOREXIA NERVOSA MEASURE

The ORTO-15 was used in the questionnaire to assess Orthorexia nervosa symptoms. ORTO-15 is a multiple choice questionnaire consisting of 15 items with 4 point likert-scale participants options. A score 1 shows the answer assigned to behaviours that most reflect orthorexia nervosa, otherwise a score 4 shows the answer assigned to normal behaviours. Total score the ORTO-15 questionnaire is 15 in minimum and 60 in maximum, the cutoff final score for ON is < 40, score <40 reflected that the participant showing symptoms of (Donini, et al., 2005).

DEMOGRAPHICS

Participants were asked about their age (in years), gender (male or female), faculty, monthly income (in rupiah), and nutritional knowledge consisting of 9 questions.

ASSESSMENT AND ANALYSIS

Analyses were performed in Microsoft Excel 2016 and SPSS Version 26. Univariate analysis is used to describe the characteristics of each variable. The frequency distribution table includes data from the variables: intensity of social media Instagram usage, orthorexia nervosa, gender, monthly income, age, faculty cluster, and nutritional knowledge. While the bivariate chi square test analysis is used to determine the correlation between the intensity of social media Instagram usage and Orthorexia Nervosa in UGM students. Then multivariate analysis of binary logistic regression was used to determine the presence of a confounding variable in the correlation between the intensity of social media Instagram usage and Orthorexia Nervosa. This study has five variables that are predicted as confounding variables, such as gender, age, faculty cluster, monthly income, and nutritional knowledge.

RESULT AND DISCUSSION

A summary of demographic sample characteristics, shown in Table 1 and 2. The subjects of this study were 529 undergraduate students from UGM. The characteristics of the subjects in this study consisted of gender, age, faculty, faculty cluster, and monthly income (amount of income earned in a month such as family income, salary, scholarship money, etc). Based on the data, the gender distribution was dominated by females, consisting of 390 persons (73.7%), while male subjects were 139 persons (26.3%). From the data on the age of the research subjects, 21 years of age was the most common age of the research subjects compared to other ages, which amounted to 224 people (42.3%), and the least was 16 years (0.2%).

Table 1 Demographic information for participants (N total = 529)

Variable	Total	
	N	%
Total participants	529	100
Gender		
Female	390	73,7
Male	139	26,3
Faculty Cluster		
Medicine (Medika)	130	24,6
Social humanities (Soshum)	140	26,5
Scientist (Saintek)	164	31
Agro	95	18
Monthly Income		
< Rp500.000	108	20,4
Rp500.000 – RP1.125.000	269	50,9
Rp1.126.000 – Rp1.750.000	78	14,7
Rp1.751.000 - Rp2.375.000	38	7,2
Rp2.376.600 - Rp3.000.000	23	4,3
> Rp3.000.000	13	2,5
Nutritional Knowledge		
Less	117	22,1
Moderate	261	49,3
Good	151	28,5

... cont.

Intensity of Instagram Usage		
Very Low	61	11,5
Low	155	29,3
Moderate	169	31,9
High	105	19,8
Very High	39	7,4
Orthorexia Nervosa score		
Score <40	291	55
Score ≥ 40	238	45

Table 2 Demographic information (Age) for participants (N total = 529)

	N Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Deviation Statistic
Age	529	16	23	20.3365	1.30275

Table 3 Correlation between variables and Orthorexia Nervosa

Variable	Diagnosis of Orthorexia Nervosa		p-value
	Orthorexia Nervosa	Non Orthorexia Nervosa	
Intensity of Instagram Usage			
Very Low n (%)	31 (6)	30 (6)	
Low n (%)	74 (14)	81 (6)	
Moderate n (%)	97 (18)	45 (9)	
High n (%)	60 (11)	72 (14	0,037*[a]
Very High n (%)	29 (5)	10 (2)	
Gender			
Female n (%)	209 (40)	181 (34)	0,272[a]
Male n (%)	82 (16)	57 (11)	
Faculty Cluster			
Medicine (Medika) n (%)	71 (13)	59 (11)	
Social humanities (Soshum) n (%)	88 (17)	52 (10)	
Scientist (Saintek) n(%)	80 (15)	84 (16)	0,108[a]
Agro n (%)	52 (10)	43 (8)	
Monthly Income			
Very Low n (%)	56 (11)	52 (10)	
Low n (%)	145 (27)	124 (23)	
Quite Low n (%)	46 (9)	32 (6)	0,785[a]
Moderate n (%)	21 (4)	17 (3)	
High n (%)	14 (3)	9 (2)	
Very High n (%)	9 (2)	4 (1)	
Nutritional Knowledge			
Less n (%)	71 (13)	46 (9)	
Moderate n (%)	138 (26)	123 (23)	0,362[a]
Good n (%)	82 (16)	69 (13)	
Age	-	-	0,003*[b]

* Significant wdifferences, a Chi Square test, b simple linear regression test.

Based on Table 3, the variables of intensity of Instagram usage (0,037) and age (0,003) obtained a significance of < 0.05 and the variables of gender (0,272), faculty cluster (0,108), monthly income (0,785) and nutritional knowledge (0,362) obtained a significance of > 0.05. Hence it can be concluded that the variables of intensity of Instagram usage and age were positively correlated with Orthorexia Nervosa and the variables of gender, faculty cluster, monthly income and nutritional knowledge were negatively correlated with Orthorexia Nervosa.

Multivariate analysis using binary logistic regression was carried out on variables that had p value < 025, it can be concluded that the age and faculty cluster variables were selected to be variables that were predicted to be confounding variables in this study.

Table 4. Comparison of beta coefficient values in binary logistic regression among Instagram usage intensity, age and faculty cluster variables

Intensity of Instagram Usage	B[a]	B[b]	B[c]
Very Low Category			
Low Category	,123	,137	,081
Moderate Category	-,265	-,252	-,310
High Category	-,255	-,256	-,304
Very High Category	-1,032	-1,115	-1,091

B beta coefficient values, a Intensity of Instagram Use variables (reference), b age variable, c faculty variable

Based on Table 4, the value of the estimated coefficient (beta) of the intensity of Instagram usage with Orthorexia Nervosa without confounding variables in a row as a reference/standar. The binary logistic regression test result that after including age and faculty cluster variable as a confounding variable, the estimated value of the coefficient (beta) in Blocks 2 (B[b]) and 3 (B[c]) is not much different from Block 1 (reference), it is concluded that the variable is not a confounding variable.

DISCUSSION

This study investigated the correlation between the intensity of Instagram usage and Orthorexia Nervosa among Universitas Gadjah Mada (UGM) students. We found a significant correlation between the intensity of Instagram usage and Orthorexia Nervosa among Universitas Gadjah Mada (UGM) as measured by the ORTO-15 questionnaire. Even though the results are significant, we cannot conclude whether with higher the intensity of Instagram usage being correlation with a greater Orthorexia Nervosa tendency. Besides that, this study also investigated the correlation between the possible variables to interfere with this study (gender, monthly income, age, faculty cluster, and nutritional knowledge) and Orthorexia Nervosa. We found a significant correlation between age and faculty cluster and Orthorexia Nervosa, no confounding variables were found that interfered with the analysis of the correlation between the intensity of Instagram usage and Orthorexia Nervosa, means that this study could be concluded to be free from the confounding variables (gender, monthly income, age, faculty cluster, and nutritional knowledge).

The present findings are influenced by several factors, one of which is health-related information on Instagram. During the COVID-19 pandemic, Instagram became a source of health-related information such as nutrition; this information spread rapidly and intensely, resulting in unhealthier behavior problems. The amount of information about nutrition received by students allows them to change their eating behavior and intake. Reny & Rahmi (2020) stated in their research that during the COVID-19 pandemic, 51.56% of students admitted to increasing their vegetable intake and 62.5% of students admitted to increasing their fruit intake. Aside from the impact of the abundance of nutrition information during the COVID-19 pandemic, changes in eating behavior and food intake to become healthier are driven by cultural changes that no longer assume that the ideal body is one that is as thin as possible, but rather one that is fit and healthy. However, an obsession with excessively consuming healthy foods can lead to the development of the eating disorder Orthorexia Nervosa.

Posting someone's diet on Instagram can trigger someone to suffer from Orthorexia Nervosa. There are several factors that may be contributing to. First, Instagram is one of the social media that focuses on visual forms such as images and videos, this visual form has a stimulus effect and plays a role in influencing someone, for example someone uploads a photo of food or a location, then people who see it may want to consume the food in the photo or want to visit the place in the photo (Turner & Lefevre, 2017). Second, the follow feature on Instagram makes it

easy for users to always see accounts that they think are interesting, where in this study a third of research subjects (33.3%) follow health or diet accounts in their Instagram accounts. They will receive constant exposure to dietary information, leading them to believe that a behavior is normal, this is also reinforced by interaction or reciprocal communication in the post (Turner & Lefevre, 2017), interactions on Instagram are indeed frequent. conducted as a form of communication, this statement is in accordance with the results of this study which showed that as many as 68% of research subjects often interacted on Instagram. Third, many Instagram accounts that have many followers or are called celebgrams or influencers have the power to reach and influence hundreds of thousands of people although the source of this information is frequently misleading and they do not have skill and knowledge about nutrition. Their followers tend to follow their advice and imitate their lifestyle including their diet (Turner & Lefevre, 2017).

The ease of obtaining information via Instagram social media is advantageous if the information is used appropriately; however, behind positive information on Instagram, there is sometimes ambiguous information where the truth of the information is unclear. Misunderstood and erroneous interpretations of information by Instagram users can lead to inappropriate thoughts, which can lead to bad decisions and behavior changes.

Thus, the duration and frequency of using Instagram can have a significant influence on the eating disorder Orthorexia Nervosa, because the longer and more frequently you are exposed to Instagram's various information, the more frequently you will see eating patterns shared, uploaded, and recommended by public figures such as influencers, content creators and celebrities on Instagram. This is supported by Karmila's research (2020) which states that there is a relationship between the duration and frequency of using Instagram with eating behavior in students. It is also reinforced by the findings of Turner & Lefevre (2017) who discovered that Instagram users with a higher intensity of use are more likely to exhibit symptoms of Orthorexia Nervosa. Although it is not known in this study what the normal intensity limit is for Instagram users, students should still be cautious when sorting public figures' Instagram accounts and other Instagram accounts to follow by examining the background of the public figure and the veracity of the source of information shared on Instagram.

CORRELATION BETWEEN GENDER AND ORTHOREXIA NERVOSA

Perceptions of gender, or gender and eating disorders, are gradually changing. Eating disorders are no longer exclusively associated with women. Collier (2013) in his research showed that for many years men were considered to only contribute about 10% of the total incidence of eating disorders, even though it was estimated that 25% of men had eating disorders and there had been an increase of about 40% in cases of eating disorders. binge eating". Similar studies related to the eating disorder Orthorexia Nervosa also revealed that in a proportional study sample between male and female students, Orthorexia Nervosa was more common in male students than female students (Firdan, et al., 2010).

In contrast, other studies have demonstrated that women are 2.6 times more likely than men to suffer from Orthorexia Nervosa (Sanlier, et al., 2016). Women are more susceptible to developing Orthorexia Nervosa than men, according to research conducted by Missback (2015) on research subjects in Germany. Even though the results of the study indicated that both male and female genders were associated with Orthorexia Nervosa, the majority of studies have not found a significant association between gender and Orthorexia Nervosa (Sarah & Millis, 2019). In the student sample, there was no correlation between gender and Orthorexia Nervosa, despite the fact that men had healthier eating habits than women and women had positive feelings when consuming healthy foods (Oberle, et al., 2017). The results of most of these studies are similar to the results in this study which states that gender does not have a positive relationship with Orthorexia Nervosa. The unbalanced proportion between women and men can be one of the causes of this correlation result, which in this study was dominated by female sex, which was 73.7% of the total respondents.

CORRELATION BETWEEN FACULTY CLUSTERS AND ORTHOREXIA NERVOSA

A person's health behavior is influenced by various factors, one of which is health knowledge background. Someone who has good health knowledge will behave healthier and vice versa (Chaesi, 2020) .Health knowledge can be obtained in student groups through a variety of media, including lectures, social media, and health-related activities (talk shows, socialization, counseling). Indirectly, students who are exposed to more health information exhibit healthier behaviors. The faculty clusters at UGM are divided into 4, each of the four faculty clusters at UGM has its own characteristics for its students: the medical cluster, the social sciences and humanities cluster, the scientific cluster, and the agro cluster. In terms of health information, for instance, students in the medical cluster receive more health information in college than students in the three other clusters, along with regulations that support clean and healthy living behavior in the medical

cluster, such as within the Faculty of Medicine, Public Health, and Nursing. There are regulations prohibiting smoking and the consumption of alcoholic beverages, as well as pamphlets recommending the consumption of nutritious and healthy foods in canteen. Although students with a health education background have good health knowledge, a study conducted by Fidan (2010) on medical students in Turkey showed that the prevalence of Orthorexia Nervosa in medical students was quite high at 43.6%. A similar study by Agopyan, et al (2018) also showed the same result, namely the prevalence of Orthorexia Nervosa in nutrition students reached a percentage of 70.4%.

In contrast, this study's findings do not suggest that faculty clusters are associated with Orthorexia Nervosa. Thus, there is no difference in the incidence of Orthorexia Nervosa between students in the medical cluster, the social sciences and humanities cluster, the scientific cluster, and the agro cluster. There may be discrepancies between research results and the literature due to the fact that information about health is readily available through various media, so that every student has the same opportunity to obtain health information through various media. These findings are supported by the fact that 43.9% of research subjects viewed health content as the kind of content they frequently see on Instagram.

CORRELATION BETWEEN MONTHLY INCOME AND ORTHOREXIA NERVOSA

Individuals with higher incomes have a greater financial opportunity to purchase higher quality food than individuals with lower incomes; in general, people with Orthorexia Nervosa are defined as someone who typically consumes only healthy food that is of high quality, regardless of where the food is in terms of price. more expensive than ordinary food. Therefore, high income is associated as one of the risk factors for Orthorexia Nervosa. Hyrnik et al (2016) in their research in Poland discovered that the risk of Orthorexia Nervosa increases with increasing family income.

The findings in this study are inversely related to Hyrnik's study, where monthly income was not associated with Orthorexia Nervosa. The difference between the results of this study and other studies can be explained by the uneven distribution of monthly income among research subjects, where half of all research subjects (50.9%) have a monthly income of Rp. 500,000 – Rp. 1,125,000, which is 269 people, while the highest monthly income is > IDR 3,000,000 and only 13 people (2.5%). However, because this study does not ask how much the research subjects spend on food, the amount of their monthly income cannot represent the total costs incurred for the amount and type of food consumed by the research subjects.

Each individual has different financial plans, even with the same income. With the same income, everyone has different financial goals, depending on the individual's situation, goals, behavior, and needs (FPSB, 2007). Therefore, someone with a high income does not always purchase high-quality food on a consistent basis, so that the monthly income is unrelated to Orthorexia Nervosa. In addition, the participants in this study are still students who may still rely on their parents for food.

CORRELATION BETWEEN NUTRITIONAL KNOWLEDGE AND ORTHOREXIA NERVOSA

Someone who has good nutritional knowledge tends to have good eating behavior and vice versa. However, statistical analysis revealed that there was no significant relationship between nutritional knowledge and Orthorexia Nervosa, with $p = 0.785$ ($p > 0.05$). Knowledge does not always have a direct influence on a person's eating behavior. In addition to knowledge, changes in eating behavior can be sparked by awareness and positive attitudes from within. Behavior that is formed by awareness will be permanent (Notoatmodjo, 2011 in Dirgahayu, 2015). It can be concluded that someone with good nutritional knowledge does not necessarily have good eating behavior, and vice versa. The findings of this study are consistent with the findings of Agopyan et al. (2018), who found as many as 70.4% of nutrition students exhibited symptoms of Orthorexia Nervosa. As a result of their study and comprehension of nutrition, nutrition students are more likely to engage in healthy eating practices.

There is no correlation between nutritional knowledge and Orthorexia Nervosa because good nutritional knowledge does not necessarily prevent eating disorders, as demonstrated in this study, in which 13% of research subjects with good nutritional knowledge experienced Orthorexia Nervosa, compared to 9% of research subjects with knowledge of good nutrition who did not experience Orthorexia Nervosa. This is possibly because not everyone can apply acquired knowledge to their daily eating habits (Rahayu and Dieny, 2012 in Chaesi, 2020).

CORRELATION BETWEEN AGE AND ORTHOREXIA NERVOSA

The findings of this study indicate that age is positively correlated with Orthorexia Nervosa because the value of $p = 0.003$ ($p < 0.05$). Although this finding does not reveal which age group is at a higher risk for developing Orthorexia Nervosa, numerous studies have demonstrated

that this disorder is more prevalent in younger individuals. In a study conducted by Fidan et al. (2010) on Turkish medical students between the ages of 16 and 29, the under-21 and over-21 age groups were compared. According to the results of this study, students under the age of 21 are more likely to be affected by Orthorexia Nervosa than adults over the age of 21. According to the findings of Livasovic's (2017) research, adolescents aged 15 or 16 are more likely to exhibit behaviors associated with Orthorexia Nervosa.

Young people who are at a higher risk of developing Orthorexia Nervosa may be as a result of the media's increasing influence on the younger generation, so they feel compelled to worry not only about their health, but also about pursuing a self-image that matches what they hear and see in the media (Almeida, et al., 2018). This is consistent with the findings of this study, which found that 63% of total students aged 19 had Orthorexia Nervosa, which was higher than the 52% of total students aged > 19 years. It is also clarified by the fact that the age group of 15 to 19 years experiences the highest prevalence of eating disorders (Livazovic, 2017).

In contrast to the findings of this study, the research conducted by Grammatikopoulou et al. (2018) came to the opposite conclusion. Specifically, they discovered that there was no connection between the age factor and Orthorexia Nervosa. There are also studies that suggest that the possibility of developing Orthorexia Nervosa grows with the patient's age (Depa et al., 2017).

LIMITATION

The generalization of these findings is limited to this instrument (ORTO-15 questionnaire) study, because the questionnaire can only detect behavior diet and lifestyle habits (stage one) and have not been able to detect on the pathological aspect (stage two) (Mitrofanova, E. et al.,2021). Thus, the summary results of the ORTO-15 questionnaire can only be used as a screening tool (early detection) and not yet for pathological diagnosis. To obtain a pathological diagnosis, an interview with psychologist is necessary.

CONCLUSIONS

The current findings suggest that, within the study population, there was a positive correlation between the intensity of the usage of social media platforms like Instagram and Orthorexia Nervosa. Gender, faculty cluster, monthly income, nutritional knowledge, and age had no

significant correlation with Orthorexia Nervosa in Universitas Gadjah Mada students. Furthermore, the majority of the research subjects use Instagram with a medium intensity, and the prevalence of Orthorexia Nervosa in Universitas Gadjah Mada students is 55%.

RECOMMENDATION

Individuals should be careful in sorting public figure's Instagram account to follow and need to crosscheck the public figure background, they should sort out and validating all the health information in Instagram to prevent incorrect eating behavior influence and helps halt the rising prevalence of Orthorexia Nervosa.

University should intensify prevention effort to educate the student on good nutrition to avoid unhealthy eating behavior and improve healthy lifestyle.

ACKNOWLEDGEMENTS

REFERENCE

Agopyan, A. *et al*. 2018. The relationship between Orthorexia Nervosa and body composition in female students of the nutrition and dietetics department. *Eating and Weight Disorders.* 24(2):257-266

Almeida, C., Vieira Borba, V. & Santos, L. 2018. Orthorexia Nervosa in a sample of Portuguese fitness participants. *Eating and Weight Disorders* 23:443-451.

Annur, C. M. & Bayu, D. 2021. *Instagram Users By Gender & Age Group.* Jakarta: Databoks.

Bo, S. *et al*. 2014. University courses, eating problems, and muscle dysmorphia: Are there any associations?. *Journal of f Translational Medicine* 12:1-8.

Brytek-Matera, A. 2012. Orthorexia Nervosa - An eating disorder, obsessive-compulsive disorder or disturbed eating habit?. *Psychoterapia.* 1:55-60.

Brytek-Matera, A. et al. 2015. Orthorexia Nervosa and self-attitudinal aspects of body image in female and male university students. *Journal of Eating Disorders,* 3:1-8.

Budury, S., Fitriasari, A. & Sari, D. J. E. 2020. Social Media and Student Mental Health During the Covid-19 Pandemic. *Jurnal Keperawatan Jiwa.* 8(4): 551-556.

Dell'Osso, L. *et al*. 2017. Prevalence and characteristics of Orthorexia Nervosa in a sample of university students in Italy. *Eating and Weight Disorder*. 23(1):55-65.

Depa, J. *et al*. 2017. Prevalence and predictors of Orthorexia Nervosa among German students using the 21-item DOS. *Eating and Weight Disorders,* 22:193-199.

Donini, L. *et al.* (2005. Orthorexia Nervosa: Validation of a diagnosis questionnaire. *Eating Weight Disorder,* 10:28-32.

Dunn, T., Gibbs, J., Whitney, N. & Starosta, A. 2017. Prevalence of Orthorexia Nervosa is less than 1%: data from a US sample. *Eating and Weight Disorders,* 22:195-192.

Financial Planning Standards Board. 2007. *Fundamental of Financial Planning*. Jakarta: FPSB.

Firdan, T., Ertekin, V., Isikay, S. & Kirnipar. 2010. Prevalence of orthorexia among medical students in Erzurum, turkey. *Comprehensive Psychiatry,* 51: 49-54.

Grammatikopoulou, M. G., Gkiouras, K., Markaki, A. G. & Theodoridis, X. 2018. Food addiction, orthorexia, and food-related stress among Dietetics students. *Eating and Weight Disorders,* 23:459-467.

Hayles, O., Wu, M., De Nadai, A. & Strorch, E. 2017. Orthorexia Nervosa: An examination of the prevalence, correlates, and associated impairment in a university sample. *Journal of Cognitive Psychotherapy,* 31:124-135.

Hyrnik, J. *et al*. 2016. *International Journal of Psychiatry in Clinical Practice,* 20:199-230.

Karakus, B., Hidiroglu, S., Keskin, N. & Karavus, M. 2017. Orthorexia Nervosa tendency among stundent of the department of nutrition and dietetics at a university in Instanbul. *Northern Clinics of Istanbul,* 4:117-123.

Karmila, S. 2020. *The Relationship between Exposure to Food Information on Instagram Social Media and Eating Behavior in Students at the Universitas Sumatera Utara in 2019.*. Postgraduate Thesis. Universitas Sumatera Utara.

Livazovic, G. 2017. Dissatisfaction with physical appearance and behaviors associated with eating disorders in adolescents. *Criminology & Social Integratuon Journal,* 25(1):90-109.

Missbach, B. *et al*. 2015. When Eating Right, Is Measured Wrong! A Validation and Critical Examination of the ORTO-15 Questionnaire in German. *PLoS One,* 10(8):1-15.

Mitrofanova, E. et al. Does ORTO-15 produce valid data for Orthorexia Nervosa? A mixed-method examination of participants interpretations of the fifteen test items. *Eat Weight Disorder*, 26(3):897-909.

Notoatmodjo, S. 2018. *Health Research Methodology*. 3rd. Jakarta: PT Rineka Cipta.

Oberle, *et al*. 2017. Orthorexia Nervosa: Assessment and correlates with gender, BMI, and personality. *Appetite,*108:303-310.

Sanlier, N. *et al*. 2016. Does the Rise in Eating Disorders Lead to Increasing Risk of Orthorexia Nervosa? Correlations with Gender, Education, and Body Mass Index. *Ecology of Food and Nutrition,* 55(3):266-278.

Sarah, E. M. & Millis, J. S. 2019. Orthorexia Nervosa: A Review of Psychosocial Risk Factors. *Appetite,*140:50-75.

Strahler, J., Hermann, A., Walter, B. & Stark, R. 2018. Orthorexia Nervosa: A behavioral complex or a psychological condition?. *Journal of Behavioral Addictions,* 7(3):1-14.

Turner, P. G. & Lefevre, C. E. 2017. Instagram use is linked to increased symptoms of Orthorexia Nervosa. *Eat and Weight Disorder,* 22:277-284.

Tsania Fitri Kumala*
Yayuk Hartriyanti
Aviria Ermamilia

Department of Nutrition and Health, Faculty of Medicine Gadjah Mada University, Jl. Farmako Sekip Utara, Yogyakarta 55281 Indonesia

*Correspondence.
tsania.fitri.kumala@mail.ugm.ac.id